Philippine Society for the Study of Nature

2nd International

and

12th Annual Scientific Conference

May 22-27,2012,East Asia Royale Hotel,General Santos City,Philippines

"Crossing Borders for A Sustainable and Healthy Environment"

SAGITTARIUS MINES, INC.
YOUR PARTNER TOWARDS A BRIGHTER TOMORROW

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Sustainable Future

Sagittarius Mines, Inc. (SMI) is proud to play an important role in growing and sustaining the Philippine economy and communities through its Tampakan Copper-Gold Project in southern Mindanao.

We are committed to environmentally and socially responsible mineral resources development and will continue to work with all our stakeholders to ensure communities benefit from our activities in both the short and long term.

Head office: Yakal St. corner Talisay St., Poblacion Tampakan, South Cotabato 9507 Philippines Tel +63 83 2271043 Fax +63 83 2271040

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Metro Manila office: 12/F LKG Tower, 6801 Ayala Avenue, Makati City 1227 Philippines Tel +63 2 8563023 to 25 Fax +63 2 8563032

SMI

SAGITTARIUS MINES, INC.

YOUR PARTNER TOWARDS A BRIGHTER TOMORROW

Philippine Society for the Study of Nature, Inc. (PSSN)
TIN 005-866-117-000 SEC Reg. No. B200000647
Mailing Address: P.O Box 1036, Baguio City, Benguet, Philippines
Website: http://www.pssnonline.org

Philippine Society for the Study of Nature, Inc.
BPI checking account no. 000911-0146-45
Los Banos Branch

PSSN stands for the Philippines Society for the Study of Nature, Inc. It was organized in a national conference on networking for the wise and sustainable use of nature at the University of the Philippines College Baguio (now University of the Philippines Baguio) in April 2000. The participants saw the need for a network to address nature and nature-related problems in the country. Thus, the society was established in order to provide a venue for the development of strategies for the unscrupulous utilization of nature and its amenities. On September 26, 2000, the society was registered with the Securities and Exchange Commission (SEC) **as a non-profit, non-stock, non-partisan organization of professionals, researchers, administrators, policymakers, practitioners, students, and organizations involved in nature studies and its related activities.**

The society's primary objectives are to provide and develop strategies towards wise and sustainable use of nature and to ensure a faithful representation of responsible thingking and sentiment regarding issues about nature. It also seeks to establish partnership and/or collaboration with local government units and other institutions that are involved in the development, conservation, and management of nature resources, Its various activities serve as a channel for the exchange of information, sharing of professional expertise, networking, and strengthening of camaraderie and cooperation among members and partner institutions.

Objectives

The society's objectives are:

- Provide and develop strategies towards wise and sustainable use of nature;
- Ensure a faithful representation of responsible thinking and sentiment regarding issues about nature;
- Establish partnership/collaboration with LGU and NGO;
- Establish local institutional chapters;
- Strengthen camaraderie and cooperation among the members

PSSN's annual conference in nature studies has been successfully developing for the last 12 years. With the first conference held in Los Baños in 2001, the conference has been collaborated with various institutions in different areas in the country, since then; in Baguio (2002) with UP Baguio, Cebu (2003) with UP Cebu College, Bohol (2004), Pampanga (2005) with Pampanga Agricultural College, Davao del Norte (2006) with University of Southern

Mindanao and Local Government of Kapalong, Palawan (2007) with Palawan State University, Ilocos Norte (2008) with Marcos Mariano State University, Iligan City (2009) with Mindanao State University-Iligan Institute of Technology, Baguio (2010) with UP Baguio, and Los Baños (2011) with University of the Philippines Open University and University of the Philippines Los Baños. These conferences provided an important venue that attracts engineers, scientists, students, environmental advocates, and other professionals from many parts in the country.

The success of these annual conferences reflects the critical environmental topics that are discussed as well as the quality of the presented papers. All the papers that are selected for either oral or poster presentation underwent a review process.

This year's conference theme "Crossing Borders for a sustainable and healty environment" aims to create an ideal atmosphere for cross-cultural and cross-disciplinal discourses in environmental topics. The aim is to gain a multi-perspective view of environmental issues and concerns, solutions, management innovations, as well as advances in developing conservation, restoration, education, research methods, and advocacy strategies. This multi-perspective view is important for the creation of a sustainable and healthy environment for the next generation. In addition, it aims to provide a venue for sharing and consultations with experts regarding their research works and expertise for potential collaborative development endeavours.

The following are the Conference sub-themes:

1. Environmental Governance and People's Participation
2. Green Technology and Economy
3. Environmental Education and Advocacy
4. Partnerships for the Environment
5. Environmental Research and Methods

OFFICERS 2011- 2012

JESUSA D. ORTUOSTE, PhD
President
Agency: Sultan Kudarat State University
Mobile No. 0926 338 1193
Email: susanortuoste@gmail.com

ROMEO G. GOMEZ, Jr. PhD
Vice-President
Agency: Benguet State University
Mobile No.0918 427 5017

LITA SOPSOP, PhD
Secretary
Agency: Palawan State University

MERITES BUOT
Treasurer
Agency: Univerity of the Philippines
@ Los Baños

SOTERO M. ABAN PhD
Auditor
Agency : Pangasinan State University

RICARDO M. BAGARINAO, PhD
PRO & Website Master
Agency : University of the Philippines Open University (UPOU)
Los Banos

CECILIO BAGA, PhD
Business Manager
Cebu Technological University

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RAMON M. DOCTO, PhD
Agency : Palawan State University

ZENAIDA G. BAOANAN, PhD
University of the Philippines Baguio

PAST PRESIDENTS and CONSULTANTS OF PSSN, Inc.

1. INOCENCIO E. BUOT Jr., PhD - 2000-2001
2. ZENAIDA G. BAOANAN, PhD - 2001-2002
3. NAOMI G. TANGONAN, PhD - 2002-2003
4. RICARDO M. BAGARINAO, PhD - 2003-2004
5. HONORIO M. SORIANO, JR., PhD - 2004-2005
6. CAYETANO C. POMARES, PhD - 2005-2006
7. LORNA C. GELITO, PhD - 2006-2007
8. JULIUS MANZANO, Jr., PhD - 2007-2008
9. CESAR S. DEMAYO, PhD - 2008-2009
10. ZENAIDA G. BAOANAN, PhD - 2009-2011

LIST OF PSSN LIFE MEMBERS

1. Aban, Sotero M
2. Afuang,Leticia E.
3. Agrupis, Shirley
4. Ajido, Rachel M.
5. Alagano, Artemio C
6. Alibuyog, Nathaniel R
7. Aquino, Marlowe U.
8. Aspiras, Ofelia E.
9. Balaoing, Jose G.
10. Ballada, Karen
11. Baluyot, Avilla V
12. Baguinon, Nestor T
13. Banaticla Ma Celeste N
14. Bangcolen, Agnes G.
15. Bagarinao, Ricardo T
16. Blanco, Peter D
17. Balangcod, Teodora D
18. Baoanan, Zenaida G
19. Barcellano, Emerson V
20. Baril, Joselito
21. Buenaventura, Ma. Josephine (formerly Tandoc)
22. Buot, Inocencio E Jr
23. Buot, Merites M.
24. Cabato, Julie C.
25. Cadiz, Nina M.
55. Godinez, Jenefer A.
56. Gomez Jr, Romeo A
57. Gonzalez, Cecirly O
58. Goss, Milagrosa M.
59. Hansel Carmelita G
60. Hipol, Roland M.
61. Juanich, Liza O.
62. Lerom, Romeo R.
63. Licos, Jovy Bambalan
64. Lontoc, Beatriz M.
65. Magtoto, Liezl
66. Mamalo, Bai Sharifa A.
67. Manzano Virgilio Julius Jr P
68. Martinez-Goss, Milagrosa
69. Mata, Roberto
70. Mendoza, Yolanda M
71. Mijares, Pio Siscar Jr
72. Mones, Deemson
73. Nabanalan, Grace Gano
74. Nallana, Leonarda G
75. Noble-Nano, Ana Belen
76. Nasdoman, Elena G.
77. Obanan, Steve P.
78. Ortuoste, Jesusa D
79. Padit, Rogelio

26. Calderon, Margaret M.
27. Callano, Reynaldo S
28. Cambel, Teresita L
29. Canedo, Jaime O.
30. Castro, April Hope
31. Chua, Racquel
32. Comising,Brigida C.
33. Cruz, Charlie
34. Cubelo, Jose Edwin
35. De Castro, Ma . Elenita
36. Demayo, Cesar
37. De Vera, Rene B
38. De Vera, Irene
39. Diestro Dwight D
40. Dizon, Josefina T
41. Dizon, Romeo
42. Docto, Ramon M
43. Duaqui, Yellowbelle
44. Escueta, Silvestre C.
45. Espaldon, Ma. Victoria C.
46. Espiritu-Afuang, Leticia
47. Fajardo, Analinda
48. Fiar-od, Caridad B.
49. Florece, Leonardo
50. Follosco, Alicia G.
51. Galuba, Henry L.
52. Garcia, Armando C
53. Gaut, Aleksander
54. Gianan, Nicolito

80. Pareňo, Shella C.
81. Ricaforte, Benigno Glenn R.
82. Rivera-Pedling, Marites C.
83. Pomares, Cayetano C
84. Puntawe, Nancita F
85. Quilawat, Mae W.
86. Quintos, Roderick C.
87. Rivale, Ida H.
88. Rivero, Henry I
89. Sabate, Reyen
90. Sajonas, Dominica J
91. Salcedo, Precila G
92. Sampang, Arlene G.
93. Sangalang, Marie Fe M.
94. Santos, Antonio
95. Serrano, Joanne
96. Sevidal Castro, Luz C
97. Silvestre, Jaime C.
98. Sopsop, Glenn O.
99. Sopsop, Lita B.
100. Soriano, Honorio Jr M
101. Subilla, Melanie S.
102. Tangonan, Naomi G
100. Tapay, Nenita E
101. Teñoso, Annie Rose
102. Tranquilan, Jane B
103. Villafaña, Abel P.
104. Zapico, Florence L

Department of Environmental and Natural Resources
Visayas Avenue, Diliman, Quezon City
Tel. Nos. 929-6626 to 29; 929-6633 to 35
926-7041 to 43; 929-6252; 929-1669
Website: http://www.denr.gov.ph / E-mail: web@denrgov.ph

MESSAGE

On behalf of the Department of Environment and Natural Resources, I wish to convey my best wishes to the Philippine Society for the Study of Nature, Inc. in collaboration with the Sultan Kudarat State University on the occasion of its 2nd International Seminar and 12th National Scientific Conference! Your conference theme, *"Crossing Borders for a Sustainable and Healthy Environment,"* is very timely, as the care and enhancement of our environment, in order to be effective, requires cross-cultural and cross-disciplinary approaches. This is well reflected in your topics on environmental governance and people's participation, green technology and economy, environmental education and advocacy, partnerships for the environment and environmental research and methods.

May your conference be a venue for the cross-fertilization of ideas and the creation of partnerships and networks to help address the challenges of our environment and natural resources in the light of climate change and global trends, as we all work together towards building a sustainable and healthy environment for our generation and generations to come.

Kudos and Mabuhay!

(SGD) RAMON J.P. PAJE
Secretary

Let's Go Green

Republic of the Philippines
DEPARTMENT OF AGRICULTURE
Bureau of Agricultural Research
email: rd@bar.gov.ph website: www.bar.gov.ph

MESSAGE

Congratulations to the Philippine Society for the Study of Nature, Inc. (PSSN) for your 2nd International and 12th Annual Scientific Conference with the theme "**Crossing Borders for a Sustainable and Healthy Environment**"!

Challenged with a fast-growing population and the non-sustainable agro-industrial use of soils and water, the country's natural resources are slowly degrading leading to significant environmental degradation. Widespread deforestation has been the largest contributor to the degrading environment. Despite laws requiring trees to be replanted, forests were cleared and denuded areas abandoned, damaging watersheds and silting farmland and estuaries.

A more pressing issue concerning Mindanao is power crisis which has affected not only the business establishments but also the transportation, livelihood, and daily lives of the communities in Davao, Cagayan de Oro, Iligan, and General Santos Cities. Apart from the hydroelectric plants requiring technical attention, it is believed that siltation of watersheds and rising temperature led to the vanishing supply of water.

In line with the conservation of nature and management of watersheds, the Bureau of Agricultural Research (BAR) is working with the International Crops Research Institute for Semi-Arid Tropics (ICRISAT) and the Department of Agriculture-High Value Crops Development Program (DA-HVCDP) in advancing the rainfed areas in the country through the Philippine Rainfed Agriculture Research, Development and Extension Program (PhiRARDEP). One of the components of PhiRARDEP is participatory watershed management. The program seeks to develop, coordinate, monitor and evaluate the implementation of a vigorous rainfed agriculture research, development and extension program to enhance food, nutrition and energy security, improve livelihoods and empower communities in the country's rainfed areas. Through this program, we can also protect our biodiversity and help in mitigating the effects of climate change.

We hope that through this scientific meeting and conference, members of the PSSN can continue working together to generate technologies and information to promote a healthy and sustainable environment!

Congratulations and *Mabuhay*!

TEODORO S. SOLSOLOY, Ph.D.
Assistant Director
DA-Bureau of Agricultural Research

MESSAGE

It is a privilege to have given this opportunity to give a message for the event. I am happy to congratulate the officers and members of the Philippine Society for the Study of Nature, Inc. in organizing this 2nd International and 12th Annual Scientific Conference held at East Asia Royale Hotel, General Santos City on May 22-27, 2012.

I firmly believe that this conference will attain this year's theme "Crossing Borders for a Sustainable and Healthy Environment", considering that this Scientific gathering will convene 200 or more participants coming from the Association of Southeast Asian Nations (ASEAN). This is to create an atmosphere ideal "for cross-cultural and cross-disciplinal discourses in environmental topics to gain a multi-perspective view concerning issues and concerns, as well as recommendations and solutions." Our mandate also aligns with enhancing the professional growth and commitment of environmentalists to ensure that we are aware of the impacts we will make to Mother Nature.

Furthermore, I take this opportunity to enjoin everyone to actively participate in this International Conference, strengthen the Society's objectives and strive for more opportunities that will carry on for greater achievements towards environmental protection and management.

Mabuhay!

(SGD) DATU TUNGKO M. SAIKOL
Regional Director, DENR XII

POLLUTION CONTROL ASSOCIATION OF THE PHILIPPINES INC.
(PCAPI) REGION-XII
St. Francis of Asissi, PurokSt. Gabriel, Koronadal City

ENVIRONMENTAL MANAGEMENT BUREAU

MESSAGE

The Pollution Control Association of the Philippines Inc. (PCAPI) Region-XII, extends its warmest greetings and congratulations to the organizers, officers, members and guests of the Philippine Society for the Study of Nature (PSSN) on the occasion of your 2nd International Seminar and 12th National Scientific Conference themed, **"Crossing Borders for Sustainable and Healthy Environment"**, on May 22-27, 2012, at East Asia Royale Hotel, General Santos City, Philippines.

I commend the efforts of the organizers and officers for coming up with this cognizable international event and activity that ensures sustainability and the continuity of your identified target programs and projects in a wider latitude through cross-cultural and multi-disciplinary approaches on the study and management of nature.

We hope that this gathering will equip you with useful insights and will be an excellent venue for you and the participants in mending the deteriorating environment, most especially the global issue on Climate Change, through and by Crossing Borders for Sustainable and Healthy Environment as your theme.

On behalf of the officers and members of PCAPI-Region XII, I wish you a fruitful conference and warm fellowship!

ENGR. MARDION L. BALGOS, PME
President, PCAPI Region-XII

LALAWIGAN NG SULTAN KUDARAT
1973

Republic of the Philippines
Province of Sultan Kudarat
OFFICE OF THE PROVINCIAL GOVERNOR
Isulan, Sultan Kudarat

MESSAGE

We are in the midst of various pressing issues. One of which, is the cause and effect of Climate change that we are experiencing globally. This year's conference theme: "Crossing Borders for Sustainable and Healthy Environment" is very laudable and so timely, since its focus is on cross-cultural and multi-disciplinary approaches on the study and management of nature. This endeavor will be of great help to pave the way to better understanding on preserving Mother Nature. This advocacy of promoting the welfare of our Environment would surely be benefited not only by the present generation but also for the future generations.

It is with great honor and privilege that I am extending my warmest felicitations to the Philippines Society for the Study of Nature (PSSN) together with my fellow Sultan Kudarateños from Sultan Kudarat State University (SKSU) on the conduct of it 2nd International Seminar and 12 national Scientific Conference on may 22-27, 2012 at the East Asia Royal Hotel, General Santos City.

As Governor of the Province of Sultan Kudarat, I salute on every individual whose concern is on the preservation of environment. I strongly endorse anybody and every organization whose advocacy is for sustainable use of nature; its conservation and management to mitigate any ill effects of climate change.

Together let us preserve our environment. Congratulations and Mabuhay!

DATU SUHARTO T. MANGUDADATU, AL HAJ
Provincial Governor

MESSAGE

Governor Pingoy's message for the 2nd International Seminar and 12th National Scientific Conference:

Greetings of Peace!

It is truly an honor to be a part of this 2nd International Seminar and 12th National Scientific Conference hosted by the The Philippine Society for the Study of Nature, Inc. in partnership with the Sultan Kudarat State University (SKSU). I am delighted to welcome each and everyone in this remarkable event. Indeed, you have come so far.

Your efforts and contributions as key players in the field of environmental protection and sustainability to make every endeavor a success manifest the undeniable growth and progress that it is now up to.

And as you continue to influence and instill the values of hardwork, persistence and optimism among your fellow colleagues and members of the organization countrywide, allow me to also commend you for, in one way or another, sharing and inculcating best practices. Certainly a job well done to you especially to your leaders!

May you continue to carry out a worthy pursuit that directs to a win-win situation and continuous growth opportunities among the members of your esteemed group.

Let's bear in mind that the success of any group or organization would depend on how we match purpose with action. We have to work hand-in-hand toward the common good. Challenges would always be there; nevertheless, these should not give you a reason to give up what you have worked hard for through these years… it's always a choice to overcome these and rise above any difficulty or trial.

Your promising contributions are certainly inspiring. Your continued support plus the great passion you put into work would apparently comprise the legacy which you will be passing on to the next generations. Again, keep it up!

Indeed, there is no greater gift we can give ourselves than being a blessing to other people.

May you keep your unity intact as you continue sharing that positivity which manifests in every endeavor you take. I wish you all the success and may your efforts continue to make a difference in the next years to come. Mabuhay and God bless…

(SGD) **GOVERNOR ARTHUR "DODO" Y. PINGOY JR., M.D**.
Province of South Cotabato

MESSAGE

Globalization process has transformed Philippine economy from meager to an open market driven economy. Philippines is poised for a massive economic growth and the vibrant, dynamic business environment is forcing industries to rethink about strategies ,structure, values and to make optimum utilization of science and technology as well as to build up human capital to gain competitive advantage for growth and development.

Development is greatly contributed by research and educational institutions that keep on making innovations and strategies to be able to create significant impact in the lives of the people not only in the Philippines but also across borders.
This international seminar and national scientific conference of the Philippine Society for the Study of Nature (PSSN) serve as a venue for our countries to count on our researchers, educators, scientists and students to grow and contribute to the promotion of healthy environment for sustainable development. The holding of this important event in General Santos City, Philippines, is not only an opportunity for our local researchers, faculty and students to disseminate the result of their researches but also an occasion for them to learn innovations from other countries and institutions which can be used for their own improvement and for our people.

I commend the President of PSSN Dr. Jesusa D. Ortuoste, who is also from Sultan Kudarat State University (SKSU) together with the officers and members of the PSSN for the conduct of this international seminar and national scientific conference this year. This shows that the Society is continuously working and responding to the various challenges of nature by making science and technologies accessible to all and the emerging innovations to be known to the people.

May this occasion be of great help in improving our creativity and in strengthening our research initiatives in making the environment healthy for sustainable development. Together, let us work to enhance our nature and forge stronger ties between organizations in the Philippines and across borders for the benefit of all.

Mabuhay po tayong lahat!

TERESITA L. CAMBEL, EdD.
President, SKSU

Philippine Society for the Study of Nature, (PSSN), Inc.

MESSAGE

Dear Fellow PSSNians and friends of PSSN!

It was a pleasure to welcome old friends and newcomers to the PSSN 2nd International and 12th Annual Scientific Conference hosted by the Sultan Kudarat State University. Papers submitted in all categories are indicators that more and more researchers and scientists are willing to share discoveries for the advancement of science and technology. Indeed, the theme of this years' convention " Crossing Borders for a Sustainable and Healthy Environment " is a manifestation that we are moving and working together globally for the betterment of Mother Nature.

The charter date of an organization always sets the stage for something big in the future. Like all great things, there is always a beginning. Moving on to a new horizon and shifting to a sustainable society has become a matter of great concern to everyone. Against the backdrop of such things are deteriorating global environmental conditions, worries about the depletion of resources and the rapid growth of emerging countries. For the next generation of people all around the world, we want to lead the way in bringing about a green revolution that will start with our everyday lives, as we continue to provide safety and peace of mind as well as comfort to people's lives in a sustainable way. I believe that this is surely the right approach for us to take in putting our management philosophy into practice in today's world

Human civilization urgently needs a profound transformation – in both the technological and the societal senses. Bringing about this profound transformation will require that the frontiers of scientific knowledge continue to advance. For one, our understanding of what is happening with the environment, and the impact of our actions upon it, are fast-developing yet incomplete. Insufficient, too, is our grasp of the intricacies of our own social, economic and political systems, and why they produce unsustainable outcomes. Moreover, deploying effective responses and transformative change will demand continuous innovation. It is thus of fundamental importance that we dramatically scale up research – from the basic to the applied and of all disciplines – and turn the results into effective, knowledge-based policies and action.
This is where PSSN can best serve humanity. PSSN has at its disposal a vast network of outstanding scientists and organizations with considerable human, intellectual and institutional resources. In support to the vision of the society, its three main pillars of work each serve an indispensable purpose, all working in synergy to deliver the best science for society.

- By **organizing International Research Collaboration**, we gather the brightest minds for joint inquiry around issues of common and pressing concern.
- In reinforcing **the Universality of Science**, our aim is that scientists anywhere, of any age, discipline and background possess the freedom and the means to participate freely (and responsibly!) in global science.
- And last but not least, with **Science for Policy**, PSSN engages with decision-makers to ensure that excellent science does not remain only that, but actually informs decisions that matter.

More than ever before, actions and solutions need to take centre stage. If this is truly the "make-or-break" decade, then there is no time to waste. At the same time that we expand our knowledge base, what already exists must turn into concrete change and solutions that will make a real difference. Thus PSSN is wholeheartedly committed to work with all of its partners to make sure that these things happen. This is now the challenge to the next set of officers – to continue to innovate, work harder and always keep the fire of knowledge burning to encourage more members to actively participate in the upcoming conferences in the future and expand networks not only in the Philippines but also in the global arena..
To all participants, thank you for gracing this occasion. Magandang GENSAN and MABUHAY!

JESUSA D. ORTUOSTE, PhD
President, PSSN 2011-12

CONFERENCE PROGRAMME

DAY 1 May 22, 2012

TIME	ACTIVITIES
	ARRIVAL OF PARTICIPANTS
	Courtesy Call at the Office of the Hon. Mayor Darlene Custodio
8:00 – 9:00 am	Pre-conference Registration
9:00 – 5:00 pm	Pre Conference Training on " Aerobic and Rice Technology"
	Registration is 600 Php inclusive of a training kit , 1 meal and 2 snacks
1:00 – 5:00	High School Science Research Paper Competition
	Registration for HS students & Advisers - 500 Php inclusive of 1 meal and 2 snacks
	• Registration for the Convention/Seminar proper
	• BOT Meeting

DAY 2 May 23, 2012

TIME	ACTIVITIES	
7:00 -9:00	Registration (Cont'd.)	
9:00 -9:45	Opening Program	
	Doxology	MSU-Gensan Choir
	National Anthem	MSU-Gensan Choir
	Opening Remarks	Dr. Jesusa D. Ortuoste PSSN President 2011-12
	Welcome Address	Hon. Darlene Custodio Mayor, General Santos City
	Surprise Number	
	Inspirational Message	Hon. Arthur "Dodo" Y. Pinggoy, MD Governor, South Cotabato
	Intermission Number	SKSU Teatro Kalakat
	Presentation of Delegates	Dr. Lita Sopsop PSSN Secretary
	Introduction of Keynote Speaker	Dr. Teresita L. Cambel University President, SKSU
	Keynote Address	Dr. Teodoro S. Solsoloy Scientist/Assistant Director DA-Bureau of Agricultural Research
	Conference Overview	Dr. Ricardo Bagarinao PSSN PRO & Website Master
	MASTER OF CEREMONY: **Engr. Rodolfo R. Solomon**	
	Coffee Break	

10:00-12:00	Best Paper Competition
12:00 -1:00	Lunch Break
1:00 - 1:45	Plenary Session
	Incidence and Distribution of Tapping Panel Dryness and Corynespora Leafspot Disease in Rubber-Growing Provinces of the Philippines/
	Dr. Naomi G. Tangonan
	Moderator: Dr. Edna Oconer
1:45 – 2:00	Coffee Break
2:00 – 5:30	Continuation Best Paper Competition

EVENING SESSION

6:00 - 7:30	MOU signing with partner agencies/Poster Viewing
	& Welcome Banquet/Dinner with Congressmen, Governors & Mayors
7:30 – 10:00	Socialization
	Emcee: Engr. Rodolfo Solomon & Dr. Lilibeth Edaño

ATTIRE : ALL BOT's/OFFICERS must be in a corporate attire

DAY 3 May 24, 2012

TIME	ACTIVITIES
6:00 – 3:00	NATURE TOUR to Lake Sebu
	Tree Planting & Launching of the Adopted PSSN Park in Lake Sebu, Zip Line visit/
5:00 -9:00 pm	Dinner And Socio-Cultural Presentation With The Hon. Governor Of Sultan Kudarat and SKSU Key Officials
	Venue : Sultan Kudarat Capitol, Isulan, Sultan Kudarat
9:00 - 10:30 pm	BACK TO GENSAN (Hotel)
	In-charge: Ms. Nenita V. Esteban
	Dr. Carlos E. Lacamento

DAY 4 May 25, 2012 (Election of 2012-2013 BOT: 8am-12nn)

Committee Chair: Dr. Romeo Gomez

TIME	ACTIVITIES
8:00 -9:00	Plenary Session (Green Technology and Economy Environmental Research) **ORLANDO F. BALDERAMA, PhD** Professor, Agricultural Engineering, Isabela State University Moderator: Ms. Teresa I. Samonte **"Simulation Models for Sustainable Agriculture and Natural Resources Management: Emerging Tools towards Increased Research Efficiency for Agriculture Development and Resources Conservation"**
9:00-12:00	Paper Presentation with Break (5 parallel sessions)
12:00- 1:00	LUNCH BREAK
1:00 -2:00	PLENARY SESSION (Environmental Governance and People's Participation) **NILDA R. BURGOS, PhD** Professor, Weed Physiology and Molecular Biology, Dept. of Crop, Soil, and Environmental Sciences, University of Arkansas, Fayetteville, AR, USA Moderator: Dr. Ricardo Bagarinao **"Sustainable Agriculture: Moving Beyond the Fancy Slogan"**
2:00 – 5:00	Continuation of Paper Presentation with Break (5 parallel sessions)

EVENING SESSION

7:00-9:00	NEWLY ELECTED officers/ BOT Meeting

DAY 5 May 26, 2012

TIME	ACTIVITIES
8:00 – 9:00	PLENARY SESSION (**Partnerships and Collaboration for the Environment)** **SUKENDAH , Ph D** Professor, Universitas de Pembangunan Veteran East Java Surabaya, Indonesia **"ACADEME – Coconut Growing Communities partnership to overcome poverty, conserve germplasm and create healthy environment: A Project on Zero Waste Technology on Kopyor Coconut"** **Moderator: Dr. Ruby S. Hechanova**
9:00 – 12:00	Continuation of Paper Presentation with Break**(4 parallel sessions)**
12:00 – 1:00	LUNCH BREAK

1:00 -2:00	PLENARY SESSION **(Environmental Education and Advocacy & Environmental Research and Methods)** **LIN QING Ph D** Professor.& Vice President of School of Economics, Fujian Normal University , Fuzhou , Fujian , China,P.C 350108 **"Development of Multifunctional Agriculture and Environmental Protection"** Moderator: Dr. Carlos L. Lacamento
2:00 – 4:00	Continuation of Paper Presentation with Break (5 parallel sessions)
4:00 – 6:00	**BUSINESS MEETING** Approval of the Agenda Review and Approval of the Minutes of the 2011 general assembly meeting in Los Banos, Laguna Matters arising from the minutes of the 2011 general assembly meeting in Los Banos, Laguna Report of the President Report of the Treasurer Report from the PSSN Journal Editor Chapter Reports Amendments of the Constitution and By-Laws Open Forum/General Discussions Other Matters BREAK
6:00-8:00	CLOSING CEREMONIES, AWARDS NIGHT AND BANQUET

DAY 6 May 27, 2012

TIME	ACTIVITIES
7:00 – 8:00 am	Planning meeting for NEW BOT Post Conference Tour

HOME SWEET HOME

BEST PAPER COMPETITION

May 23, 2012

Room	Time	Title	Presenter/Authors	Moderator
	8:00am	The Complex Diversity Of Asia Pacific Wild Rices And Its Conservation Implications	Maria Celeste N. Banaticla-Hilario/Nigel Ruaraidh Sackville Hamilton/ Ronald G. van den Berg/Kenneth L. McNally/T.T. Chang	**ENGR. RODOLFO R. SOLOMON**
		Gender Participation in Community Based Mangrove Forest Management Along Tambac Bay, Anda, Pangasinan, Philippines	Nerda C. De Vera,/Nerda Diana Cristina N. Item/ Aeron Wilfred D. Ortega/Irene A. De Vera	
		Ants (Hymenoptera: Formicidae) Of Mt. Apo National Park Philippines: A Survey of Nocturnal and Diurnal Ants in The Mossy Montane Forest	Jhonny Wyne B. Edaño/Janette P. Supremo / James Gregory C. Salem	
		Land Cover Change And Water Yield of Silang-Santa Rosa River Subwatershed, Laguna, Philippines	Kathreena G. Engay[1] and Damasa B. Magcale-Macandog[2]	
		Isolation, Purification, and Characterization of Bacterial Isolates Obtained From Gills of *Teredora Princesae* for Qualitative Cellulolytic Activity/	Mary antonette P. Esperida, Paul R. Olvis	
		Market Model Approach to the Event Study of the Relationship Between the Severe Weather and Philippine Stock Exchange Index/	Michael C. Villadelrey/ Stan Michelle R. Villadelrey/ Ramon Joseph P. Esteves/Jomar F. Rabajante/ Divina Rogeli H. Reamon/ Nikko C. De Leon	
		Native's Territorial Behavior and Perceived Environmental Impact of Community Intrusion	Sheila May R. Licup/ Abigail R. Carranza /Christian U. GaranJ/ennie P. Mendoza / Jowanah Lyn L. Nacar /Lenie Rocel E. Rocha /Paul R. Olvis	
		Biosorption of Dry Biomass of Aspergillus Oryzae and Penicillium Chrysogenum	Joefrhym D. Merillana	
		Establishing a Composite Index from Criteria of Resilient Coastal Communities Determined through an Analytic Hierarchy Process (AHP) Model /	Pedcris M. Orencio/Masahiko Fujii	

		Bacteriological Safety, Proximate Composition and Amino Acid Profile of the Egg Mass of the Wedge Seahare (*Dolabella auricularia)* (Lightfoot, 1786) **/**	Ador Rivera Pepito,[1,] /Gloria Gomez-Delan[2] /Manabu Asakawa[3]/ Letecia J.Ami/En. Emilia.S.Yap[1]/ Minerva SD. Olympia, Anthony S. Ilano[4]/ Kaori Yasui[3]/Venerando D. Cunado[2]	
		Fractal Dimension and Patchiness in Hinabian-Lawigan Watershed, Southern Leyte, Philippines	Jay-ar O.Ragub/Ricardo T. Bagarinao	
		Utilization of Sea Cucumber (*Holothuria Atra*) Body Walls and Sea Urchin (*Tripneustes Gratilla*) Tests as Potent Antibacterial Agent/Martha Louise M. Tongco, Paul R. Olvis	Martha Louise M. Tongco/ Paul R. Olvis	

HIGH SCHOOL CATEGORY FOR BEST PAPER COMPETITION

May 22, 2012

Room	Time	Title	Presenter/authors	Moderator
	1:00-3:00pm	Evaluation of *Chanos Chanos (*Milkfish) Bile Extract as an Organic Pest Repellant for *Ostrinia furnacalis* (ASIATIC CORN BORER	Inbemar T. Corcino /Oyelle Anfernee T. Veloso/ Kim Gabriele Y. Galaura/Shieldon Vic S. Pinoon	**MR. ADRIAN PROTACIO**
		Mimosa Pudica L. (Makahiya) Root: Potential Kidney Stone Solvent/	Kirstel Joy L. Picar/ Anna Villame Inbemar T. Corcino /Oyelle Anfernee T. Veloso/ Kim Gabriele Y. Galaura/Shieldon Vic S. Pinoon	
		Health Status of the High School Students In Balo-I, Lanao Del Norte, Philippines Based on Body Mass Index	Jommalyn M. Tabal/ Madeleine D. Soriño / Jenefer A. Godinez	
		Eucheuma Denticulatum as an Agent In Prolonging the Shelf-Life Of 'Carabao' Mangoes	Cid A. Domingo/ Jeno D. Guerrero/ Tiara S. Medina/ Frances Noreen R. Arellano	
		Assessment on the Community Structure of Seagrass Along the Interidalzone of Limao, Island Garden City Of Samal (Area In Davao Gulf	Dhaisy Mhae D. Lorin /Michelle Anne Marquez/, Jan Marie V. Valdez	
		Effectiveness of Makabuhay (*Tinosporarumphii*) As Botanical Insecticide Against *Aedes* – The Dengue Vector	Kerlt Andreu L. Picar/ Eunice Angelica G. Suelto	
		Sargassum Seaweed *(Eucheuma Denticulatom):* Potential Biosorbent for Lead Nitrate, Cadmium Sulfide and Zinc Sulfate Contaminated Aqueous Solutions	Yolwin Jed Perales	

SCHEDULE OF ORAL PRESENTATION

May 25, 2012
Green Technology Category

Room	Time	Title	Presenter/authors	Moderator
Session Room A	9:00-12:00am	Sensory qualities of shrimp cookies: an improved recipe	Charena J. Castro	**DR. ROMEO GOMEZ**
		Eggshells as cement extender	Jade V. Colmo,/ Rommel M. Lagumen, Ph.D	
		Stem cut propagation technologies for rubber trees	Dr. Onofre S. Corpuz	
		Cuttings types and concentration of iba on growth of red mangrove (*rhizophora stylosa)* propagule	F. Deru Dewanti, /Ratna Rositawati, Agus Sulistyono	
		Potential of Ash of Agricultural Waste as Alternative Source of Potassium, Calcium, and Magnesium Nutrient	Ida Ekawati,/ Zasli Purwanto	
		Potency of Phylloplane saprophytic fungi on shallot as antagonists against purple blotch disease (*Alternaria porri*) in East Java, Indonesia	Herry Nirwanto,/ Tri Mujok	
		Revegetation as Improvement Efforts of the Post-sand Mining Land in Yogyakarta	Dyah Arbiwati, Abdul Rizal AZ.	
		Strategic analysis of friendly products in Yogyakarta, Indonesia.	Dyah Rachmawati Lucitasari,/ Ahmad Muhsin	
		Teratogenicity of Cassava (*Manihot esculenta* crantz) Root extract using duck embryo Assay	Francis I. B. Roces	

SCHEDULE OF ORAL PRESENTATION

May 25, 2012
Green Technology Category

Room	Time	Title	Presenter/authors	Moderator
Session Room A	2:00-5:00pm	Influence of Calamansi and Virgin Coconut Oil as active reagents on the acceptability of liquid hand wash	Anabelle T. Pantaleon, /Corazon P. Macachor, / Hubert G. Quiñones	**DR. CARLOS E. LACAMENTO**
		Influence of Crop Rotation System on Soil Quality in Tukucan farms in Tinoc, Ifugao	Estella M. Paoay , /Zeverine P. Banganan /Leon G. Mocate Jr.,/ Romeo A. Gomez Jr., Ph.D.	
		Homemade compost and fermented activators: an effective alternative to improving yield in radish	Pet Roey L. Pascual, /Pedrito S. Nitural	
		Improved composting through fermented activators and em® utilization /Pet Roey L. Pascual /and Pedrito S. Nitural	Pet Roey L. Pascual /and Pedrito S. Nitural	
		Effects of different types of milk fat globule membrane materials on the physical and rheological characteristics of set yoghurts /Pet Anthony.L. Pascual, /Koen Dewettinck /and Thein Trung Le	Pet Anthony.L. Pascual, /Koen Dewettinck /and Thein Trung Le	
		The Cobb Broiler Fed with varying levels of Honey feed additives	Mohamadtaha s. Pendaliday Ebrahim M. Ulanan	
		Ecotourism: recreation vehicle for environmental education, natural conservation and community Empowerment in Yogyakarta Special Region Province, Indonesia	Dr.Siti Syamsiar	
		Trigona biroi (Stingless bees) is potential for Sustainability of Pagbilao Mangrove Forest, Quezon Province, Philippines	Amalia E. Almazol,PhD	
		Feedstocks Of Fuel For Large- Scale Biodiesel Production: A Review And Prospects For The Future	Lea C. Garcia	

SCHEDULE OF ORAL PRESENTATION

May 25, 2012
Environmental Governance Category

Room	Time	Title	Presenter/authors	Moderator
Session Room B	9:00-12:00am	Sustainability of Magindanawon Upland Rice Farming System in Cotabato Philippines	Dr. Zainudin M. Adam	**ENGR. EULOGIO L. APELLIDO Jr.**
		Soli-Soli and Cassava as a Festival Emblem and as an Agricultural Resource of Camotes Island, Central Philippines: Their Status, Processing and Proposed Conservation Options for Sustainability	Berenice T. Andriano ,/Serapion N. Tanduyan /and Ricardo B. Gonzaga	
		Alternative Water Facility Management System of Cebu Technological University-Main Campus	Reylan G. Capuno	
		Environmental Dimensions and Livelihood Practices of Badjaos in Surigao City	Prof. Carlos H. Donoso	
		Sustainable Resource Management in Ancestral Domains and Lands	Li Jia	
		Development of Solid Waste Recovery Model for a University using System Dynamics	Ryan B. Laytani, M.Eng.	
		Gender Participation in Mitigating Climate Change in Argao, Cebu, Philippines	Edgardo P. Lillo	
		Assessment of Gender Role in Farming System among Magindanawn Tribes	AbdulkadiL M. Makalin /Dr. Onofre S. Corpuz /Dr. Zainudin M. Adam /Dr. Lumina L. Cabilo	
		Establishment of Community-based Marine Protected Area (CBMPA) at Sitio Recudo, Brgy. Yook, Buenavista, Marinduque: a People's Initiative on the Conservation of Marine and other Resources	Doreen R. Mascarenas	
		Waste Management at the Automotive Shops in Metro Cebu	Pedro Y. Quemada /Cecilio S. Baga	

SCHEDULE OF ORAL PRESENTATION

May 25, 2012
Environmental Governance Category

Room	Time	Title	Presenter/authors	Moderator
Session Room B	2:00-5:00pm	Environmental Practices of Eva Aetas: The Future Amidst Degradation	Chona Camille E. Vince Cruz	**DR. RAMON DOCTO**
		Socio-economic, Environmental, and Livelihood Practices of Indigenous People Residing in the Vicinity of Parang-Parang Watershed, Surigao City, Philippines	Prof. Carlos H. Donoso	
		Climate Change Adaptation and Farm Economics in High and Low Input Agroecosystems in the Highland Benguet, Philippines /Abner O. Lawangen	Abner O. Lawangen	
		Solid Waste Management Practices in Carcar, City, Cebu, Philippines /Edgardo P. Lillo /Steve Michael T. Alcazar	Edgardo P. Lillo /Steve Michael T. Alcazar	
		Ethnobotanical Uses of Olagak (*Uvaria* sp.) and Apalang (*Barringtonia* sp.) by the Tagbanua Tribe in Aborlan, Palawan, Philippines /Eva Niña B. Lopez /and Mildred P. Palon	Eva Niña B. Lopez /and Mildred P. Palon	
		Governance of MPAs for Effective Engagement and Managing Stakeholders: Case Study on the Agojo Fish Sanctuary and Marine Park in Catanduanes Island, Philippines	Jimmy T. Masagca, /Sonia R. Vargas, /Asuncion V. Asetre, /Estrella T. Tribiana	
		Status of Compliance of Gasoline Stations in Leyte to Occupational Safety and Health (OSH) Policies and Standards of the Department of Labor and Employment (DOLE)	Edgar I. Peque	
		Indicators of Sustainability of Indigenous Forest Management System of the Iturkaw in Tinglayan, Kalinga Northern Luzon	Robert A. Rodolfo /Teodoro R. Villanueva /Arturo SA Castillo/ Armando M. Palijon/ Myrna G. Carandang	

		Agrotourism:form of Public participation in Environmental and Natural Resource Sustaining	Soeharto	
		Solid Waste Management Program (SWMP) of Pacijan Island Cebu, Philippines: The Level of Participation of the Inhabitants, Effects and Problems	Isaac Soringa, /Crisniel Bacat, /Cliff Harold Bensig/and Serapion N. Tanduyan	
		Indigenous Health Remediation: The case of Deaganons of Magcaraguit group of Islands, Dimasalang, Masbate	Ida F. H. Revale, /Carlos V. Cortez,/ Phil V. Morano, /Angelo P. Candelaria	
		Establishment of Marine Fishery Reserve and Sanctuary off Magcaraguit Group of Islands, Dimasalang, Masbate (MFRS-MGI): Design Options and Other Proposed Initiatives	Ronnel R. Dioneda Sr/, Carlos V. Cortez Jr./Angelo P. Candelaria, Yolanda Julieta Brugada,/Aurea Borromeo/Corazon V. Caputan	
		A Post-Normal Science Approach to Sustainable Development: The Case of Romblon Province	Eddie G. Fetalvero	

SCHEDULE OF ORAL PRESENTATION

May 25, 2012

Environmental Education/Research /Partnership

Room	Time	Title	Presenter/authors	Moderator
Session Room C	9:00-12:00am	Awareness and Mitigating Strategies on Climate Change: It's Impact on the Performance of the Faculty and Students /	Moharabe M. Andang,/Dr. Onofre S. Corpuz, /Dr. Zainudin M. Adam /and Dr. Lumina L. Cabilo	**DR. SOTERO ABAN**
		Biodiversity in the Face of Urban Development in Baguio City, Philippines	Ross Anthony D. Eguia, /Arvin Jay M. Grimaldo, /Zenaida G. Baoanan	
		Perceived Responsiveness of Agricultural Research and Extension Programs of Higher Institutions to the Socio Economic status of Communities in Region XII	Pasigan U. Buisan	
		Anatomical Study of Grafting Mangosteen Seedlings	Ramdan Hidayat	
		Role of Weeds in Spreading Vector of Peanut Stripe Virus (PSTV	Mofit Eko Poerwanto/ and Siwi Hardiastuti Endang Kawuryan	

		Environmental Factors on the Growth of Jatropha at Potorono Village Yogyakarta Indonesia	M. Nurcholis, /S. Sumarsih, /Rr. R. Brotodjojo /and D. Haryanto99	
		Navigational Patterns of Students in an Online Learning Environment: Implications in Environmental Education and Awareness	Ricardo T. Bagarinao	
		Non-formal Environmental Education: A Strategy to Increase Environmental Awareness of Tagbanua children in Sitio Tabyay, Brgy. Cabigaan, Aborlan, Palawan, Philippines	Jessie C. Braganza, Jr., /Lita Bañoc-Sopsop	
		Coastal Marine Biodiversity Conservation-Capability Building Program in Maguindanao and Sultan Kudarat Province	Pasigan U. Buisan/Alimudin S. Pendulat	
		Toward the Path of a Sustainable Tourism Program the Marinduque Eden (Ecological Destinations and Education in Nature) Program of Marinduque State College	Dr. Romulo H. Malvar	
		Environmental Sustainability Program Implementation of Selected Public Schools of General Santos City: Basis for Environmental Advocacy Framework	Estela Marie O. Verana	
		Mangrove Rehabilitation by Community-Based Forest Management Agreement (CBFMA) Holders in Western Pangasinan	Rene B. De Vera /and Irene A. De Vera	
		African Night Crawler, Indigenous Microorganism and Fermented Plant Juice: Agents for Rapid Decomposition	Elvie V. Diaz, PhD/ Rolando H. Hechanova,PhD	
		Diversity of Medicinal Flora in the Province of Albay, Luzon Island, Philippines	Phil V. Morano	
		Hydrologic Frequency Analysis of Rainfall in Region X- Northern Mindanao	Joy V. Lorin-Picar	

SCHEDULE OF ORAL PRESENTATION

May 25, 2012
Environmental Education/Research/Partnership

Room	Time	Title	Presenter/authors	Moderator
Session Room C	2:00-5:00pm	Primary Productivity of Dasol Bay in Western Pangasinan, Philippines.	Sotero M. Aban, / Cornelia E. Ibarra, / Rey S. Raguindin, /Armando C. Garcia and /Rene B. de Vera	**DR. LITA SOPSOP**
		Abundance and Distribution of Shipworm, *Kuphus Polythalamia,* in Barangay Sta. Clara, Kalamansig, Sultan Kudarat	Julie E. Albano, Ph.D , /Emmanuel E. Albano Jr./Mary Joyce L. Flores, Ph.D	
		Cave Bats (*Chiroptera*) in Rajah Sikatuna Protected Landscape, Bohol Island, Philippines	Steve Michael T. Alcazar, / Adela C. Duran, / Rosalyn P. Alburo, /Hemres M. Alburo	
		Percentage Success, Survival and Growth of Grafted Mango as Influenced by Time and Storage Materials	Henrisa Pedroso Aparis,/Jesusa D. Ortouste Ph.D.,/ & Rolando F. Hechanova Ph.D.	
		Indigenous Microorganisms (imos) Associated in the Vermi Silage Production	Dr. Teresita B. Bayaron	
		Farmers and their Contribution to Greenhouse Gas Emission /Ian	Phil M. Canlas	
		Landscape Changes in the Ulot Watershed in Samar Island, Philippines	Evelyn Amit-Corado	
		The Lake of Bay in History and Memory	Dwight David A. Diestro	
		Land Cover Change and Water Yield of Silang-Santa Rosa Riversubwatershed, Laguna, Philippines	Kathreena G. Engay, /Damasa B.Magcale-Macandog	
		Spatio-Temporal Patterns of Landscape Change in Batangas City	Glenn O. Sopsop,/Edwin R. Abucay,/Prima R. Silvestre, /Henry M. Custodio /and D. Manikham	
		Reproductive Biology of the Janitor Fish *Pterygoplichthys* spp. in Marikina River, Philippines	Joycelyn C. Jumawan, /Benjamin M. Vallejo /and Annabelle A. Herrera[3]	
		Using Trisectoral Approach to Solving Philippine Waste Disposal Problem	Li Jia	

		Ethnographic Accounts on the Use of Medicinal Plants of Albay, Philippines /	Ida F. H. Revale	
		Bio-Physical Characterization of the Coastal Waters of Bacon District, Sorsogon City, Philippines	Ida F. H. Revale /Arnelyn D. Doloiras	
		Effects of Dietary Phytase from different Bacterial Sources on Growth and Phosphorus Utilization of Tilapia *Oreochromis mossambicus*	Rande B. Dechavez/ Augusto E. Serrano/ Gaudiosa A. Gonzales/ Liberato A. Laureta/Mary Jane A. Amar	
		Iba ang Natural: An Exploratory Study on "Nature" as a Discursive Resource for Marketing Products through TV Commercials	Primo Garcia	

SCHEDULE OF ORAL PRESENTATION

May 25, 2012
Green Technology Category

Room	Time	Title	Presenter/authors	Moderator
Session Room D	9:00-12:00am	Steel Solid Waste fiber reinforced concrete (SSWFRC)	Jireh Anthony Lief N. Forro, /Rodolfo B. Solomon, CE	**DR. IRENE DE VERA**
		Acceptability of *Chevon* Tocino	Erlinda S. Galo, /Corazon P. Macachor	
		Biomass Potential of Microalgae in Liguasan Marsh, Cotabato and estuary of St. Cruz, Davao Del Sur	Alexter F. Generale	
		The potential of balanacan cove for sustainable tidal power generation	Engr. Alex J. Hidalgo	
		Carotenoids content of commercial seaweed in Bali and its potential effect as antioxidant	K. Sri Marhaeni Julyasih	
		Influence of salt concentration on the fermentation rate of fish sauce from anchovies, *stolephorus spp*	Hermenigelda V. Kiamco, /Corazon. P. Macachor / and Cecilio S. Baga	
		Vulnerability of termite soldiers and workers (caste) To *allamanda cathartica* l. Leaf extracts	Frank Britz V. Cadavis, /Facundo Rey M. Ladiao	
		On-farm performance of organically grown local upland rice varieties in arakan	Ms. Merla V. Cajandig, Dr. Pendatun E. Dalam, Dr. Onofre S. Corpuz	

		Diversity of Medicinal flora in the Province of Albay, Luzon Island, Philippines	Phil V. Morano	
		Promotion of Sweet Potato Flour in Food Industry of Bantul Regency (Special Province) of Yogyakarta, Indonesia	Ari Rahmawati/Rev. Dr. W.Wimalaratana/Dr. SitiSyamsiar	
		Egg-at-First-Lay in Pateros Ducks Fed with Cadmium and Organochlorine Pesticide Residues in Commercial Feeds	*Henry I. Rivero,/ Renato S.A.Vega,/ Severino C. Capitan, /and Angel L. Lambi*	

SCHEDULE OF ORAL PRESENTATION

May 25, 2012
Green Technology Category

Room	Time	Title	Presenter/authors	Moderator
Session Room D	2:00-5:00pm	Utilization of agricultural waste and biological agent to increase rice yield	Oktavia S. Padmini, /and R.R Rukmowati Brotodjojo	**DR. JULIE ALBANO**
		Potential of Tithonia (*tithonia diversifolia)* compost to support organic farming on Tomato / Plant	Widiwurjani	
		Reorientation of cycle of cutting teak tree for increasing of water deposits and decreasing of land degradation	Kemal Wijaya,/ B. Wisnu Widjajani /and Irfan B. Pramono	
		Back to nature back to parboiled rice	Sri Wuryani ,/D.A Puspitaningrum	
		Acceptability of chilled sweetened gozo (*kappaphycus alvarezii doty)* salad in two different types of preparation mixed with diced mango (*magnifera indica linn.*)	Ronald M. Raminez, /Annalie G. Gasta, /Jessel O. Dalagon	
		Cocos nucifera Cultivar and Maturity Effects on the Quality and Production Yield of Virgin Oil	Christeodoflor A. Ramos, /Corazon P. Macachor/ and Cecilio S. Baga	
		Fabrication and characterazation of titanium dioxide based sensitized solar cell using vinegar	Alex N. Remegio,julie E. Albano, Ph. D.,/Victorino M. Laviste	
		Millet (*Panicum miliaceum*) instant cereal formulation for food processing technology: instructional guide	/Anjin Pleiadess P. Cabrera, /Genes M. Pasaje, DPA	

		Control the Development of Wilt Disease(Ralstonia Solaneacearum) on Tomato Plants through Seed Treatment withPseudomonad Flourescent Isolate PF-122	Yenny Wuryandarl Trlwldodo Arwlyanto	
		The Influence Of Habitat On The Characteristics Of The Green Macroalga *Caulerpa Lentillifera* (Agardh,1837) as Human Food	[1*]Gloria G. Delan, /[1]Julieto S. Legados, [1]/Venerando D. Cunado, [2]/Rachel Luz V. Rica, [1]/Ador R. Pepito /Anthony S. Ilano	

SCHEDULE OF ORAL PRESENTATION

May 26, 2012
Green Technology Category

Room	Time	Title	Presenter/authors	Moderator
Session Room A	9:00-12:00am	Fermented papaya fruit juice as organic liquid fertilizer for Bush bean (*Phaseolus vulgaris*).	Sherwin A. Lagutin/Carlos E. Lacamento	**DR. CECILIO BAGA**
		Socio-economic Profile of Sea Cucumber *Apostichopus japonicus* Gatherers in the Coastal Areas of Bantayan Island, Cebu Province	Miguelito A. Lauglaug, /Cecilio S. Baga,/ Bonifacio S. Villanueva,/ Corazon P. Macachor, PhD /and Noel Dierran	
		Varietal trial of peanut planted on a newly established Salt farm on Dinagat Island /Ignacio M. Lincuna, /Jerry P. Bernadez, /Carlos M. Dunque	Miguelito A. Lauglaug, /Cecilio S. Baga,/ Bonifacio S. Villanueva,/ Corazon P. Macachor, PhD /and Noel Dierran	
		Acceptability of sweet potato [*ipomoea batatas*] tart	Jonita V. Literatus,/ Arcelita M. Gorgonio,/ Ermelinda M. Kiamco, /Dr. Serapion N. Tanduyan	
		Eggshell and limestone as cement extender	Rodne L. Loria, /Rodolfo B. Solomon	
		Benefits and costs of tourism in Palawan /	Dr. Lourdes S. Arcilla	
		Processing of frigate mackerel *auxis thazard* gender roles in product safety S. Villanueva	Corazon P. Macachor,/ Cecilio S. Baga,/ Bonifacio	

		Efficiency of the Two Types of Gears for Eel Fishing in the Coastal Waters of Carmen,Cebu, Central Philippines	/Hector C. Abdon,/Venerando D. Cunado,/Rachel Luz V. Rica /Gloria G. Delan,/Ruben M. Ungui /andRowena P. Dato-on	
		Soli-Soli and Cassava as a Festival Emblem and as an Agricultural Resource of Camotes Island, Central Philippines: their Status, Processing and Proposed Conservation options for Sustainability	Berenice T. Andriano,/Serapion N. Tanduyan, /Ricardo B. Gonzaga	
		Tourism Industry in the Municipality of Moalboal, Cebu: Its Impact to the Socio-Economic and Cultural Life of the Community	Dr. Grace B. Gimena/ Dr. Nerissa V. Gador/ Dr. Severina P. Velos	

SCHEDULE OF ORAL PRESENTATION

May 26, 2012

Green Technology Category

Room	Time	Title	Presenter/authors	Moderator
Session Room A	2:00-4:00pm	Lemon extract and milk as active reagents for Transparent shampoo	Rebecca A. Rivas, /Corazon P. Macachor /and Cecilia Elena P. de los Reyes	**DR. ARLENE ANCHETA**
		Palm fronds lumber	Bimbo L. Salazar, /Mary Lynn G. Magbanua, Ph.D	
		Used tire (crumb rubber) as asphalt modifier Pimentel,/Mary lynn G. Magbanua, Ph.D	Anthony B.	
		Gleaning and extraction rate of holothurians in Camotes Islands, Central Philippines	Serapion N. Tanduyan, /Panfilo E. Ciriaco, /Ricardo B. Gonzaga,/ Wilfredo G. Anoos,/ Lourdes M. Garciano /and Berenice T. Andriano	
		Acceptability of tilapia (*oreochromis niloticus*) twist from Offals enriched with Horse Radish (*moringa oleifera lam.)*Leaves	Jonita V. Literatus,/ Arcelita M. Gorgonio, /Serapion N. Tanduyan, /Julieta T. Surbano	
		Acceptability of cassava (*manihot esculenta*) siopao	Ostria, Michael Sam ,/ Serapion N. Tanduyan, /Ermelinda M. Kiamco	
		Utilization and Curative Practices of Herbal Medicine	Eva A. Agbay	

SCHEDULE OF ORAL PRESENTATION

May 26, 2012

Environmental Governance Category

Room	Time	Title	Presenter/authors	Moderator
Session Room B	9:00-12:00am	Indigenous Rice Farming System in Ligawasan Marsh, Mindanao Philippines: A Conservation Technique for Climate Mitigation	Dr. Harris M. Sinolinding /Dr. Onofre S. Corpuz, Ph.D	**DR. ROMUALDO M. ORTUOSTE**
		Islandness", as a Form of Living Among Households in Gaspar Island, Tres Reyes Islands, Marinduque	Virginia M. Sotto,Ed.D	
		Rangeland Management in Sagarmatha (Mount Everest) National Park and BufferZone, Nepal: Socio-economic perspective	Thakur Prasad Upadhyay, PhD/ Khem Raj Bhattarai, PhD	
		Perception, Awareness and Adaptation Strategies on the Effects of Climate Change in Southern Cebu, Philippines	Eva A. Agbay	
		Solid Waste Management in the Integrated Areas of Development in Southern Leyte.	Amelia Girly l. Aranas, M.P.A., D.P.A., Ph.D.	
		Improving Shelf-Life of Cooked Rice Using Household Vinegar	Lolita L. Aranas, MPH	
		Philippine Oyster *Crassostrea Iredalei* as Potential Bioindicator of Sugar Effluents	Atay, Lordfrey Dickson M.,/Briones, Jan Michael P.,/Buot, Abigail L.,/Calingacion, Alfie F.,/Cimafranca, ,/Louie Mar E.,/Estrellado, Giel O../ Grino, Justine E.,/Quiao, Kriza Mae A.	

SCHEDULE OF ORAL PRESENTATION

May 26, 2012

Environmental Education/Research/Partnership

Room	Time	Title	Presenter/authors	Moderator
Session Room B	2:00-4:00pm	Biosorption of Dry Biomass of Aspergillus Oryzae and Penicillium chrysogenum	Joefrhym D. Merillana	**DR. RHODELYN M. DALAYAP**
		Attitude of Freshmen College Students of Western Philippines University Towards Chemistry: Antecedents and Coping Mechanisms	Cecilia S. Santiago	
		Corticolous Lichen Species at Southern Luzon State University	Leo l. Pastor /and Amalia E. Almazol	
		Pesticide Residue Analysis of Common Solanaceous Green leafy vegetables in Bagsakan Centers of Koronadal and Tacurong Cities, Philippines	Erlindo P. Lalisan and/Junito P. Marcelino, Ph.D	
		Diversity, Distribution and Implication for Conservation of Fruit Bats (Mammalia, Chiroptera,Megachiroptera) in Nasipit, Agusan Del Norte, Philippines	Neil Jun S. Lobite, /Sheryl L. Paz, Msc.	
		Coliform Content of Shellfish (*Anadara Antiquata*) in Davao Gulf	Rosie Lynn P. Tejada	
		Occurence and Abundance of Fruit Bats in some Conservation Areas of North Cotabato	Lothy Fernandez Casim, R.N.,/ M.S. Marion John Michael M. Achondo	
		Pre-Spanish Environmental History of Pangasinan, Philippines	Irene A. De Vera	
		Assessment of The Common and Endemic Medicinal Plants Used in Various Households of Albay, Philippines	Ma. Teresa A. Mirandilla, Ph.D. /Elizabeth P. Abalon	
		Utilization Documentations of The Medicinal Plants Used by Health Practitioners of Albay Province, Philippinnes	Jean Annette S. Ibo	
		Deagan Island: Retracing its History,	Angelo P. Candelaria, Ramil C.	

		Documenting Health Remediations, Understanding Family Relations and Gender Roles In Agriculture and Fisheries	Chavenia, Ida H. Revale, Guilbert O. Oraye, Amelia A. Dorosan, Laarni D. Pancho and Emilio C. Valenzuela[2]	
		Indigenous Knowledge In Fishing: Its Effect to Coastal Resources and Its Adaptation to Climate Change	Lilibeth S. Galvez/Jannette C. Estioca /Luzelyn C. Traya	
		Red Tide: The Case for Sorsogon Bay	Michael Montealegre,/Charmaine Malonzo,/Ida Revale,/ Ma. CrispinaBaltazar,/ Nera Galan,/ Noemi Madrid,/ Ma. Corazon Barrameda,/ Eden Ante, /Anne Retuerma,/ RonnelDioneda,/ Phil Morano,/ Ma. Bernadette Bongais,/ Magdalena Bobier,/ SalvacionTabo, /Carlos V. Cortes Jr.,/ Joseph Dechavez,/ Emmer Beltran,/ Psyque Denso,/ Jeff Cañada	

SCHEDULE OF ORAL PRESENTATION

May 26, 2012

Environmental Education/Research/Partnership

Room	Time	Title	Presenter/authors	Moderator
Session Room C	9:00-12:00am	Geometric Morphometric Variation among *Ambassis Interrupta* Fish Populations from the River, Rivermouth and Seaward areas of Linamon, Lanao Del Norte	Sherryl Lipio-Paz	**MS. DOREEN BARRACA**
		Constructional Constraints in Miniaturized but Functional Designs: Cranial Systems in Fishes and Implications to Larval Aquaculture and Fish Conservation in the Philippines	Jimmy T. Masagca /and Manrico T. Masagca	
		Status of Mantayupan River Ecosystem	Alfredo C. Neri	
		In-Vitro Germination of Dendrobium *(Dendro bium sp.)* Seed Pod using different levels of Concentration of Culture Media	Andresa A. Pasaje, PhD/ Marise C. Bendanillo /Teodoro A. Cabillo/ Wilson U. Llegunas Jr	
		Effect of Population Densities on the Production of Sweet Sorghum	Mohamadtaha S. Pendaliday	
		Multilocational Field Testing of three	Florence Lasalita-Zapico,/ Catherine	

		Manila Hemp (*abaca*) Varieties in Southern Mindanao,Philippines	Hazel Aguilar,/ Jaime Namocatcat, /Joey Real Marie Barbosa,/ Deocyth Sarsalejo /and Sittie Rokaiya Banisil	
		Assessment of Ecological Habitat of Deagan IOsland, Magcaraguit, Dimasalang, Masbate, Philippines	Ronnel R. Dioneda Sr., Anne Retuerma-Dioneda,Aurea Borromeo, Skorzeny De Jesus	
		The Role of Non-Governmental Organizations (NGOs) in Disaster Management: The Case of Daraga Albay	Antonio Santos	
		Use of Weblog as a Tool to Enhance Environmental Advocacy of College and Graduate School Students /	Ava Clare Marie O. Robles	
		Observations and Experiences of Small Island Communities to their Surroundings in Relation to Climate Change	Diosdado P. Zulueta	
		Multilocational Adaptibility of three Manila Hemp (*musa textilis* l. née)Varieties in Southern Mindanao,Philippines	Florence Lasalita-Zapico, /Catherine Hazel M.Aguilar, /Jaime A. Namocatcat , /Joey Real Marie I. Barbosa,/ Deocyth Sarsalejo /,and Sittie Rokaiya Banisil	
		Gender Participation in Community Based Mangrove Forest Management Along Tambac Bay, Anda, Pangasinan, Philippines	Nerda C. De Vera,/ Diana Cristina N. Item, /Aeron Wilfred D. Ortega,/ and Irene A. De Vera	
		An Integrated Conservation-Education Framework for Sustainable Resource Management of Abalone in Carot, Anda, Pangasinan	Emmanuel C. Capinpin Jr./ Ruth S. Guzman	
		Zoning a Protected Area: The Case of Mt. Mantalingahan Range Palawan Island, Philippines	Lita B. Sopsop	
		Status of Mantayupan River Ecosystem	Alfredo C. Neri	

SCHEDULE OF ORAL PRESENTATION

May 26, 2012

Environmental Education/Research/Partnership

Room	Time	Title	Presenter/authors	Moderator
Session Room C	2:00-:4:00pm	Biodiversity of Herpetofauna and Macroinvertebrates in Selected Caves of Rajah Sikatuna Protected Landscape, Bohol Island, Philippines	Steve Michael T. Alcazar, /Adela C. Duran, / Rosalyn P. Alburo,/ Hemres M. Alburo	**DR. RICARDO BAGARINAO**
		Seascape and Climate Change: Women Fisher's Perspectives and Insights	Fe L. Alcantara- Andico, Ph.D	
		Complex Diversity of Asia Pacific Wild Rices and Its Conservation Implications /	Maria Celeste N. Banaticla-Hilario/, Nigel Ruaraidh Sackville Hamilton/, Ronald G. van den Berg[2], /and Kenneth L. McNally	
		Importance of Riparian Forest fragment on Avifaunal Diversity of Swidden Landscape in Sagpangan, Aborlan, Palawan	Alejandro A. Bernardo Jr.	
		Water Quality and Pollution in Camatian River (Quezon Province): A Tributary to Laguna Lake	Maria Luisa A. Enal,/ Ma. Joeylynn V. Magallanes,/ Ann Joy P. Quindoza,/ Shiela A. Babia,/JacquilynA. Bañal, /Florence C. Maranan, /Fidesmarie A. Villenas/ and WilmaL. Comia	
		Salinity Tolerance of the Progenies of Two Red Tilapia Strains at Increasing Salinity Levels	Jennie B. Fernandez /and Sotero M. Aban	
		Fisheries Resources of Dasol Bay in Western Pangasinan, Philippines /	Armando C. Garcia, Sotero M. Aban, /Cornelia E. Ibarra, /Rene B. De Vera, /Rey S. Raguindin /and Dante M. Mendoza	
		Seagrass Resources of Dasol Bay in Western Pangasinan, Philippines	Armando C. Garcia, /Sotero M. Aban, /Cornelia E. Ibarra,/ Rene B. De Vera, /Rey S. Raguindin /and Dante M. Mendoza	
		Establishment of Marine Fishery Reserve and Sanctuary Off Magcaraguit Group of Islands, Dimasalang, Masbate (Mfrs-Mgi): Design Options and other Proposed Initiatives	Ronnel R. Dioneda Sr./Carlos V. Cortez Jr./Angelo P. Candelaria /Yolanda Julieta Brugada/ Aurea borromeo/Corazon V. Caputan /Ida FH Revale / Laarni Pancho /Pedro Jacob Jr./Jocelyn Serrano, Amelia Dorosan/Erwin Rayel/Charmaine Malozo/ Jason Punay	

		Trends, Status and Employment of Fisheries Students and Graduates: The Case Cebu and Bohol, Central, Philippines	Rachel Luz P. Vivas-Rica/Gloria G. Delan/Christine M. Corrales	
		Importance of Non-wood Forest Products in the Life of the Local People in Talakaigan Watershed, Palawan Island, Philippines	Lita B. Sopsop	
		Enhancing Environmental Perspectives through Online Instruction	Alvie Simonette Q. Alip	

SCHEDULE OF ORAL PRESENTATION

May 26, 2012
Green Technology Category

Room	Time	Title	Presenter/authors	Moderator
Session Room D	9:00-12:00 am	Sustainable agricultural development	Masyhuri	**DR. CYRILL MAY NECTAR L. TABARES**
		Comparative study of NSIC 128 (Matatag) and nct3, (IR-79913-b-176-b4) lowland rice applied with different rates of foliar fertilizer (california growers)	Mohamad T. Nasa, Dr. /Onofre S. Corpuz, /Dr. Pendatun E. Dalam	
		Tomato production as influence by neem leaf extract and complete fertilizer	Gabriel T. Nasiluan, /Dr. Pendatun E. Dalam,/Dr. Onofre S. Corpuz	
		Nutrients analysis of indigenous home-made Ferticides	Faunillan, Jholly D / Jesusa D. Ortuoste	
		Residual effect of ammonium sulfate substitution on soil properties and productivity of plant and ratoon cane	Nurhidayati, /Abdul Basit, /Sunawan	
		Use of different food additives to enhance the flavor of dried tilapia oreochromis spp for export market : an improved recipe /	Benjie Oncienes, /Venerando D. Cunado, /Corazon P. Macachor	
		Testing and Evaluation of Indigenous Upland Rice Cultivars in Sultan Kudarat Province	Romualdo M. Ortuoste,/ Jesusa D. Ortuoste	

		Global and Local Markets of penaeus monodon in bohol island, philippines: gender role in haccp implementation	Cecilio S. Baga, /Miguelito A. Lauglaug /and Corazon P. Macachor	
		Distribution of Benguet Lily (Lilium Philipinensis) in Banig, Tawang La Trinidad and km. 46, Paoay, Atok, Benguet	Zeverine P. Banganan, /Romeo A. Gomez, Ph.D	
		Assessment of ecological habitat of Deagan Island, Magcaraguit, Dimasalang, Masbate, Philippines	Prof. Ronnel R. Dioneda SR.,/ Anne Retuerma-Dioneda, /Aurea Borromeo, /Skorzeny De Jesus	

SCHEDULE OF ORAL PRESENTATION

May 26, 2012
Green Technology

Room	Time	Title	Presenter/authors	Moderator
Session Room D	2:00-4:00pm	Isolation and characterization of stress related gene from a lesion mimic and senescence mutant in rice (*oryza sativa* l	Jerwin R. Undan, /Muluneh Tamiru, /Akira Abe, /Shunichi Kosugi, /Hiroki Takagi,/ Kakoto Yoshida,/ Jesusa Undan /and Ryohei Terauchi	**DR. FLORENCE L. ZAPICO**
		Influence of sucrose on the quality of VCO-Vinegar	Hubert G. Quiñones,/ Renissa S. Quiñones, /and Corazon P. Macachor	
		Gluten-free flour blends sensory characteristics /	Renissa S. Quiñones,/ Corazon P. Macachor /and Hubert G. Quiñones	
		Liquid fertilizer from fish waste	Rey S. Raguindin	
		Solid waste material for bricks production	Marchie Q. Yadao, /Rodolfo B. Solomon, CE	
		Organic Farming Practices on Upland Dinorado Rice	Ms. Lilet P. Yamelo, /Dr. Pendatun E. Dalam,/ Dr. Onofre S. Corpuz	
		Survival and Growth Response of outplanted malapapaya treatedwith mykovam and mycogroe	Francisco N. Beltran,/Antonio	
		Sustainability of Waste Management Practices of Carabao Dairy Farm in Nueva Ecija, Philippines	Estela M. Paoay	

POSTER COMPETITION

1. **UTILIZATION OF INDIAN ALMOND *(Terminalia catappa linn.)* AND WASTE ANIMAL FATS AS BIODIESEL**
   Rizano, Franjette Marie L.; Brasales,Carmel Anne B.
   Sultan Kudarat State University, EJC Montilla, City Tacurong
2. **DIVERSITY ASSESSMENT OF SOIL MICROFUNGI IN RICE PADDIES OF SELECTED SITES IN THE PROVINCE OF ALBAY, PHILIPPINES**
   Jonathan Jaime G. Guerrero, Daryl B. Alfante
   Legazpi City, Philippines, 4500
3. **INDIGENOUS KNOWLEDGE IN FISHING: ITS EFFECT TO COASTAL RESOURCES AND ITS ADAPTATION TO CLIMATE CHANGE**
   *Lilibeth S. Galvez, **Jannette C. Estioca and, **Luzelyn C. Traya
   Davao Oriental State College of Science and Technology, Mati City, Davao Oriental
4. **BIOACTIVITIES OF SAMBONG (BLUMEA BALSAMIFERA LINN.)**
   Yolwin Jed G. Perales/Jan Razil Alolod
   Sultan Kudarat State University, Science Laboratory High School
5. **THE PHYTOREMEDIATION POTENTIAL OF SPHAGNUM MOSS *(Sphagnum Flexuosum)* AGAINST LEAD, COPPER AND CADMIUM CONTAMINATED WATERS**
   Yolwin Jed G. Perales
   Sultan Kudarat State University, Science Laboratory High School
6. **INFLUENCE OF ADMINISTRATORS' SUPERVISORY PRACTICES ON TEACHERS' COMMITMENT OF PUBLIC ELEMENTARY SCHOOLS**
   Genghiskhan S. Akmad
   Cotabato Province
   Dr. Onofre S. Corpuz
   Asst. Prof., CFCST-Arakan, Cotabato
   Dr. Zainudin M. Adam
   Asso. Prof., CFCST-Arakan, Cotabato
   Dr. Lumina L. Cabilo
   Asst. Prof 3., CFCST College of Arts and Sciences
7. **AQUATIC INSECTS' DIVERSITY AT TAYTAY FALLS IN BARANGAY TAYTAY, MAJAYJAY, LAGUNA: INDICATOR OF WATER QUALITY**
   Mary Ann R. Agudilla and Kristian Rodrigo A. Yara
   Southern Luzon State University, Lucban, Quezon
8. **PERCEEPTION AND READINESS OF HIGH RISK HOUSEHOLDS TOWARDS CLIMATE CHANGE**
   Ian Phil M. Canlas
   Leyte Normal University, Philippines
9. **MEDICINAL PLANTS AT NORTH-WESTERN SLOPE OF MOUNT KATULUNGAN, DOS, MAGUINDANAO**
   Josol, Elaine Gay; Laurie, Mercedita A.; Remollo, Leopoldo l.
10. **THREE FLORA AT NORTH-WESTERN SLOPE OF MOUNT KATULUNGAN,DOS, MAGUINDANAO**
    Camiguing, Rosie R.; Laurie, Mercedita A.; Remollo, Leopoldo L.
    Taviran, Datu Odin Sinsuat, Maguindanao
11. **THE INFORMATION SEEKING STRATEGIES PHILIPPINE CORN VARIETIES DURING GERMINATION AND EARLY SEEDLING STAGE**
12. **SALINITY TOLERANCE OF SELECTED PHILIPPINE CORN VARIETIES DURING GERMINATIVE AND EARLY GROWTH STAGES**
    Florence Lasalita-Zapico, Donna Jan Aljas and Catherine Hazel Aguilar
    Mindanao State University, General Santos City 9500 The Philippines
13. **THE SUSTAINABILITY OF PRIVATE HIGHER EDUCATION INSTITUTION IN REGION XII**

14. **INCIDENCE OF BANANA BUNCHY TOP (BBT) AND DISEASE MANAGEMENT PRACTICES FOR BBT OF BANANA GROWERS IN THE 11 MUNICIPALITIES OF SOUTH COTABATO.**
15. **INCIDENCE OF BANANA BUNCHY TOP (BBT) AND DISEASE MANAGEMENT PRACTICES FOR BBT OF BANANA GROWERS IN THE 12 MUNICIPALITIES OF NORTH COTABATO.**
    Dr. Jaime C. Silvestre, Necesito, Jerry, Jr. A.
    University of Southern Mindanao,Kabacan,Cotabato.
16. **EVALUATION OF DIFFERENT SUBSTRATES FOR SPRAWN PRODUCTION OF VOLVALRIELLA VOLCACEA**
17. **MIMOSA PUDICA *I.* (MAKAHIYA) ROOT: POTENCIAL KIDNEY STONE SOLVENT**
18. **EFFICACY OF *HYDROPHYTUNE ORBICULATUM* (TABON-TABON) SEED EXTRACT INPREVENTINGANTHRACNOSE AND STEM-END ROT IN POST-HARVESTED CARABAO MANGOES**
    Efren L. Jucoy, Renante C. Oran, Judel Jay A. Tabsin, Mervin G. Salmon, Engr. Gerson D. Dumpasan
    Panabo National High School, Panabo City, Davao del Norte, Philippines
19. **SOIL PHYSICO- CHEMICAL PROPERTIES IN THE UPLAND RICE PRODUCTION AREAS IN SELECTED INDIGENOUS COMMUNITIES OF ARAKAN, COTABATO, PHILIPPINES** *
    Soriel Evangelista, Pamosogan, MSc and Juliet C. Bangi, Ph.D.
    Arakan, Cotabato
20. **GERMINATION AND SEEDLING GROWTH OF GATROPHA CURCAS L. AS EFFECTED BY VARIOUS PRE- SOWING TREATMENTS**
21. **FLORAL ASSESSMENT OF MT. DATA NATIONAL**
    Romeo A. Gomez, Jr.
    Benguet State University
22. **CARBON BUDGET OF RUBBER PLANTATIONS IN SELECTED MUNICIPALITIES OF COTABATO PROVINCE**
    Dr. Onofre S. Corpuz
    Cotabato Foundation College of Science and Technology,
    Doroluman Arakan 9417 Cotabato, Philippines
23. **ROOT GROWTH POTENTIAL, VARIABILITY AND HERITABILITY OF YEMANE (*Gmelina arborea* ROXB)**
    Onofre S. Corpuz
    Cotabato Foundation College of Science and Technology,Doroluman Arakan 9417 Cotabato
24. **POTENTIALS OF SELECTED INDIGENOUS HARDWOOD TREE SPECIES IN MITIGATING CLIMATE CHANGE THROUGH CARBON TRAPPING**
    Dr. Onofre S. Corpuz, Myrnalyn Moquera
    CFCST Arakan, Cotabato
25. **GERMPLASM COLLECTION, ISOLATION AND IDENTIFICATION OF WILD EDIBLE MUSHROOMS OF MT. BANGCAY, CUYAPO, NUEVA ECIJA**
    Rich Milton R. Dulay[1], Sofronio P. Kalaw[1], Renato G. Reyes[1], Mark Anthony S. Gatcho[2] and Reyna C. Tiniola[2],
    [1]Center for Tropical Mushroom Research and Development, Central Luzon State University, Science City of Munoz, Nueva Ecija/
    [2]Dr. Ramon de Santos National High School, San Antonio, Cuyapo, Nueva Ecija
26. **ENHANCING COCONUT FARM PRODUCTIVITY AND PROFITABILITY BY INTEROPING SUITABLE ABACA VARIETIES (MUSA TEXTILES NEE) IN A WET GROWING ZONE OF SOUTHERN MINDANAO, PHILIPPINES**
27. **OPTIMUM CULTURE CONDITIONS FOR MYCELIAL GROWTH OF Arocybe aegerita (V. Brig.) Singer**
    Sofronio Kalaw, Via Ann C. Marcelo, Rich Milton Dulay, Renato G. Reyes
    Central Luzon State University, Science City of Muñoz, Nueva Ecija

28. **TERATOGENIC ACTIVITY OF *LENTINUS TIGRINUS* EXTRACT ON THE EMBRYONIC DEVELOPMENT OF ZEBRAFISH (*DANIO RERIO*)**
    Rich Milton R. Dulay[1*], Sofronio P. Kalaw[1], Renato G. Reyes[1], Esperanza C. Cabrera[2], Noel F. Alfonso[2] and Cassielyn M. De Leon[3]
    [1]Central Luzon State University, Science City of Munoz, Nueva Ecija
    [2] De La Salle University, Taft Avenue, Manila
    [3]Aliaga National High School, Aliaga, Nueva Ecija
29. **PROFILE OF THE HOSPITALITY INDUSTRY AT PANAGSAMA AND WHITE BEACH IN MOALBOAL, CEBU: LEARNING CASE**
    Dr. Proserpina T. Dionaldo, Romeo G. Pableo,/ Hermina S. Gabales /Rosalea A. Fenina A. Margallo
    CTU-MOALBOAL CAMPUS
30. **NOSTOC AS EXOTIC FOOD IN EASTERN PANGASINAN**
    Sotero M. Aban, Ph.D.
    Pangasinan State University, Binmaley Campus, Binmaley, Pangasinan, Philippines
31. **DISEASES OF PALM (ELAEIS GUINEENSIS) IN SIX MUNICIPALITIES OF SULTAN KUDARAT PROVINCE, PHILIPPINES**
32. **VISUALIZATION OF SPECIES DIVERSITY BASED ON PATTERNS OF DEVELOPMENTALM MODULES IN THE WINGS OF DAMSELFLIES**
    Sharon Rose M. Tabugo, Mark Anthony J. Torres and Cesar G. Demayo
    MSU-IliganCity
33. **FACTORS INFLUENCING LOW PERFORMANCE IN SOLVING PROBLEMS INVOLVING CONCENTRATION OF SUBSTANCES IN SOLUTIONS OF BSIT FRESHMEN STUDENTS ENROLLED AT CEBU TECHNOLOGICAL UNIVERSITY, SAN FRANCISCO, CEBU**
34. **STUDENTS' BEHAVIOR PROBLEMS AND TEACHERS' COMPETENCIES IN PHYSICAL EDUCATION**
    Israeli Salinas Caminos
    Cebu Technological University
35. **SOME ECONOMICALLY IMPORTANT BIVALVES AND GASTROPODS FOUND IN THE ISLAND OF HADJI PANGLIMA TAHIL, IN THE PROVINCE OF SULU, PHILIPPINES**
    Sharon Rose M. Tabugo[1], Jocelyn O. Pattuinan[1], Nathanie Joy J. Sespene[1] and Aldren J. Jamasali[2]
    [1]MSU-Iligan Institute of Technology,Iligan City; [2]Mindanao State University- Jolo, Sulu
36. **PRELIMINARY SURVEY OF ROOD-KILLED FRESHWATER TURTLES ALONG ABORLAN-PUERTO PRINCESA CITY NATIONAL HIGHWAY, PALAWAN, PHILIPPINES**
37. **BIOFUNGICIDES AS PROTECTIVE CONTROL OF STEM ROT OF COFFEE SEEDLINGS CAUSED BY *Sclerotium rolfsii* Sacc.**
    Charise F. Aranas, Raquel B. Evangelista
    University of Southern Mindanao, Kabacan,Cotabato
38. **SCLEROTIUM ROLFSII CAUSES VARIOUS DISEASES ON FOUR SPICES: ANNATTO, CHILLI, LEMON GRASS, AND TARRAGON**
    Naomi G. Tangonan, Melesa M. Prado, Rey A. Palmares, & Elaine Genevive B. Parcon
    University of Southern Mindanao, Kabacan, Cotabato
39. **COMPARING TWO BANANA FOLIAR DISEASES: CORDANA LEAFSPOT AND SIGATOKA**
    Naomi G. Tangonan, Elaine Genevive B. Parcon, Rey A. Palmares, & Melesa M. Prado
    University of Southern Mindanao, Kabacan, Cotabato
40. **ANTROPOGENETICS OF A SUBANEN CLAN**
41. **FRESHWATER FISH AND MACROINVERTEBRATE ASSEMBLAGES OF ZAMBOECOZONE, BARANGAY TALISAYAN, ZAMBOANGA CITY**
    Jaime A. Namocatcat, Lorenzo L. Taping III, Catherine M. Aguilar, and Florence L. Zapico
    Mindanao State University, General Santos City

42. SPECIES COMPOSITION, DIVERSITY AND CONSERVATION STATUS OF BIRDS AND FROGS IN ZAMBOECOZONE, BARANGAY TALISAYAN, ZAMBOANGA CITY

43. BIOMASS POTENTIAL OF MICROALGAE IN LIGUASAN MARSH, COTABATO AND ESTUARY OF STA. CRUZ, DAVAO DEL SUR
Alexter F. Generale, Lothy Fernandez-Casim, R.N., M.S.,
Bryann Lloyd P. Bretaña
University of Southern Mindanao, Kabacan, Cotabato

44. ANTIMICROBIAL AND ENZYMATIC ACTIVITY OF ENDOPHYTIC FUNGI FROM THE ROOTS OF *Avicennia* spp.
De Guzman, P.A., Casim, L., R.N., M.S., Sepelagio, E.G., R.M.T., MAppSci.
University of Southern Mindanao, Kabacan, Cotabato

45. UTILIZATION OF SEA CUCUMBER (*HOLOTHURIA ATRA*) BODY WALLS AND SEA URCHIN (*TRIPNEUSTES GRATILLA*) TESTS AS POTENT ANTIBACTERIAL AGENT
Martha Louise M. Tongco, Paul R. Olvis
University of the Philippines Cebu, Gorordo Avenue, Lahug, Cebu City

46. A COMPARATIVE STUDY ON THE COMMUNITY STRUCTURE OF ECHINODERMS AND THE RATE OF FISH CATCH BETWEEN POBLACION AND COLERO, LILOAN

PLENARY ABSTRACT

SUSTAINABLE AGRICULTURE: MOVING BEYOND THE FANCY SLOGAN

Nilda R. Burgos
Professor, Weed Physiology and Molecular Biology, Dept. of Crop, Soil, and Environmental Sciences, University of Arkansas, Fayetteville, AR, USA
Email:nburgos@uark.edu
phone: +1 (479) 575-3955; fax: +1 (479) 575-3975

ABSTRACT

The practice of agriculture is tightly intertwined with natural resources and the environment. Sustainable agriculture is the practice of agriculture where the long-term impact on the environment is minimal and optimum production is maintained without exhausting the natural resources or causing severe ecological damage. This presentation uses rice production in the southern USA as a model to illustrate practical issues in sustainable agriculture, how these relate to the study of nature, and the role of public and private institutions as well as individuals in realizing sustainable practices. Between 1970 and 2011, harvested rice area in the USA fluctuated between 734,700 ha and 1,535,220 ha. Between 1980 and 2010, the average US rice yield increased from 4.9 to 7.5 mt/ha. This has placed the US among the top five rice exporters globally and made US rice production critical in meeting world food demand. Improved technologies, including better varieties, improved irrigation systems, machineries, and a wide array of pesticides to control diseases, insects and weeds contributed to increased rice yield. In the foreseeable future, rice production could not be sustained without pesticides and irrigation water.

The greatest challenges farmers face now are weed resistance to herbicides and the declining supply of groundwater. Current rice production practices are not sustainable. Four major weed species (*Echinochloa*, *Cyperus*, *Leptochloa*, and weedy *Oryza*) have evolved herbicide-resistant populations. *Echinochloa* has evolved resistance to four herbicide modes of action used in rice represented by propanil, quinclorac, clomazone, and imazethapyr. Weed resistance problem encompasses all major crops (i.e., cotton, corn, soybean). Researchers developed best management practices (BMPs) to manage resistant weeds and preserve effective herbicide chemistries. Researchers in academia, Extension Specialists, and the agrichemical industry collaborated to disseminate this information to farmers. Because BMPs are generally complex and costly, the adoption rate is minimal. To promote adoption of BMPs, private and government institutions concerned with agriculture partnered with academia to implement policies that would promote adoption of BMPs. The impending water scarcity is a grave issue. Crop irrigation from groundwater in Arkansas alone increased from 0.95 billion gal/day in 1965 to 6.9 billion gal/day in 2005. The alluvial aquifer in the Grand Prairie region of Arkansas (part of the Mississippi embayment aquifer) is declining by 90 cm/yr as estimated in 2000. Rice production in the adjoining states of Arkansas, Mississippi, and Missouri (all drawing from the same aquifer) consumes 1,840 billion gal/yr. Researchers are finding ways to reduce irrigation water consumption. Farmers are building rainwater catchment systems. The US Geological Survey, US Army Corps of Engineers, and Natural Resources Conservation Service are conducting assessments of water resources and crafting plans and policies to mitigate the problem. To be successful, attaining sustainability must be a nationwide endeavor.

Keywords: aquifer depletion, BMPs, groundwater, herbicide-resistant weeds, irrigation water, weed control

SIMULATION MODELS FOR SUSTAINABLE AGRICULTURE AND NATURAL RESOURCES MANAGEMENT: EMERGING TOOLS TOWARDS INCREASED RESEARCH EFFICIENCY FOR AGRICULTURE DEVELOPMENT AND RESOURCES CONSERVATION

Orlando F. Balderama, PhD.
Professor VI, Agricultural Engineering
Isabela State University

ABSTRACT

Today more than ever, increased food production and security depend on judicious use of resources. Moreover, issues such as climate change, climate variability, soil carbon sequestration and the long-term impact on food production and food security and environmental sustainability, have become important. Many weather, soil, genetic and management factors affect the way a crop will respond to irrigation, fertilizer and other management practices. Determining appropriate crop management strategies under these uncertainties has major economic and environmental implications.

Computer simulation models of the soil/plant/atmosphere system with user-friendly GIS interfaces can make a valuable contribution to both furthering our understanding of the processes that determine crop responses and predicting crop performance, resource use and environmental impacts for different environments and management scenarios. User-oriented simulation models greatly facilitate the task of optimizing crop growth, resources management and deriving recommendations concerning soil, water and crop management. They can also be used to determine the potential impact of climate change on crop production and long-term soil carbon sequestration, carbon stock of a landscape, or provide management scenarios for adapting to climate variability.

This paper presentation describes a software package called decision support system for agrotechnology transfer crop simulation models (DSSAT)_CSM which has been in use for the last 25 years by researchers worldwide. This package incorporates models of 28 different crops with software that facilitates the evaluation and application of the crop models for different purposes. The basis for the DSSAT cropping system model (CSM) design is a modular structure in which components separate along scientific discipline lines and are structured to allow easy replacement or addition of modules. It has one soil module, a crop template module which can simulate different crops by defining species input files, an interface to add individual crop models, a weather module, and a module for dealing with competition for light, water and nutrients.

For purposes of environmental research, this paper also elaborates data requirements approaches and methods for model evaluation and application including benefits of DSSAT_ CSM in providing considerable opportunities for users in the scientific community for greater cooperation in interdisciplinary research and in the application of knowledge to solve problems at field, farm, basin, region and higher levels.

INCIDENCE AND DISTRIBUTION OF TAPPING PANEL DRYNESS AND CORYNESPORA LEAFSPOT DISEASE IN RUBBER-GROWING PROVINCES OF THE PHILIPPINES

Naomi G Tangonan
University Professor/Scientist I and Project Leader
University of Southern Mindanao, Kabacan, North Cotabato
Email: ngtangonan@gmail.com Mobile: 0948-764-4929

ABSTRACT

Surveys on the incidence and distribution of tapping panel dryness (TPD) and Corynespora leafspot (CL) in rubber-growing provinces of the Philippines were conducted. Other factors were also noted such as the age and type of rubber clones planted, weather factors, and the cultural management practices adopted in rubber plantations including hectarage, budwood gardens, and seedling nurseries.
There were 18 provinces and 57 municipalities/barangays in the Philippines surveyed for incidence of TPD, CL, and other diseases. A total of 655.37 hectares (ha) of rubber plantations and nurseries were surveyed. In Luzon, 145.226 ha, 61.889 ha for Visayas, and 448.25 rubber plantations in Mindanao were surveyed.

Among 18 provinces surveyed throughout the country TPD was prevalent in 11 provinces with their corresponding percentage infections: Palawan (60%), Laguna (45%), Bukidnon (25%), Negros Oriental, Negros Occidental, Davao del Sur, Zamboanga Sibugay (20%), North Cotabato (19.09%), Southern Leyte (10%), and Basilan (0.004%). The eight provinces without TPD were Quezon, Pampanga, Tarlac, Isabela, Kalinga, La Union, and Sultan Kudarat.

Weather conditions among provinces had similar temperatures of 21.1 – 28.02 °C per month. Rainfall, on the other hand, ranged from 964.8 mm – 3293.16 mm, yearly (2010). No significant effect was noted between weather and incidence of TPD and CL; regardless of weather conditions such diseases occurred. However, age of the rubber trees showed highly significant correlation to the incidence of TPD. Older trees showed higher TPD, commonly observed on trees that were 9 - 30 years old. The 26-year-old rubber plantation owned by Mr. Julian Sampayan of Palawan had the most severe incidence of TPD during the survey.

The common clone used in the nurseries was RRIM 600, same clone grown in plantations established years ago. Other clones such as PB 330, PB 260, RRIM-2000-Series were also introduced to some of these areas but RRIM 600 remains a popular choice. Moreover, there are old existing trees (from non-budded seedlings and wildlings) that produce good latex in areas like the UPLB Forestry in Laguna, Sitio Tul-ay, Hinunangan in Southern Leyte, and Sitio Jagna, Nagbalaye, Sta. Catalina in Negros Oriental.
The failure of many rubber growers to adopt the recommended practices (fertilizer application, weeding, pruning, and proper tapping) resulted to incidence of TPD. In addition, typhoon/s in Laguna contributed to high incidence of tapping panel dryness. Other diseases noted during the surveys were: anthracnose, leaf blight, bird's eye spot, sooty molds, powdery mildew, stem bleeding, dieback, pink disease, knob gall, and root rot diseases.

GENOMICS TOOLS FOR THE ANALYSIS OF GENETIC DIVERSITY

Hugo Volkaert
Center for Agricultural Biotechnology
Kasetsart University Kamphaengsaen Campus
Nakornpathom, Thailand 73140 & BIOTEC
111 Thailand Science Park
Khlong Luang,Pathumthanee, Thailand 12120

Past progress in understanding the processes driving evolution has been tightly coupled with the development of new analysis techniques to collect genetic data in more detail and at larger scale. The availability of high-throughput DNA sequencing technologies is rapidly becoming a new tool in the study of population genetic diversity and evolution. Deciphering the genetic make-up of diversity genome-wide at the DNA level will enable us to study several outstanding questions that previously could not be addressed effectively.

DNA sequencing has been widely adopted to study genetic diversity in human populations and linking the diversity at particular loci with qualitative “disease causing” genes but also with quantitative traits such as stature. Similar studies have been performed in model animals such as mice and plants such as *Arabidopsis* and rice.

Even in non-model organisms for which whole genome sequence resources are still unavailable, DNA sequencing offers great potential. Instead of sequencing complete genomes in a few individuals, the sequencing of representative regions of a genome can be done in many individuals: exome sequencing, RAD-tag sequencing, or sequencing of restriction enzyme fragments. This opens new opportunities to study a species’ genetic diversity at large numbers of loci giving an outlook to study population genetic structure as well as adaptation to the environment through detection of loci under positive selection pressure, ultimately even offering insight into the mechanisms driving speciation. The sequencing of reduced representation libraries also opens new horizons in plant and animal breeding with better prospects to find markers closely linked to phenotypic traits in more diverse populations. The sequencing of communities of micro-organisms (metagenomics) has offered new insights into the diversity of difficult to culture organisms in soil and water.

However, the analysis of large-scale sequencing data is challenging, in particular because most sequencing platforms provide relatively short reads, which are difficult to align and assemble.

DEVELOPMENT OF MULTIFUNCTIONAL AGRICULTURE AND ENVIRONMENTAL PROTECTION

Lin Qing PhD
Professor & Vice president of School of Economics
Fujian Normal University , Fuzhou , Fujian , China,P.C 350108
Mobile: +86-13559109211
E-mail: lqzhdh@163.com; linqing@fjnu.edu.cn;

ABSTRACT

In this paper, the writer introduces the concept, connotation and features of functional agriculture, development of multifunctional agriculture and environmental protection, and some development cases of multifunctional agriculture in Fujian province of China.

Keywords: functional and multifunctional agriculture, environmental protection

Title: **ACADEME – Coconut Growing Communities partnership to overcome poverty, conserve germplasm and create healthy environment: A Project on Zero Waste Technology on Kopyor Coconut**

Name	:	Dr. Ir. Sukendah, MSc.
Place of birth	:	Surabaya, East Java, Indonesia
Present position	:	Secretary of Research Center and Community Service, Associate Prof. of Plant Biotechnology Faculty of Agriculture, University of Pembangunan Nasional "Veteran" East Java
Home adress	:	Jl. Medayu Selatan XIX/T-31, Surabaya, East Java, Indonesia 60294
Telp./Fax/e-mail	:	(031)-8715931/-/kendah1@yahoo.com
Office adress	:	Jalan Raya Rungkut Madya, Gunung Anyar, Surabaya, East Java, Indonesia 60294.
Telp./Fax/e-mail	:	(031) 8783482; Fax. (031) 8783481.

ABSTRACT

FINALISTS FOR BEST PAPER

IMPROVING SHELF-LIFE OF COOKED RICE USING HOUSEHOLD VINEGAR

Lolita L. Aranas, MPH
Jose Rizal University, Dapitan City

ABSTRACT

Responsive innovations toward rice balance and supply are key issues that need to be addressed in rice sustainability. At the grassroots level, creating an appropriate technology for primary prevention against rice spoilage will reduce cost and improve rice balance and supply at the table; and consequently, global rice reserves. This simple technique found solutions in improving the family budget on food and a grassroots contribution toward rice sustainability and with increasing urbanization, the application of this technique will help cut on expenditures on rice, energy resource and time spent for cooking. The two-phase experiment showed that the technique is efficient, viable and effective as budget saver. It revealed that an average of 8.71 kilogram cooked rice was saved by one hundred ninety nine families, which served as respondents of the experiment.

Keywords: *Responsive innovation, rice sustainability, grassroots, Appropriate technology,primary prevention*

PHILIPPINE OYSTER *CRASSOSTREA IREDALEI* AS POTENTIAL BIOINDICATOR OF SUGAR EFFLUENTS

Atay, Lordfrey Dickson M.,/Briones, Jan Michael P.,/Buot, Abigail L.,/Calingacion, Alfie F.,/Cimafranca, ,/Louie Mar E.,/Estrellado, Giel O../ Grino, Justine E.,/Quiao, Kriza Mae A.
Silliman University, Dumaguete City

ABSTRACT

The study mainly sought to determine the effects of sugar effluents, which is simulated by solutions with different concentrations of molasses, on the glucose concentration present in the hemolymph of *Crassostrea iredalei.* It also determines the effect of solutions treated with different concentrations of molasses on the pH and temperature of seawater. Three experimental groups were treated with different concentrations of molasses specifically 1% (v/v), 3% (v/v), and 5% (v/v) of molasses versus the control group with no treatment. Hemolymph of the oysters was aspirated by a syringe through the adductor muscle of the oysters on the 5^{th}, 8^{th} and 10^{th} day of observation. The hemolymph volumes were then set aside. Preparation of standard solutions followed after. The glucose concentration of the hemolymph samples were then determined using spectrophotometric technique. Based from the data gathered, it was observed that as molasses concentration increases, the pH of the seawater decreases. Also the results showed that varying concentration of molasses has no effect on the temperature of the seawater. Furthermore, as the molasses concentration in the seawater increases, the glucose concentration in the hemolymph of oysters also increases. It is evident that oysters exposed to high concentration of sugar effluents cannot survive.

THE COMPLEX DIVERSITY OF ASIA PACIFIC WILD RICES AND ITS CONSERVATION IMPLICATIONS

Maria Celeste N. Banaticla-Hilario/Nigel Ruaraidh Sackville Hamilton/ Ronald G. van den Berg/Kenneth L. McNally/T.T. Chang
Los Baños, Laguna, Philippines/ Wageningen, Netherlands

ABSTRACT

Conserving wild *Oryza* species is vital in improving rice production in the face of climate change and population expansion, particularly since they are sources of tolerance to abiotic and biotic stresses. This study explored the diversity within and among the three closest relatives of rice in Asia-Pacific: *O. rufipogon*, *O. nivara* and *O. meridionalis*. One hundred thirty-five accessions were phenotyped and genotyped with 29 SSR markers. Numerical methods suggested strong eco-geographical influence on species morphology as *O. rufipogon* appeared distinct from the two phenotypically similar species that occupy identical niches. Meanwhile, SSR analyses recognized the uniqueness of *O. meridionalis* and Nepalese populations of *O. nivara*, and revealed global overlapping and local differentiation between *O. nivara* and *O. rufipogon*. Bayesian inference detected four, and at a finer structural level, eight genetic groups that corresponded to geographic populations of the three taxa. *O. nivara* had less diverse but more differentiated subgroups than *O. rufipogon*. Genetic diversity was mainly contained among accessions (64%) rather than within accessions (26%) or among species (10%). Morphological and molecular data harmoniously indicated: regional subdivisions in *O. nivara*; the distinction of Australasian populations from the rest of *O. rufipogon*; and greater differentiation of these two species in South Asia.
The implications of these variation patterns to wild rice conservation will be discussed.

Keywords: Oryza rufipogon, O. nivara, O. meridionalis, wild rice, diversity patterns, conservation

GENDER PARTICIPATION IN COMMUNITY BASED MANGROVE FOREST MANAGEMENT ALONG TAMBAC BAY, ANDA, PANGASINAN, PHILIPPINES.

Nerda C. De Vera,/Nerda Diana Cristina N. Item/
Aeron Wilfred D. Ortega/Irene A. De Vera
Pangasinan State University Binmaley Campus

ABSTRACT

Gender participation in community based mangrove forest management is very crucial in bringing development in the coastal communities as well as in the country. This study investigated the participation of men and women in the Community Based Mangrove Forest Management along Tambac Bay of Anda, an island Municipality of Pangasinan.

The study was conducted in Barangays Poblacion, Macandocandong, Awile and Toritori with a total of ninety-nine (99) officers and members of the organized People's Organizations. The survey type of interview was used in conducting the primary data gathering.

With the aid of SPSS (Statistical Package for the Social Sciences) software program the researchers were able to answer the specific objectives. For objectives no. 1, 2, 3 and 4, determine the number of men and women holding elected positions in community based mangrove forest management (CBMFM) organization; identify men and women's reasons in joining CBMFM; and determine the level of attendance and participation of men and women in the CBMFM activities, frequency counts and percentages were used. The level of attendance and participation made use of three point scale. Attended more than three times and high participation were given a score of 3; attended two or three times and moderate participation were given a score of 2; and

attended once or not and less participation, a score of 1. The Chi-square test was used in objective no. 4, correlate demographic and economic variables with the level of participation of men and women in CBMFM activities.

Out of ninety-nine PO, 23.3% were from Awile, 28.3% Macandocandong, 14.1% Poblacion and 34.3% Toritori. Majority of the PO were 60.6% male and 39.4% female. Majority of them were in middle age with 69.7% and 92.9% married. Monthly income of the PO ranged mostly from P 1, 000 - 3, 999 only because of low educational attainment. Based on the findings most of the PO were Roman Catholic.

The CBMFM organizations prepared CBMFM plan which was approved by Department of Environment and Natural Resources. The CBMFM plan includes the following activities: a) CBMFM planning in terms of meetings, seminars, and workshops; b) nursery establishment activities i.e nursery site selection, nursery site planning and establishment, selection of mangrove species, selection of nursery workers, propagule collection, treatment and storage, potting, fertilizing, disease and pest control; c) plantation establishment activities i.e formulation of aims of plantation, planning and designing of plantation, cleaning of plantation site, spacing measurement, holing or marking and planting; and d) protection and maintenance activities i.e. removal of dead plants and debris, replanting, pest control, patrolling, and monitoring.

Most men were holding elected positions than women. Also, men were greater in number than women in the CBMFM organization membership. Men did not involve women in holding elected positions and memberships for domestic constraints. CBMFM planning in terms of meetings was the most attended by the respondents. Workshops and seminars were regarded time consuming. The reason most considered by men and women in participating CBMFM was planting for the next generation's use. Planting activity was the most highly participated by them. The reason for less participation by men and women in CBMFM activities was domestic constraints followed by health constraints.

As men and women become old, stay long in membership in the organization, and belong to a common religion, their level of participation increases in all CBMFM activities.

The study recommends that gender sensitivity need to be increased in all CBMFM organizations in terms of strengthening the IEC on role of men and women in community based mangrove forest management by the LGU, NGO and government agencies concerned. Time management and scheduling should be emphasized in the CBMFM organizations in order for members to appreciate the value of planning in terms of seminars and workshops and supporting the CBMFM activities. A system and a standardized scheme particularly on monetary incentives in all CBMFM activities should be prepared by officers in cooperation by agencies concerned. Involve young generations in the CBMFM for them to appreciate sustainability of their parents' undertakings. There is a need to conduct further study on social differences of men and women to further appreciate development and sustainability of a program or project. Further, there is a need to conduct similar study to confirm or validate the findings.

Keywords: gender participation, Community Based Mangrove Forest Management, domestic constraint

THE INFLUENCE OF HABITAT ON THE CHARACTERISTICS OF THE GREEN MACROALGA *Caulerpa lentillifera* (Agardh,1837) AS HUMAN FOOD

[1*]Gloria G. Delan, /[1]Julieto S. Legados, [1]/Venerando D. Cunado, [2]/Rachel Luz V. Rica, [1]/Ador R. Pepito /Anthony S. Ilano
[1]Cebu Technological University/ [2]Cebu Technological University- Main Campus, Cebu City/ [3]University of San Carlos- Talamban Campus, Cebu City

ABSTRACT

The quality of the green macro alga, *Caulerpa lentillifera,(*Lato) needs to be assured in view of its utilization as human food since seaweeds are known as an efficient bio-filter of the pollutants present in the sources. Thus, this study was conducted in order to determine the influence of habitat on the characteristics of the seaweed to serve as basis in selecting the culture sites of production for the sustainability of this commodity as food. The samples used in the study were taken from the culture ponds in Cebu and Bohol and from the wild. Seaweed samples were gathered from the culture sites for the different analyses such as presence of heavy metals, lethality assay, bacteriological count, direct pollution indicator, proximate composition and mineral content.

The results showed high concentrations of Hg and Pb in all the seaweed samples from the different sources. Lethality assay shows that the seaweed sample from Bohol had lower LC_{50}, whilst higher LC_{50} was obtained from the wild samples in Cebu. In terms of bacteriological count, the wild sample obtained the lowest Aerobic Plate Count of 9.3×10^3 cfu/g and E. coli of <1.0 x 10 cfu/g from the rest of the samples. Across sites, the proximate composition of the samples differed, same with the mineral contents like sodium, iron and calcium. Higher NO^3 levels were obtained in all samples compared to NH_3 and PO_4 as direct indicators of pollution.

Keywords: Bio-filter, heavy metals, lethality assay, pollution and food safety

EUCHEUMA DENTICULATUM AS AN AGENT IN PROLONGING THE SHELF-LIFE OF 'CARABAO' MANGOES

Cid A. Domingo,/Jeno D. Guerrero,/Tiara S. Medina,/ Frances Noreen R. Arellano

ABSTRACT

The post-harvest processes used by exporters to prolong the shelf-life of 'Carabao' mangoes are hazardous. For this reason alternative post-harvest technique is essential. The study was conducted to test the efficacy of the *Eucheuma denticulatum* (Guso) extract in prolonging the shelf-life of post-harvested 'Carabao' mangoes.

The study was laid out in a Complete Randomized Design (CRD) having six treatments and three replications. The treatment were as follows; T_0- Distilled water, T_1- 15% of *Eucheuma denticulatum* (Guso) extract solution, T_2- 25% of *Eucheuma denticulatum* (Guso) extract solution, T_3- 50% of *Eucheuma denticulatum* (Guso) extract solution, T_4- 75% of *Eucheuma denticulatum* (Guso) extract solution and T_5- Hot Water Treatment. The experiment was conducted for ten days. The results were assessed using Visual Quality Rating (VQR) and longevity of 'Carabao' mangoes. Tukey's Test and Analysis of Variance (ANOVA) were used to analyze the data.

Analysis of Variance showed that *Eucheuma denticulatum* extract is effective in prolonging the shelf-life of post-harvested 'Carabao' mangoes. T_4 - 75% *Eucheuma denticulatum* (Guso) extract solution has effectively prolong the shelf-life of post-harvested 'Carabao' mangoes in terms of Visual Quality Rating and no. of days to ripening.

With these results, it is highly recommended to use *Eucheuma denticulatum* extract to perform as effective agent for prolonging the shelf-life of harvested 'Carabao' mangoes at 75% concentration. It is further recommended to perform similar studies on *Eucheuma denticulatum* extract in prolonging the shelf-life of other fruits such as papaya, guyabano and banana.

ANTS (HYMENOPTERA: FORMICIDAE) OF MT. APO NATIONAL PARK PHILIPPINES: A SURVEY OF NOCTURNAL AND DIURNAL ANTS IN THE MOSSY MONTANE FOREST

Jhonny Wyne B. Edaño/Janette P. Supremo / James Gregory C. Salem
University of Southern Mindanao, Kabacan, North Cotabato

ABSTRACT

Ants exhibit a distinct daily foraging behavior as nocturnal and/or diurnal foragers. This ant survey in the mossy montane forest of Mt. Apo National Park, Philippines done in November 2011 which aimed to identify and characterize nocturnal and diurnal ant species that may contribute to the current efforts in surveying Philippine ant species. This was done using pitfall trapping for ground foraging ants and active sampling for the arboreal species.

There were 45 species belonging to 27 genera and 7 subfamilies recorded. Two (2) species P*achycondyla claudata* and *Camponotus* sp. were found to be nocturnal foragers while thirty two species (32) were daily foragers and (11) species were nocturnal/diurnal that had no daily foraging patterns. *Myrmecaria brunnae* a nocturnal/diurnal species is the most abundant (20.01 relative abundace) species and was also present in all established sites.

Physico-chemical parameters showed an average air temperature of 18.54ºC and a relative humidity of 87% during the day and an 19.83ºC air temperature and a relative humidity of 85.5% during the night. Temperature and humidity play vital role and are major contributing factors that affect the foraging behavior of these nocturnal and diurnal species, thus, an extended sampling time is necessary to establish reasons for the foraging schedules of these ants. Morphological characterization showed variable results and thus every foraging pattern has its own unique similarities within and among ant species and that separates them according to their foraging strategies.

Keywords: Ants, Foraging Patterns, Nocturnal, Diurnal, Morphological Characterization

LAND COVER CHANGE AND WATER YIELD OF SILANG-SANTA ROSA RIVER SUBWATERSHED, LAGUNA, PHILIPPINES

Kathreena G. Engay[1] and Damasa B. Magcale-Macandog[2]
Southern Luzon State University/University of the Philippines Los Baños, Laguna, Philippines

ISOLATION, PURIFICATION, AND CHARACTERIZATION OF BACTERIAL ISOLATES OBTAINED FROM GILLS OF *Teredora princesae* FOR QUALITATIVE CELLULOLYTIC ACTIVITY

Mary antonette P. Esperida, Paul R. Olvis
University of the Phillipines, Lahug, Cebu City

ABSTRACT

Marine shipworms (locally known as “tamilok in the Philippines) are considered the most destructive wood boring bivalves because they cause severe damage to ships, piers, fishing equipment, and other wooden structures. This study investigates the qualitative cellulolytic activity of bacterial isolates from gills of marine shipworm (*Teredora princesae*).

Fresh samples were collected from those that had attached on mangroves found at Purok Nangka, Inuboran, Naga City, Cebu. Dissected gills were washed with sterile sea water and then homogenized using mortar and pestle. The homogenate was serially diluted and plated on Marine Agar. Isolates were purified and characterized based on colonial morphological characteristics, Gram staining method and motility. To test for the cellulose activity, the isolates were grown in the cellulose agar and appearance of the clearing zones was observed.

Data analysis revealed that twelve out of thirteen isolates showed the presence of clearing zones indicating a positive cellulase activity. The isolated colonies were characterized as irregular or circular in form; undulate, entire or lobate in margin; umbonate, raised or flat elevation; and white, creamy white, yellow, yellowish white and orange yellow. The cell shapes of the isolates observed were bacillus, diplococcus, streptococcus and pleomorphic. Both Gram-positive and Gram-negative cells were observed and all the isolates were noted to be motile.

The findings confirmed that cellulolytic bacteria from gills of marine shipworm can be used as a source for large scale production of novel enzymes for industry.

Keywords: Cellulase, cellulolytic bacteria, marine shipworm

MARKET MODEL APPROACH TO THE EVENT STUDY OF THE RELATIONSHIP BETWEEN THE SEVERE WEATHER AND PHILIPPINE STOCK EXCHANGE INDEX

Michael C. Villadelrey/ Stan Michelle R. Villadelrey/ Ramon Joseph P. Esteves/
Jomar F. Rabajante/ Divina Rogeli H. Reamon/ Nikko C. De Leon
University of the Philippines Los Banos, Laguna

ABSTRACT

Many researches said that the weather affects the performance of the stock market because of the mood-change of the investors during rainy days. This paper investigates the relationship between the weather and the Philippine Stock Market index (PSEi) using event study. But instead of considering the person’s behaviour, this paper focuses on the sheer harshness of the weather. Severity of the weather condition was based on the strength of the wind in Metro Manila. Traditional market model was considered to forecast the stock index returns and abnormal returns. It was found that severe weather conditions have a significant effect using *3 day estimation 1 day post-event* window.

Keywords: Weather, Stock Market, Event Study, Market model

NATIVE'S TERRITORIAL BEHAVIOR AND PERCEIVED ENVIRONMENTAL IMPACT OF COMMUNITY INTRUSION

Sheila May R. Licup/ Abigail R. Carranza /Christian U. GaranJ/ennie P. Mendoza /
Jowanah Lyn L. Nacar /Lenie Rocel E. Rocha /Paul R. Olvis
University of the Philippines Cebu, Lahug, Cebu City

ABSTRACT

Territorial behavior is a sense to control the use of a space or place against invasion of an outside entity. This study intends to determine the relationship among the natives' degree of territoriality, level of stress and perceived degree of environmental impact of community intrusion.

A descriptive-correlational design was used where forty-five natives residing near the coal power plant in Naga City, Cebu were visited household by household. Independent Sample t-test was used and in determining the relationship of variables, Pearson Product Moment Correlation was utilized.

Data analysis revealed that there is a relatively average sense of territoriality towards the place they lived in (M= 3.51; SD= 0.52). When they heard about the construction of the new plant, initially, the residents have felt moderately stressful towards the power plant constructed (M=3.38, SD=0.67). The severity of this impacts was moderately perceived by the residents (M=3.60, SD=1.30). Gender, however, is insignificant. The length of residency and territoriality showed a significant relationship ($p<0.05$) as well as to the native's stress level and perceived severity of the environmental impacts. It could be said that the longer one stays in an area, the higher is one's sense of territoriality.

Keywords: territorial behavior, community intrusion

BIOSORPTION OF DRY BIOMASS OF ASPERGILLUS ORYZAE AND PENICILLIUM CHRYSOGENUM

Joefrhym D. Merillana,

University of Southern Mindanao, Kabacan, Cotabato, Philippines

ABSTRACT

Aspergillus oryzae and *Penicillium chrysogenum* were used as test organisms in this study. They were tested to determine their biosorption capability using chromium, lead, and mercury. Biosorption process was carried out in varying time interval (1^{st} and 4^{th} hour) and biomass dose (100mg and 500mg). Results show that both test organisms were capable of biosorbing chromium, lead, and mercury. Effect of both biomass dosage and varying time interval in biosorption differs in fungal species. Maximum uptake of chromium, lead, and mercury by *P. chrysogenum* were 71.2 mg/L, 67.52mg/L, and 62.4 mg/L respectively. On the other hand, biosorption of chromium, lead, and mercury by *A. oryzae* were 68.6mg/L, 69.2mg/L, and 44.7mg/L respectively. Furthermore, statistics revealed that *P. chrysogenum* is more efficient compared to *A. oryzae*. The ability of both fungi to biosorbed heavy metals such as chromium, lead, and mercury can possibly be used for waste management particularly for water treatment.

ESTABLISHING A COMPOSITE INDEX FROM CRITERIA OF RESILIENT COASTAL COMMUNITIES DETERMINED THROUGH AN ANALYTIC HIERARCHY PROCESS (AHP) MODEL

Pedcris M. Orencio/Masahiko Fujii
Hokkaido University, Japan 060-0810

ABSTRACT

Coastal areas have been constantly affected by various coastal hazards that often bring its communities in varying vulnerabilities. While certain capacities were developed by communities to moderate these vulnerabilities, there is still a lack of consideration on which elements per se influenced such moderation. Along with the several issues on development and application of vulnerability analysis, this knowledge gap exacerbated a biased implementation of processes towards adaptation and mitigation of communities.

To understand what makes a resilient coastal community, specific criteria will be determined by ranking and prioritizing elements that characterized coastal community resilience. Such analysis will be conducted with a Delphi process and with the use of a pair- wise comparison method (PCM) of criteria and elements in an analytic hierarchy process (AHP) model. This will be undertaken with experts and local community members in pre-identified coastal areas in the Philippines.

The pair-wise values generated by PCM will be determined as weights that will be used to rank and categorize the attributes and criteria of resilient coastal communities. The rank provided will distinguish their relative importance in achieving the objective of a less vulnerable community. High-ranking criteria will be then selected to comprise the composite index that will be used for site-specific analysis of coastal community resilience in the country.

Keywords: Resilience index, resilience criteria, coastal communities, Analytic Hierarchy Process (AHP), Delphi technique

BACTERIOLOGICAL SAFETY, PROXIMATE COMPOSITION AND AMINO ACID PROFILE OF THE EGG MASS OF THE WEDGE SEAHARE (*Dolabella auricularia)*
(Lightfoot, 1786)

Ador Rivera Pepito,[1,] /Gloria Gomez-Delan[2] /Manabu Asakawa[3]/ Letecia J.Ami/
En. Emilia.S.Yap[1]/ Minerva SD. Olympia, Anthony S. Ilano[4]/
Kaori Yasui[3]/Venerando D. Cunado[2]

[1]University of the Philippines Visayas, Miag-ao, Iloilo/ [2]Cebu Technological University [3]Hiroshima University/[4] University of San Carlos, Cebu City

ABSTRACT

The egg masses of the wedge sea hare *Dolabella auricularia* or "*lukot"*is gathered as human food in Visayas region and some part in the Philippines, but there is no study showing its appropriateness for human consumption to justify its consumption. This study was conducted in order to assess the egg masses in terms of its bacteriological safety, proximate and amino acid composition. The Bacteriological safety was assessed in terms of Total Viable Count, Total Coliform Count and Total *E.coli* Count. The chemical characteristics were determined in terms of its proximate composition while the amino acid composition was done using an amino acid analyzer.

Result shows that the bacteriological load of the egg masses were 1.3 x 10^4 cfu/g, <1.0 x 10 cfu/g, <1.0 x 10 cfu/g, for TVC, TCC and TEC, respectively. In terms of proximate composition, it has a moisture content of 91.10 %, a total fat, protein, ash and carbohydrates of 0.85%, 2.85%, 3.43% and 1.77%, respectively. While there are thirteen (13) amino acids in which six (6) of them are essential. Based from the results *"lukot"* is another ideal food source from marine environment.

Keywords: opisthobranch, commercially important, amino acids.

FRACTAL DIMENSION AND PATCHINESS IN HINABIAN-LAWIGAN WATERSHED, SOUTHERN LEYTE, PHILIPPINES

Jay-ar O.Ragub/Ricardo T. Bagarinao
Maasin City, Southern Leyte 6600, Philippines/[2]University of the Philippines Open University, Los Baños, Laguna, Philippines

ABSTRACT

Landscape metrics for analyzing landscape structures are fast developing topics in landscape ecology. This study examines the patchiness and shape complexity of the Hinabian-Lawigan watershed in Southern Leyte, Philippines by using three landscape metrics: mean patch size, (MPS), total number of patches (TPN), and mean patch fractal dimension (MPFD). The watershed is habitat to different critically endangered species in the province, and thus analysis of its spatial configuration is imperative since it affects their distribution and movement. The analysis was facilitated through the use of Geographic Information System (GIS) and patch analyst extension of ArcGIS. The different patches were identified by using the land use-land cover classification system developed by the University of the Philippines Visayas-Tacloban College–Regional Environmental Information System (UP-REIS), which follows the National Forestry Inventory Manual used by NARSI/NAMRIA. Results indicate that the watershed consists of six different patches: annual cropland, barren land, built-up areas, closed forests, pastureland, and shrubland. Though closed forest patches were computed to have the largest total area (3,727.98 has), they have the highest total number of patches (TPN = 1,700) with MPS of 2.19 has and MPFD value, which is greater than 1. These results indicate high forest fragmentation and edge effect, respectively, and require the establishment of corridors to improve habitat connectivity. On the other hand, built-up areas have the largest computed MPS (6.43 has) due to its low TPN value (2), but it has the smallest computed MPFD (1.36) and total area (13.06 has). This indicates the non-prevalence of human habitation within the watershed. However, the presence of annual cropland patches in the watershed with computed MPS of 1.06 has, TPN of 828, and MPFD of 1.52 is a concern that needs to be addressed. Further encroachment of agricultural production to forest areas should be limited while the regular disturbance associated with these patches should be managed.

Key words: patch, fractal dimension, fragmentation, landscape, landscape ecology, landscape metrics, Geographic Information System, Hinabian-Lawigan Watershed, Southern Leyte, Philippines

UTILIZATION OF SEA CUCUMBER (*HOLOTHURIA ATRA*) BODY WALLS AND SEA URCHIN (*TRIPNEUSTES GRATILLA*) TESTS AS POTENT ANTIBACTERIAL AGENT

Martha Louise M. Tongco, Paul R. Olvis
University of the Philippines Lahug, Cebu City

ABSTRACT

In the Philippines, sea urchins and sea cucumbers are widely found and famously used as food products. The sea urchin tests are thrown as wastes after consuming the gonads while the sea cucumber body walls are eaten.

In the study, the antibacterial activity of crude ethanolic extracts from the body walls of sea cucumber and tests of sea urchin were screened against *Staphylococcus aureus* ATCC 65388, *Bacillus subtilis* ATCC 6633, *Escherichia coli* ATCC 25922, and *Klebsiella pneumoniae* UPCC 1360. Kirby Bauer method was used and zones of inhibition were recorded in millimeters. Thin layer chromatography was also employed using the solvent system methanol: chloroform (5:1)Statistical analysis using One-way ANOVA showed that there were no significant differences on the antibacterial activity between the two extracts against *S. aureus*, *B. subtilis* and *E. coli*. However, there was a significant difference between the two extracts in *K. pneumoniae* ($p<0.05$) in which the sea cucumber extract was more effective. Viewing the TLC plates under UV light (360 nm) revealed that flavonoids were present in the two extracts.

Results concluded that wastes from these two echinoderm species possess antibacterial properties and therefore can be used as alternative and effective antibacterial agents against infectious diseases.

Keywords: antibacterial activity, echinoderm

TRENDS, STATUS AND EMPLOYMENT OF FISHERIES STUDENTS AND GRADUATES: THE CASE CEBU AND BOHOL, CENTRAL, PHILIPPINES

Rachel Luz P. Vivas-Rica/Gloria G. Delan/Christine M. Corrales
Cebu Technological University, Cebu City

ABSTRACT

This paper aimed to present the current status, trends and employment of fisheries students and graduates in Cebu and Bohol, Central Philippines. Cross-sectoral investigation of two groups of respondents was conducted to currently enrolled Fisheries students and graduates. Primary and secondary data were gathered and analyzed descriptively.Findings revealed a consistent downtrend in enrollment for the past ten years. Currently enrolled students belong to a family with more than five members where their fathers are primarily farmers and their mothers are unemployed. Both enrolled and graduates of fisheries' families earn less than fifty thousand (Php50,000) annually where majority come from the rural areas of the region. A huge gap between Fisheries and Non-fisheries enrollees throughout the two provinces was observed. Intervening economic, socio cultural, issues and policies and performance in licensure examinations impacted negatively the enrollment and graduation trends of Fisheries program. A consistent decline in graduation rate was observed in the year 2002 until 2008. Of the traced graduates, 6 out of 10 are employed but tend to occupy a casual, contractual or temporary status. Majority of employed graduates that occupied jobs not related to fisheries and earned monthly salary below the minimum wage.

Keywords: Fisheries, status, trends, employment.

FINALIST FOR BEST PAPER IN HIGHSCHOOL CATEGORY

EVALUATION OF *Chanos CHANOS (*MILKFISH) BILE EXTRACT AS AN ORGANIC PEST REPELLANT FOR *Ostrinia Furnacalis* (ASIATIC CORN BORER)

Inbemar T. Corcino,/Oyelle Anfernee T. Veloso,/ Kim Gabriele Y. Galaura./ Shieldon Vic S. Pinoon
Panabo National High School

ABSTRACT

The study was conducted to test the efficacy of *Chanos chanos* bile extract in preventing the infestation of Asiatic Corn borer on Corn plants and to determine which among the treatment is the most effective.
The study was laid out in a Complete Randomized Design (CRD). There were five treatments replicated three times namely; T_0 – 100 % Distilled Water, T_1 – 30% (v/v) *Chanos Chanos* bile extract solution, T_2 – 50% (v/v) *Chanos Chanos* bile extract solution, T_3 – 70% (v/v) *Chanos Chanos* bile extract solution, T_4 – 100% *Chanos Chanos* bile extract solution. The experiment was observed for 29 days. Data were gathered every 7 days starting from the 14th day of experimentation until the 29th day of experimentation. Results were evaluated using Visual Quality Rating (VQR), Percentage Incidence of Asiatic Corn borer, Tukey's test and Analysis of Variance.

Analysis showed that *Chanos chanos bile* extract is effective in preventing the infestation of Asiatic corn borer on corn plants. The treatment with 100% *Chanos chanos* bile extract solution presented the lowest VQR and percentage incidence of corn borer and proves that the treatment gives complete protection against corn borer. The *Chanos chanos* bile extract contains *bufadienolide* that gives it insecticidal activities.

MIMOSA PUDICA L. (MAKAHIYA) ROOT: POTENTIAL KIDNEY STONE SOLVENT

Kirstel Joy L. Picar/ Anna Villame
Maryknoll High School of Panabo
New Visayas, Panabo City, Davao Del Norte , Philippines

ABSTRACT

The study entilted "*Mimosa pudica l.* (Makahiya) Root: Potential Kidney Stone Solvent was conducted to: a) investigate the effect of Makahiya roots decoction on the weights of the kidney stones; b) compare the effect of Makahiya root decoction on the weights of the kidney stones at different levels of concentration; c) determine significant differences on weights of kidney stones among treatments.

Twelve kidney stones, calcium oxalate type kidney stones were used. Four treatments in three replications were done: T1-100% decoction, T2- 50% decoction, T3- 25% decoction and T4-distilled water as control. Each of the stones were pre-weighed and then soaked to each of the 12 beakers containing the different sets of decoction. Weighing of the kidney stones were done weekly which was done in four consecutive weeks.

From the results of the study, it was found out that there was significant differences on the weights of the kidney stones as soaked on different concentrations of Makahiya root decoction. The decrease in weight of the kidney stones was attributed to the presence of saponins in Makahiya. These are glycosides which acts as diuretic which increase urine formation thus, flushing out or eliminates waste or particles in the kidneys such as stones.

Based from the results, it was concluded that: 1. Makahiya root decoction is a potential kidney stone solvent; 2. The greater the concentration of Makahiya root decoction, the greater % of its weight decrease. With this, the

following were recommended that 1. Further study using in vivo approach to verify efficacy of Makahiya root in the body; and 2. Consider Makahiya plant as a potential kidney stone solvent in the development of any alternative medicine particularly on kidney stones of calcium oxalate type.

Keywords: Calcium oxalate, solvent and diuretic

HEALTH STATUS OF THE HIGH SCHOOL STUDENTS IN BALO-I, LANAO DEL NORTE, PHILIPPINES BASED ON BODY MASS INDEX

Madeleine D. Soriño, /Jommalyn M. Tabal
Philippine Science High School – Central Mindanao Campus
Lanao del Norte, Philippines

ABSTRACT

Body Mass Index (BMI) is the ratio of the person's weight and height that tells whether he/she is underweight, normal, overweight or obese. Being underweight, overweight and obese, have health risks and weight-related implications on the physical growth of the children and adolescents. High school students are adolescents and adolescent boys tend to grow taller and heavier than girls. In this study, the BMI of the first year to third year high schools students in three schools in Balo-i, Lanao del Norte are computed to assess their health status. If the students fall under "normal", they are considered to be in relatively good health while those under underweight, overweight and obese are either undernourished or over-nourished, and thereby may affect their optimum growth and pose other health hazards. Results show that the majority of the high school students in Balo-i, Lanao del Norte fall under "normal" and so are considered healthy. Based on the results on the percentage of underweight students, however, in all three schools, the boys consistently signify a trend of being more generally underweight than girls. It is recommended that the parent associations, the school administrations and the concerned officials of the local government of Balo-i Lanao del Norte must take into consideration the need of the underweight students by implementing feeding programs or financial support and other strategies or initiatives that promote a healthy environment of the high school students no matter what their size may be.

Keywords: Body Mass Index (BMI), Underweight, Overweight, Obesity

***EUCHEUMA DENTICULATUM* AS AN AGENT IN PROLONGING THE SHELF-LIFE OF 'CARABAO' MANGOES**

Cid A. Domingo,/Jeno D. Guerrero,/Tiara S. Medina,/ Frances Noreen R. Arellano

ABSTRACT

The post-harvest processes used by exporters to prolong the shelf-life of 'Carabao' mangoes are hazardous. For this reason alternative post-harvest technique is essential. The study was conducted to test the efficacy of the *Eucheuma denticulatum* (Guso) extract in prolonging the shelf-life of post-harvested 'Carabao' mangoes.

The study was laid out in a Complete Randomized Design (CRD) having six treatments and three replications. The treatment were as follows; T_0- Distilled water, T_1- 15% of *Eucheuma denticulatum* (Guso) extract solution, T_2- 25% of *Eucheuma denticulatum* (Guso) extract solution, T_3- 50% of *Eucheuma denticulatum* (Guso) extract solution, T_4- 75% of *Eucheuma denticulatum* (Guso) extract solution and T_5- Hot Water Treatment. The experiment was conducted for ten days. The results were assessed using Visual Quality Rating (VQR) and

longevity of 'Carabao' mangoes. Tukey's Test and Analysis of Variance (ANOVA) were used to analyze the data.

Analysis of Variance showed that *Eucheuma denticulatum* extract is effective in prolonging the shelf-life of post-harvested 'Carabao' mangoes. T_4 - 75% *Eucheuma denticulatum* (Guso) extract solution has effectively prolong the shelf-life of post-harvested 'Carabao' mangoes in terms of Visual Quality Rating and no. of days to ripening.

With these results, it is highly recommended to use *Eucheuma denticulatum* extract to perform as effective agent for prolonging the shelf-life of harvested 'Carabao' mangoes at 75% concentration. It is further recommended to perform similar studies on *Eucheuma denticulatum* extract in prolonging the shelf-life of other fruits such as papaya, guyabano and banana.

ASSESSMENT ON THE COMMUNITY STRUCTURE OF SEAGRASS ALONG THE INTERIDALZONE OF LIMAO, ISLAND GARDEN CITY OF SAMAL (AREA IN DAVAO GULF)

Dhaisy Mhae D. Lorin /Michelle Anne Marquez
/Jan Marie V. Valdez /Mervin G. Salmon
Panabo National High School, Panabo, Davao del Norte, Philippines

ABSTRACT

Assessment on the community structure of seagrass at Barangay Limao, Island Garden City of Samal was conducted to determine the species composition and species diversity, the most abundant seagrass species it also correlated its correlated its physic-chemical parameters in relation to its population density.
One shot-sampling technique using uniform quadrat method consisting of three (3) transect lines were employed during the lowest tide of the intertidal zone.

The study revealed that there were two identified seagrass species in the area, *Cymodocea rotundata* and *Cymodocea serrulata*. *Cymodocea serrulata* had thehighest density (77.53 shoots/m^2). There was no dominant seagrass species the area. Correlation results revealed that both temperature and salinity positively and greatly influenced the abundance of the two species, *Cymodocea rotundata* and *Cymodocea serrulata*. Thus, seawater in Barangay Limao is suitable to support the abundance of the two species.

Based from the results, the following were deduced: a.) seagrass species *Cymodocea rotundata* and *Cymodocea serrulata* are well distributed in the area; and b.) temperature and salinity positively affect the survival and abundance of *Cymodocea rotundata* and *Cymodocea serrulata*.

Keywords: Cymodocea rotundata, Cymodocea serrulata

EFFECTIVENESS OF MAKABUHAY (*TINOSPORARUMPHII*) AS BOTANICAL INSECTICIDE AGAINST *AEDES* – THE DENGUE VECTOR

Kerlt Andreu L. Picar/Eunice Angelica G. Suelto
Maryknoll High School of Panabo
New Visayas, Panabo City,Davao Del Norte , Philippines

ABSTRACT

The study entitled " Effectiveness of Makabuhay (*Tinosporarumphii*) as Botanical Insecticide Against *Aedes* – The Dengue Vector " was conducted to test and compare the effectiveness of Makabuhay (*Tinosporarumphii*) decoction as a botanical insecticide against *aedes*. Specifically, the study aimed to determine the effectiveness of Makabuhay as a botanical insecticide against *aedes* in terms of percentage mortality and compare its effectiveness against commercial insecticide. The determining factor used was the percentage mortality of *aedes* upon application of the Makabuhay.

In this study, three (3) treatments were used namely: T_o (control), T_1 (Makabuhay decoction), T_2 (a commercial insecticide). Each treatment has three (3) replicates. The application of the three treatments was done for five (5) days during morning and afternoon at 5:30. Mortality of the *aedes* were observed and recorded.

Results of the study showed that the percentage mortality of the *aedes* applied with Makabuhay was significantly comparable with that of the commercial insecticide. Makabuhay contains two chemicals, *rotenone* and *sabadilla,* that penetrate inside the *aedes* body that weakens its body resistance and nervous systems. There are two main effects in the body. First, it is blocking the synaptic transmission which means that the *rotenone* and *sabadilla* stop the transmission of the cell message to the other cell thus, weakening the nervous system which causes death. Second, is blocking the cellular respiration process which causes paralysis due to blockage in the energy food production. From the result of the study, it was concluded that Makabuhay is an effective botanical insecticide and is almost effective like the commercial insecticide in controlling the *aedes.*

Keywords: *Dengue vector, synaptic transmission, cellular respiration*

SARGASSUM SEAWEED *(EUCHEUMA DENTICULATOM):* POTENTIAL BIOSORBENT FOR LEAD NITRATE, CADMIUM SULFIDE AND ZINC SULFATE CONTAMINATED AQUEOUS SOLUTIONS

Yolwin Jed Perales

ABSTRACT

This study was conducted in order for the proponent to determine if Sargassum Sea weed could absorb heavy toxic metals on water.To do this, the proponent collected 1 kilogram of Sea Weed, and prepared Lead nitrate, Cadmium sulfide and Zinc sulfate. The Lead nitrate was placed separately in water containers with Distilled water with 3 replications each. 2000 ppm of lead was dissolved in 500 ml water in 6 containers with triplicates in 5 treatments, treatment 1 as the positive control with 15g commercial carbon, treatment 2 as the negative control with 500 ml water, treatment 3 with 15g seaweed, treatment 4 with 30g seaweed and treatment 5 with 45g seaweed. The same procedure was done on zinc and cadmium. The experimentation lasted for 7 days.On the 7th day of observation, the color of all of the replications for Lead, Cadmium and Zinc changed which signifies that there was clearly an effect. On the very same day, the titration test was conducted with the use of Potassium permanganate, after that the brine shrimps were added and experimented for another 24 hours. After 24 hours the numbers of living shrimps were counted. After the procedure and statistical analysis, it was proven that only a very little amount of lead, cadmium and zinc remained in water. The researcher concluded that Sea Weed could absorb great amount heavy metals in water.

ABSTRACTS FOR ORAL PRESENTATION

Environmental Education

AWARENESS AND MITIGATING STRATEGIES ON CLIMATE CHANGE: IT'S IMPACT ON THE PERFORMANCE OF THE FACULTY AND STUDENTS

Moharabe M. Andang, Dr. Onofre S. Corpuz, Dr. Zainudin M. Adam and Dr. Lumina L. Cabilo
Cotabato Foundation College of Science and Technology
Doroloman, Arakan Valley

ABSTRACT

This study was conducted to determine the level of awareness and mitigating strategies on climate change and its impact on the performance of the faculty and students of Cotabato Foundation College of Science and Technology, Doroluman, Arakan, Cotabato. The data were gathered through survey questionnaire and analyzed through descriptive statistics and regression-correlation analysis.

Result of the study revealed that the respondents were aware on the causes and effects of climate change. Most of the respondents sought information regarding climate change from television.
In mitigating strategies on climate change, the respondents are always practicing reforestation, waste management, energy conservation, information drive and perform school activities and programs regarding climate management.

Multiple correlations revealed positive relationships and significant influence of awareness and mitigating strategies with performance of students while faculty has significant relationship with the level of awareness and mitigating strategies but there is no significant influence on their performance as faculty.

Keywords: Climate change, causes and effect of climate change, mitigating strategies, performance

BIODIVERSITY IN THE FACE OF URBAN DEVELOPMENT IN BAGUIO CITY, PHILIPPINES

Ross Anthony D. Eguia, Arvin Jay M. Grimaldo, Zenaida G. Baoanan
Department of Biology, College of Science, University of the Philippines Baguio
2600 Baguio City

ABSTRACT

Baguio City is known as "Summer Capital" of the Philippines and "Pine City" due to its cool climate and lush pine forest. In the face of urban development, the city's pride is at stake. There are only few remaining forest patches in the city. The Baguio City Convention Center Tree Park near the UP Campus for one is threatened to be converted into a condominium by the SM company since 2008. This plan is alarming and needs some urgent action. This motivated us to provide an empirical data on why we should support the existence of the tree park. In this study, we documented the existing flora and fauna in the area.

Basic methods such as line intercept and quadrat sampling were used. We also did visual accounts of some mobile organisms such as butterflies, moths, dragonflies, and birds. We placed traps for nocturnal, ground invertebrates as well. The gathered data were analyzed using Excel and PAST softwares. We were able to document 64 plant species and 41 animal species. The overall diversity for plants is 1.513 and for the invertebrates is 1.724 both indicating that the species have even distribution and diverse. Converting the patch

of forest for commercial purpose will therefore lead to loss of habitat of these diverse species. All the other benefits that we get from these species will be gone.

Keywords: forest patch, biodiversity, urban development, Baguio City

PERCEIVED RESPONSIVENESS OF AGRICULTURAL RESEARCH AND EXTENSION PROGRAMS OF HIGHER INSTITUTIONS TO THE SOCIO ECONOMICSTATUS OF COMMUNITIES IN REGION XII

Pasigan U. Buisan
Cotabato City State Polytechnic College Cotabato City, Philippines

ABSTRACT

The study was conducted to determine the perceived responsiveness of agricultural research and extension programs implemented by HEIs in Region XII to socio-economic status of the communities they serve.
Descriptive survey method and descriptive correlation method were used in this study. These methods are appropriate since the research and extension programs as well as the rate of technology adopters described and assessed descriptively.

The study was conducted in the University of Southern Mindanao, Mindanao State University, Sultan Kudarat State University, Cotabato City State Polytechnic College, Southern Christian College and Cotabato Foundation College of Science and Technology.
The respondents of the study were the farmer-beneficiaries or the recipients of the extension program of HEI's in Region XII. Slovin's formula was used to determine the sample size using five percent margin of error. The sampling procedure was stratified random sampling by proportionate allocation.

Farmer-respondents perceive that the agricultural research and extension programs of HEI's are largely responsive to their needs. . The perception of responsiveness is directly related to the perception of the extent of responsiveness. Furthermore, the perceived large extent of responsiveness of extension programs is associated with technology adoption although the entire package of technology may not be adopted.

Keywords: Responsiveness of Agricultural Research and Extension, Socio-economic Status.

AN INTEGRATED CONSERVATION-EDUCATION FRAMEWORK FOR SUSTAINABLE RESOURCE MANAGEMENT OF ABALONE IN CAROT, ANDA, PANGASINAN

Emmanuel C. Capinpin Jr., Ruth S. Guzman
Pangasinan State University Binmaley Campus 2417 Binmaley, Pangasinan/ Rizal Technological University Boni Avenue, Mandaluyong City

ABSTRACT

The present study attempted to establish an integrated conservation–education framework consisting of three important components — experiential learning through the Farmer Field School (FFS) Concept, using local ecological knowledge, and the use of various Environmental Education (EE) activities — in developing a corps of local resource managers who would promote sustainable abalone mariculture and resource conservation in Carot, Anda, Pangasinan.
Various EE activities such as seminars, field trips, video showings, focused group discussions, and an experiential abalone mariculture/FFS were given to a group of six (6) abalone gatherers in Carot, Anda, and

Pangasinan to heighten their ecological awareness and to mold them to become sustainable fishers and resource managers of their coastal area. Of all the EE activities, the experiential mariculture activity was the most effective amongst the cooperators because it was a hands-on learning activity using the FFS Concept. Additionally, their local ecological knowledge validated by modern scientific ecological findings was deemed important and effective in resource management. They have knowledge of the important abalone habitats and spawning patterns. The mariculture cages should be set up in these abalone fishing grounds to serve as mini-reproductive reserves in order to supply larvae and offspring to settle in these areas.

The experiential mariculture of abalone in sea cages was explored to address both resource management and economic needs. As a resource enhancement activity, mariculture guaranteed that the cultured abalones of high value were allowed to grow to sexual maturity before they were harvested while retaining some reproductive individuals to restock a marine sanctuary. The agreed harvest size in this study was 5 cm. Since mariculture makes possible the aggregation of individuals, the probability of fertilization to take place was increased. As supplemental livelihood, abalone is a high value commodity for export and delicacy in specialty restaurants, and its culture can help supplement the income of the communities. The experiential activity was also successful because it became a means for them to experience resource management and helped them translate their vision of resource management into action.

Under the FFS Concept, the researcher became a facilitator who assisted and mentored the cooperators in learning from their experience. This was opposed to the technology transfer mode wherein an extension worker was expected to be an expert delivering messages from research to farmers in a top-down approach. In the FFS, the learners advanced because they were given the free hand to learn as each learning opportunity came and to decide the problem-solving steps they would take during the mariculture activity. Thus, it provided them with a sense of ownership over the resource and responsibility for their actions. It helped transform them from being exploitative in nature to becoming stewards of their resource and for them to practice sustainable fishing activities towards sound and ecological resource management.

With their enhanced knowledge and skills, the cooperators served as examples and advocates of resource conservation in the local community as they shared their experiences with other members of the community. The three components — experiential activity/FFS, use of local ecological knowledge in resource conservation, and various EE activities — complemented each other in establishing the integrated conservation–education framework as they helped increase the environmental awareness, attitudes, and practices of the cooperators who then emerged as sustainable resource conservation managers.

Keywords: Experiential Learning; Farmer Field School Concept; Environmental Education; Local Ecological Knowledge; Abalone; Mariculture

USE OF WEBLOG AS A TOOL TO ENHANCE ENVIRONMENTAL ADVOCACY OF COLLEGE AND GRADUATE SCHOOL STUDENTS

Ava Clare Marie O. Robles
Mindanao State University General Santos City, Philippines

ABSTRACT

Environmental deprivation is a grave concern in this century. The massive progression in technology resulted to human interference in the way the environment function. The main objective of this paper is to present a concrete innovation on how environmental advocacy be assimilated in conventional learning environment to make it responsive to the sustainability mantra.

Design/Statistical Treatment- This paper uses a descriptive-comparative design to determine the difference between the attitudes of college and graduate school students towards the use of weblog as a tool for environmental advocacy. Independent T-test was utilized to compare its mean difference.

Findings- A successful innovation has been developed, and found to be significant and attainable. The college and master's students have a very positive attitude towards weblog as a tool for environmental advocacy.

Practical Implications – The key ingredient of this innovation is to utilize weblog as a platform to develop environmental advocacy for college and graduate students. This innovation is highly suitable for multi-disciplinary students. This paper is supported by the actual, students' output which can be found in the website.

ATTITUDE OF FRESHMEN COLLEGE STUDENTS OF WESTERN PHILIPPINES UNIVERSITYTOWARDS CHEMISTRY: ANTECEDENTS AND COPING MECHANISMS

Cecilia S. Santiago
Western Philippines University, Aborlan, Palawan

ABSTRACT

Four hundred eighty five college students enrolled in courses that require Chemistry and nine faculty members handling the subject were interviewed to determine students' attitude and coping strategies towards Chemistry. Results revealed that students were uncertain on how and what they feel about the subject as evidenced by w$\bar{x}$ of 3.34. Their affective domain along receiving, responding, valuing, organizing and characterization had a w$\bar{x}$ of 2.92, 3.37, 3.07, 3.09 and 3.04, respectively.

The level of significance of all correlation was 0.05. Attitude versus anxiety was 6.645 > 2.101 and defensive pessimism was 2.736 > 2.101, hence there is a significant relationship between students' attitude and their self-protective strategies.

Coping strategies had high correlation to anxiety (3.307 > 2.048), handicapping (3.719 > 2.048) and defensive pessimism (2.622 > 2.048).
Very high correlation existed between teachers' field of specialization and the students' self-protective strategies of anxiety (5.164 > 2.131), self-handicapping (5.183 > 2.131) and defensive pessimism (5.918 > 2.131).

Significant correlations existed between teachers' attitude towards teaching Chemistry and students' self-protective strategies of anxiety, self-handicapping and defensive pessimism with computed *t*–value of 11.764>2.046, 13.995 and 9.464, respectively.

Based on the results of the study, an Action Plan was proposed which focused on the improvement of the instructors/professors' knowledge and skills in teaching Chemistry to provide a conducive learning environment therefore uplifting students' attitude towards the subject.

NAVIGATIONAL PATTERNS OF STUDENTS IN AN ONLINE LEARNING ENVIRONMENT: IMPLICATIONS IN ENVIRONMENTAL EDUCATION AND AWARENESS

Ricardo T. Bagarinao
University of the Philippines Open University Los Banos, Laguna

ABSTRACT

The paper construed the online learning environment as ecosystems or microhabitats of learners. On the perspective of organisms, these microhabitats provide the important ingredients of their growth and survival. Depending on the degree of their relevance, organisms create certain navigational patterns, which when analyzed may provide important information for conservation and management.
Course sites in a learning management system hosts several pages that contain the basic ingredients necessary for successful learning transactions by students. Depending on how they perceived these pages, students may create distinct navigational patterns, which when analyzed may also provide information that can help Faculties-In-Charge (FIC) or online educators design and manage their course sites.
The study analyzes the navigational patterns of students in a doctoral course in Biology. The study employs logged data analysis for all virtual transactions and activities of the students. Descriptive statistics were computed while processed data were visualized as graphs, tables, and diagrams. Implications of results on environmental education and awareness were identified and discussed.

Keywords: distance learning, e-learning, learning management system, online learning environment

NON-FORMAL ENVIRONMENTAL EDUCATION: A STRATEGY TO INCREASE ENVIRONMENTAL AWARENESS OF TAGBANUA CHILDREN IN SITIO TABYAY, BRGY. CABIGAAN, ABORLAN, PALAWAN, PHILIPPINES

Jessie C. Braganza, Jr., Lita Bañoc-Sopsop
WPU, Aborlan, Palawan

ABSTRACT

Tagbanua children in Sitio Tabyay, Cabigaan, Aborlan, Palawan, who were 7-12 years old were exposed to non-formal environmental education activities to determine whether their environmental awareness will improve through such strategy.
Results revealed that there was an increase of children's awareness by 36.37% after exposing them to non-formal environmental education activities. Grade VI children got the highest mean score by 71.83. However, there was a low correlation between gain score and age, attendance and level of education while moderately correlated with gender.

Children's environmental awareness motivated them to do environmental action *i.e.* tree planting, clean-up, forming a youth organization and coming up with a work plan to protect their environment. The love of their place was evident in the poems and drama which they had produced.

Non-formal environmental education therefore is an effective strategy to enhance children's environmental awareness.

COASTAL MARINE BIODIVERSITY CONSERVATION-CAPABILITY BUILDING PROGRAM IN MAGUINDANAO AND SULTAN KUDARAT PROVINCE

Pasigan U. Buisan/Alimudin S. Pendulat
Cotabato City State Polytechnic College Cotabato City, Philippines

ABSTRACT

The purpose of the study was to assess the implementation of coastal marine biodiversity conservation capability building program to the fisherfolks in Maguindanao and Sultan Kudarat Province.

Descriptive survey method was used in this study. This method was appropriate since the extent of attaining in which the expectation/objectives of CMBC-capability building program, extent of the implementation of the procedural of CMBC-capability building program and the effect of CMBC-capability building program on the attitude and awareness of fisherfolks were described and assessed descriptively.The respondents of the study were the CMBC Capabilty building program beneficiaries/fisherolks in Bonggo Island and Paril Sangay Protected Seascape.

Results revealed that the marine biodiversity conservation capability building program is carried out well. Thus, there were a remarkable change on the attitude and awareness of the respondents, which led them to upgrade their social behavior. However, there is a need to re-examine the strategy in the implementation of the program in order to achieve the objectives/expectation of the program to a very great extent so as to promote welfare and uplift the living conditions of fisherfolks.

Keywords: Coastal Marine Biodiversity and Conservation, Capability Building.

TOWARD THE PATH OF A SUSTAINABLE TOURISM PROGRAM! **THE MARINDUQUE EDEN (ECOLOGICAL DESTINATIONS AND EDUCATION IN NATURE) PROGRAM OF MARINDUQUE STATE COLLEGE)**

Dr. Romulo H. Malvar
Marinduque State College

ABSTRACT

Ecotourism is one form of tourism that relies more on the natural resources and cultural heritage of a certain place. Since it is nature-based, this in the long use can be exploited, wherein everything under it cannot be replenished. Thus, ecotourism need to be anchored to the concept of sustainable development and at the same time meeting the satisfaction of the tourists, the local community people and the future generation to come. These concepts led to the conception of Marinduque EDEN Program of Marinduque State College, which stands for ecological destinations of the province and education of everyone about nature. The study primarily looked on possible ecotourism destinations in the province, since based on studies, foreign tourists favours the coastal communities and seascapes and the mountain agrobiodiversity areas. The study applied series of fieldwork, focused group discussions, structured and semi-structured interviews and document analysis. The study revealed that the province has five (5) coastal communities and small island seascape potentials for ecotourism and three (3) mountain biodiversity and agroecological zones. These areas have varieties of nature destinations that can offer varieties of ecotourism activities if put in place. The province is so peaceful, with zero crime rates, have certified safe coastal and river ecosystems, have lowest solid waste rate and lowest nonbiodegradable wastes, which are favoured by foreign tourists. The province is also seismologically safe and rarely hit by typhoons.
Key words: ecotourism, Marinduque, tourism, sustainable tourism.

ENVIRONMENTAL SUSTAINABILITY PROGRAM IMPLEMENTATION OF SELECTED PUBLIC SCHOOLS OF GENERAL SANTOS CITY: BASIS FOR ENVIRONMENTAL ADVOCACY FRAMEWORK

Ava Clare Marie O. Robles
Mindanao State University General Santos City, Philippines

ABSTRACT

The 21st century is a period of converging social, economic and environmental crises. One apparent reality is that the detrimental environmental cost of human activities can never be compensated by the reimbursement of growth people were currently experiencing. As a result, improving societal and environmental sustainability is now one of the key research goals worldwide.

However, the need to sustain program for environmental protection necessitates the synergy of institutions and government offices that demonstrate their responsibility to the sustainability of the environment. One way to be on this stage is by having an innovative advocacy framework for schools that promote the implementation of the environmental sustainability programs in schools of General Santos City.

Thus, this study determined the level of implementation of the environmental sustainability of the selected public schools in General Santos City. This research may enable the DepEd officials, students, teachers and parents in the community responsive on the current need of the society where it serves. It is believed that the school's environmental sustainability program implementation can be improved further if realistic advocacy framework is developed.

Keywords: Environmental Sustainability, environmental advocacy

ESTABLISHMENT OF MARINE FISHERY RESERVE AND SANCTUARY OFF MAGCARAGUIT GROUP OF ISLANDS, DIMASALANG, MASBATE (MFRS-MGI): DESIGN OPTIONS AND OTHER PROPOSED INITIATIVES

Ronnel R. Dioneda Sr./Carlos V. Cortez Jr./Angelo P. Candelaria /Yolanda Julieta Brugada/
Aurea borromeo/Corazon V. Caputan /Ida FH Revale / Laarni Pancho /Pedro Jacob Jr./Jocelyn Serrano,
Amelia Dorosan/Erwin Rayel/Charmaine Malozo/ Jason Punay
Ramil Chavenia, Skorzeny C. De Jesus

Bicol University Research and Development Center, 4500 Legazpi City
DENR-PENRO-Masbate/ LGU Dimasalang

ABSTRACT

There were three design options for the establishment of MFRS, each have its advantages and disadvantages and the choice was left to the community and the LGU. . Options 1 and 2 have one reserve and sanctuary area at different sites and option 3 have the combined reserves and sanctuaries of options 1 and 2. For the guidance on MPA management objectives, the management category IV of the International Management that is anchored on sound technical bases and one that is community-based is paramount. Along this line, participatory technical inquiries produced by the Deagan Island Coastal Resources Management for Sustainable Development and Management Program(DICOREMAP), as to the status and potentials of the coastal life support systems (habitats) capture fisheries, fish stock status, as well as the understanding of the socio-economic and administrative systems composed the vital information for integration to planning and management in order to make coastal resource management of Deagan Island and the Magcaraguit Group of

Islands more proactive and responsive. This paper presents the results of integrated technical inquiries and the recommended sites for the establishment of marine fishery reserve and sanctuary (MFRS) and ecotourism sites, and, the recommendations for the eventual formation of a multi-sectoral management council.
Union for the Conservation of Nature or IUCN (Kelleher and Kenchington, 1992 and Salm and Rodney, 1984) can be considered appropriate for the MGI MFR-S, which should allow regulated fishing in the reserve and a fishing ban in the sanctuary.

The recommended administrative mechanisms for the implementation and monitoring of the MGI-MFRS will be: Passage of an Ordinance Declaring Marine Fishery Reserve and Sanctuary at Magcaraguit Group of Islands (MGI-MFR-S); Creation of a special body tasked to oversee and implement projects by the Marine Fishery Reserve and a Sanctuary (MFR-S); Putting-up of Livelihood Projects; Education Campaign; Fishery Law Enforcement Training and Deputization of Bantay Dagat; and Provision of Patrol Boat and fuel.

AFRICAN NIGHT CRAWLER, INDIGENOUS MICROORGANISM AND FERMENTED PLANT JUICE: AGENTS FOR RAPID DECOMPOSITION

Elvie V. Diaz, PhD
Rolando F. Hechanova,PhD

ABSTRACT

Sultan Kudarat State University an academic institution carry out a study on segregation and composting. The campus generates 60-70% of the biodegradable wastes such as leaves, grasses and paper, and 30-40% non-biodegradable wastes.

To effectively reduce the total volume of generated wastes by 50% and reduce waste quantities for collection, African night crawler (vermiworm), Indigenous Microorganism (IMO) and Fermented Plant Juice (FPJ) are compost accelerators that were used in the conduct of composting the biodegradable wastes of the campus.

The study was conducted with four treatments replicated three times, Treatment0 con-trol (biodegradable waste), treatment1- biodegradable + vermiworm, treatment2- biodegrada-ble waste + IMO and treatment 3-biodegradable waste + FPJ, employing completely ran-domized design and data gathered were analyze using Analysis of Variance.

Result of the study implies that the three compost accelerators are effective agents in the decomposition process of the biodegradable waste, but it is the application of the African night crawler that attains the least number of days an average of 32.67 that hasten the decomposition of the biodegradable waste.

ENHANCING ENVIRONMENTAL PERSPECTIVES THROUGH ONLINE INSTRUCTION

Alvie Simonette Q. Alip
University of the Philippines Open University
Los Baños, Laguna 4031 Philippines

ABSTRACT

The Twentieth Century has witnessed the rapid developments in information and communication technologies (ICTs), as well as greater concerns for the environment. Interestingly, the use of ICTs not only widens access to information and education, it is also a viable means to increase environmental awareness and perspectives.

The UP Open University (UPOU) offers environmental and natural resources management (ENRM) courses through distance education, which employs learning via computer network also known as online learning or online instruction.

This paper examines the enhancement of environmental perspectives through online instruction. It reports on the relevance of a course on Socio-Cultural Perspectives on the Environment (ENRM 221) to UPOU students vis-a-vis their perceptions on the quality of online instruction. Eighteen ENRM 221 students participated in the Quality of Online Instruction (QOIS) online survey form which adapted the Rubric for Online Instruction (ROI) developed by the California State University, Chico. Results showed that the ENRM 221 students viewed their course as generally exemplary in terms of learner support and resource, instructional design and delivery, innovative teaching with technology, online organization and design, assessment and evaluation of student learning, and faculty use of student feedback.

Keywords: environmental perspectives, online instruction, distance education

IBA ANG NATURAL: AN EXPLORATORY STUDY ON "NATURE" AS A DISCURSIVE RESOURCE FOR MARKETING PRODUCTS THROUGH TV COMMERCIALS

Primo Garcia
UP Open University

ABSTRACT

Nature has always been represented in books, visual arts, and recently on film, television, and the internet. With the growing popularity of wellness and sustainability, nature has become a potent discursive resource and a symbol for promoting products in the media. This paper presents the preliminary results of a qualitative data analysis on how research is socially constructed in and through TV commercials uploaded in the web. This has implications on the meanings people may associate with nature and the actions they may take in relation to it.

Environmental Research

PRIMARY PRODUCTIVITY OF DASOL BAY IN WESTERN PANGASINAN, PHILIPPINES

Sotero M. Aban, Cornelia E. Ibarra, Rey S. Raguindin, Armando C. Garcia and Rene B. De Vera
Pangasinan State University, Binmaley Campus, Binmaley, Pangasinan, Philippines

ABSTRACT

Dasol Bay is a vast and rich fishing ground located in the western part of the province of Pangasinan. It is bounded by the municipalities of Burgos and Mabini in the north, the municipality Infanta in the south, the Zambales mountains in the east, and the South China Sea in the west. In order to sustain its protection management and conservation, this study was conducted to determine its primary productivity and water quality conditions from two distance locations of the bay: 1, 000 meters (Station A) and 2,000 meters (Station B) away from the shoreline.

Result showed that Dasol Bay has a gross primary productivity (GPP) ranging from 44.14 to 58.88 mgC m^{-3} hr^{-1} at 2,000 meters away from the shoreline while 27.99 to 42.71 mgC m^{-3} hr^{-1} GPP at 1,000 meters away from the shoreline. The computed net primary productivity at 2,000 meters ranged from 1.56 to 8.06 mgC m^{-3} hr^{-1} while 1.95 to 6.51 mgC m^{-3} hr^{-1} at 1,000 meters away from the shoreline.

The water of Dasol Bay at 2,000 meters away from the shoreline has a water depth ranged from 18.6 to 35.3 m, 35 ppt water salinity, 5 to 22 m water transparency, 28.3 to 30.9^{o}C water temperature, 8.8 water pH, and 6.07 to7.28 mg/l dissolved oxygen while the water depth at 1,000 meters away from the shoreline ranged from 2.5 to 19.4 m, 34-35 ppt water salinity, 2.2 to 16 m water transparency, 27.8 to 31.1^{o}C water temperature, 8.8 to 9 water pH, and 5.1 to 6 mg/l dissolved oxygen.

Plankton analyses revealed 3 groups of phytoplankton with diatoms (Phylum Chrysophyta) as the most dominant group having a relative density of 98.34% and 97.96% for Station A and Station B, respectively. This followed by dinoflagellates (Phylum Pyrrophyta) with a relative density of 1.16% (Station A) and 1.20% (Station B) and blue-green algae (Phylum Cyanophyta) with a relatively density of 0.50% (Station A) and 0.84% (Station B). Sixteen genera/species of diatoms were identified which include *Chaetoceros, Rhizolenia, Bacteriastrum, Thallasionema, Coscinodiscus, Thallasiothrix, Nitzschia, Navicula, Biddulphia, Gyrosigma, Amphora, Thallasiosira, Climacosphenia, Pleurosigma, Diatoma and Diploneis*. Chaetoceros was the most dominant diatom species with a relative density of 93.84% and 95.16% for Station A and Station B, respectively. *Ceratium* and *Trichodesmium* was the only species identified for the group of dinoflagellates and blue-green algae, respectively.

For zooplankton, copepoda were the most dominant species with a relatively density of 80.27% for Station A and 40% for Station B. The other groups of zooplankton include cladocera, decapoda, cirripedia under Phylum Arthropoda, gastropoda and pelecypoda under Phylum Mollusca, genus *Sagitta* under Phylum Chaetognatha, genus *Globigirena* under Phylum Protozoa and genus *Oikopleura* under Phylum Echinodermata: Holothuria).
Analyses of nutrients such as phosphate, ammonia and nitrite showed very low concentrations which were beyond detectable limit in all sampling sites except in Hermosa/Gais-Guipe sampling area with a phosphate concentration of 0.70 mg/l.

It was observed that Dasol Bay at a distance of 1,000 meter away from the shoreline has a higher concentration of chlorophyll-a and higher number of plankton communities which might be attributed to anthropological activities along the bay.

Key Words: Dasol Bay, Primary Productivity, Plankton

ABUNDANCE AND DISTRIBUTION OF SHIPWORM, *KUPHUS POLYTHALAMIA,* IN BARANGAY STA. CLARA, KALAMANSIG, SULTAN KUDARAT

Emmanuel E. Albano Jr.[1] /Mary Joyce L. Flores, Ph.D[2]/Julie E. Albano, PhD.[3]

[1] University of the Philippines Cebu City;
[2] Professor, University of the Philipines, Cebu City
[3] Researcher, Sultan Kudarat State University

ABSTRACT

Large size shipworms identified as *Kuphus polythalamia* were found sprouting on the seafloor of the coastal barangay of Sta. Clara, Kalamansig, Sultan Kudarat. The unique size and habitat of these shipworms lead to the study of their abundance and distribution on November 2010. Three stations were set up in a 100 m x 100 m area. Selected physicochemical and biological parameters were measured using protocols adapted from Australian Institute of Marine Science (1994). The water's physicochemical factors were generally within normal ranges. The muddy substrate had pH that ranged from 6.93 – 7.20; a high average nitrogen content of 3.50% - 3.83%, and low phosphorus content of 11.67 – 15.67 ppm. Abundance was highest at Station 3 with total of 95 individuals and lowest at Station 1 (15 individuals), with sizes ranging from 50 cm- 104 cm. Except for depth and abundance, there were no other significant differences across stations. Likewise, there were no significant correlations between abundance and physicochemical parameters.

The results of this study were compared with a similar study done in an adjacent area. T-test results showed significant differences ($\alpha = 0.05$) between the two study sites for nitrogen ($p = 0.017$), phosphorus ($p = 0.003$), soil pH ($p = 0.001$), bottom temperature ($p = 0.003$) and depth ($p = 0.001$), but not for abundance. The non-significant and low correlation between the physicochemical parameters and abundance, within and between study areas, could mean that abundance and distribution of *K. polythalamia* were more influenced by the presence of wood in the substrate than by the physicochemical factors. For more conclusive results, a detailed sampling on the physicochemical and biological aspects is strongly recommended.

CAVE BATS(*Chiroptera*)IN RAJAH SIKATUNA PROTECTED LANDSCAPE,BOHOL ISLAND,PHILIPPINES

Steve Michael T. Alcazar, Adela C. Duran, Rosalyn P. Alburo, Hemres M. Alburo,
Cebu Technological University-Argao Campus, Argao, Cebu, the Philippines

ABSTRACT

Cave bats are critical components and important elements in the cave ecosystem because their excrement introduces nutrients, which support a complex invertebrate cave fauna. A study of the biodiversity in limestone caves in Rajah Sikatuna Protected Landscape (RSPL) on the island of Bohol was conducted. The results of the study are integrated into the CHED- Cave Biodiversity Database - one of the major objectives of the study. The study employed mist netting to capture bats. Roosting bat populations were estimated using quadrat method.
The study had documented 11 bat species belonging to five families in all 26 caves across study sites. These include two fruit bats, four hipposiderid, two vespertilionid, two rhinolophid, and one emballonurid. Of the 11 species recorded two were Philippine endemic; namely, *Hipposideros pygmaeus* and *Hipposideros obscurus*. Gintaasan cave in Sierra Bullones showed viable colonies of roosting bats with more than 5,000 individuals and the rest of the caves had below 2,000 individuals. Gintaasan cave had fewer disturbances compared with other caves where major threats (hunting, guano mining, and swiftlet nests collection) are prevalent. Biophysical variables like humidity, temperature, and light availability that influence the cave study sites are also recorded.
The prevalence of major threats in most of the caves visited suggests urgency of conservation efforts to reduce further damage to the cave ecosystem.
Keywords: Cave bats, RSPL- Bohol island, and CHED-Cave Biodiversity Data Base

PERCENTAGE SUCCESS, SURVIVAL AND GROWTH OF GRAFTED MANGO AS INFLUENCED BY TIME AND STORAGE MATERIALS

Henrisa Pedroso Aparis, Jesusa D. Ortouste Ph.D., & Rolando F. Hechanova PhD.
Sultan Kudarat State University,EJC Access, Montilla,Tacurong City

ABSTRACT

The study was conducted at SKSU- Lutayan Campus to determine the percentage success, survival and subsequent growth of grafted mango as influenced by time/days of storage and storage materials used. The parameters tested were the following: percentage success in grafting operation, percentage survival of grafted mango, plant height, number of leaves, length and width of leaves and number of days to bud break.
The study was laid out in 5x5 factorial experiments in a Completely Randomized Design (CRD) and replicated three (3) times. Specifically the study was conducted: 1) determine the storage viability of mango scion for grafting operation as influence by time and storage materials, 2) determine the best number of days and kind of storage materials for grafting operation, 3) determine the growth performance of grafted mango scion as influenced by time and storage materials, 4) determine the economics of using various storage materials for grafting mango. The treatments used the time /Days of Storage (:5) as factor A and the different storage materials (5) as Factor B .

Result of the study showed that scion stored on different days significantly influenced the percentage success, percentage survival, and plant height, number of leaves and length and width of leaves. On the contrary, storing the scion on the different number of days did not significantly influence the number of days to bud break.

However, scion stored, using the different storage materials significantly influenced the percentage success, plant height, number of leaves and the number of days to bud break. Likewise, storing the scion using the different storage materials did not significantly influenced the percent survival and length and width of leaves.
Moreover, the interaction effect of the number of days of storage and the use of the different storage materials was observed to have no significant influenced in all data gathered.
The result of the study recommends storing the scion within three days to enhanced high percentage success, survival and growth of grafted mango in terms of plant height, number of leaves and length and width of leaves. But economically, storing the scion in a moist newspaper for three 3) days give a higher return of investment compared to other storage materials.

Keywords: Asexual Propagation, Bud, Scion, stock, grafting, percentage success, percentage survival

INDIGENOUS MICROORGANISMS (IMOS) ASSOCIATED IN THE VERMI SILAGE PRODUCTION

Dr. Teresita B. Bayaron

Davao Del Norte State College, New Visayas, Panabo City

ABSTRACT

The rotting of tissues in the open field is usually due to indigenous microorganism (IMOs) that abounds in the open ecosystems. These decomposers grow abundantly in biodegradable materials found in garbage bin, dead animals and plant tissues left dried or rotten in the open field. In the soils, organisms like fungi and bacteria are capable of rapid growth and reproduction due to the availability of decomposed organic matter, a substrate best for earthworm production.

The organic silage made of rotten fish, discarded vegetables, and banana fruits and peelings harbor pathogens abundantly after three weeks of exposure to the garbage bin where the vermi were grown artificially, consequently, increasing the growth of juvenile vermi biomass after 30 days of culture.
The most dominant, from the 15 isolated indigenous microorganisms found associated in the organic silage were *Penicillium sp., Aspergillus sp., Rhizopus sp., Escherichia, Salmonella, and Pseudomonas.* The isolated IMOs were known as good decomposers for it degrades or breakdown fast the organic silage needed by vermi for its growth and development.

Keywords: IMOs, Organic Silage, Vermi Biomass

FARMERS AND THEIR CONTRIBUTION TO GREENHOUSE GAS EMISSION

Ian Phil M. Canlas
Leyte Normal University, Philippines

ABSTRACT

A growing body of literatures claims that carbon dioxide emission has dramatically caused the increase of mean temperature of the planet. However, another greenhouse gas least known to people is methane produced during anaerobic decomposition of organic materials. Recent studies show that methane is twenty five (25) times more potent in trapping heat than carbon dioxide. The forgoing study attempted to assess the rice farming practices in selected towns of Leyte and Eastern Samar and infer its contribution to greenhouse gas emission. Using a researcher-made guide questionnaire, sixty (60) farmers were interviewed regarding their post-harvest waste management practices. Results show that local government units (LGUs) of these towns have passed ordinances prohibiting the burning of post-harvest wastes. Moreover, it was found that most farmers decompose all their wastes naturally and scatter it to the paddies upon plowing and preparation for planting as taught to them in the trainings they have attended.

Further, it was found that rice paddies, whether or not they are irrigated, are continuously flooded with water and are only drained two weeks before harvest. Evidently, these practices are found to cause the anaerobic decomposition of organic wastes, hence, result to a large volume of methane gas emissions.

Key words: methane, carbon dioxide, greenhouse gas, farmers, rice paddies

LANDSCAPE CHANGES IN THE ULOT WATERSHED IN SAMAR ISLAND, PHILIPPINES

Evelyn Amit-Corado
Eastern Samar State University

ABSTRACT

The study investigated the landscape changes in the Ulot Watershed in Samar Island, Philippines. The watershed lies at the heart of the Samar Island Natural Park, a new protected area established under Presidential Proclamation No. 244 on August 13, 2003. Particularly, the study determined how the landscape changes in the Ulot Watershed have impacted on the biodiversity richness of the watershed and the lives of people of Samar Island using key informant and documents review. Result show that efforts to preserve the Ulot Watershed have continuously been challenged by the major issues due to diverse interests of stakeholders-logging, mining, agriculture, each wanting to be given priority. The issues are aggravated by the lack of land use plan, lack of capacity and knowledge about sustainable forest management and inappropriate farming practices.

Forest-edge communities, who remained after the commercial logging days, need to be involved in production of wealth to address poverty but that their production must not endanger the ecosystem which is critical to the life of the Ulot Watershed.

THE LAKE OF BAY IN HISTORY AND MEMORY

Dwight David A. Diestro
University of the Philippines Los Baños College, Laguna
ABSTRACT

The Lake of Bay is literally in the contours of Philippine history as it lies in the heartland of the Southern Tagalog region. There is a strategic configuration that exists: the lake, Pasig River and Manila Bay. The paper aims to trace the historical trajectory of Laguna de Bay from its geological beginnings to the 1980s and 1990s when the Manggahan Floodway and Napindan Hydraulic Control Structure were constructed. The earliest written source on Philippine history is the Laguna Copperplate Inscription dated 900 CE. The Noli Me Tangere and El Filibusterismo have an unusual number of references to the lake because Dr. Jose Rizal, the Philippine national hero was from the lakeshore town of Calamba.
The government has paid attention to the social, environmental and political aspects of the lake. Legislation was enacted in the 1960s to form the Laguna Lake Development Authority. Numerous scientific studies have been conducted starting in the 1900s because of the collective desire to maintain the ecological harmony of the place. Power relations are evident in the management of any resource. Conflicts have been recorded among the users of the lake, for example the fishpen capitalists against the ordinary fisherfolk. Changes and continuities across time will be made prominent in the presentation.

Keywords: environmental history, Philippine history, Laguna de Bay

LAND COVER CHANGE AND WATER YIELD OF SILANG-SANTA ROSA RIVER SUBWATERSHED, LAGUNA, PHILIPPINES

Kathreena G. Engay[1] , Damasa B. Magcale-Macandog[2]
[1] Southern Luzon State UniversityAyuti, Lucban, Quezon, Philippines 4328/ [2] University of the Philippines Los Baños College, Laguna, Philippines 4031

ABSTRACT

Patterns of land cover changes in the Silang-Santa Rosa River Subwatershed were documented through conduct of Participatory Rural Appraisal approaches and GIS mapping. 1993 and 2008 Land cover maps were generated from classified satellite images using ArcGIS with four identified cover classes that include perennials and coconut, cultivated or tilled areas, fallow and grassland, and built-up. Land cover patterns in the subwatershed begun from perennials to grassland to built-up, and from farmlands to idle lands then to built-up.
A GIS-based water balance model of the subwatershed that predicts water discharge was derived from PCRaster's DISCHARGE MODEL with component parameters including rainfall, evapotranspiration, cover coefficient, and soil field capacity. Results of sensitivity analysis showed that the volume of water discharge changes with varying land cover coefficients. The model can be used to simulate various scenarios of land cover change and its impact to water yield. Simulation results show that increase in built-up areas resulted to increase in water yield implying reduction in groundwater recharge.

Keywords: Silang-Santa Rosa Subwatershed, Participatory Rural Appraisal, land cover change, land cover patterns, water balance model

SPATIO-TEMPORAL PATTERNS OF LANDSCAPE CHANGE IN BATANGAS CITY

Glenn O. Sopsop,[1] Edwin R. Abucay,[2] Prima R. Silvestre, [2] Henry M. Custodio[2] and D. Manikham[2]
[1]WPU-CFES, [2]UPLB-SESAM

ABSTRACT

This study was conducted to determine the nature and magnitude of the landscape structural changes in Batangas City and suggest implication on the hydrology with emphasis on water quantity and water quality
The 2002 and 2008 satellite images (ASTER, 30m resolution) of Batangas City were downloaded from the National Astronomy and Space Administration (NASA). Images were processed and analyzed in Geographic Information System (GIS). Landscape metrics were computed using Patch Analyst extension for ArcGIS.

All path types tend to become evenly distributed (2002 to 2008) with agricultural land use (cropland with annuals and perennials) dominantly increasing and tend to aggregate in irregular shape. Built-up enormously increased in area (143.13%), number (56.73%), and density and tend to be irregular in shape. Grassland and shrubland decreased in area and number, patch size and density. Secondary forest decreased in area and patch size but increased in patch number and tends to be circular in shape. Landscape change has brought about by the rapid urbanization in Batangas City. Its implications to water quantity and quality were discussed.

ANATOMICAL STUDY OF GRAFTING MANGOSTEEN SEEDLINGS

Ramdan Hidayat [1)]

Lecturer of Agrotechnology Department, Faculty of Agriculture National Development University “Veteran” East Java-Indonesia, Raya Rungkut Madya Street, Surabaya

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ABSTRACT

Mangosteen (*Garcinia mangostana* L.) is a plant of slow growth with a long juvenile period (8-15 years), so that mangosteen have very long dormancy period.To shortening long juvenile periods of mangosteen can do with planting grafting plant. Nevertheless growth rate of grafted mangosteen slower and canopy is un-simetric with a little branch. To Solved of the problems, this research would to focus in anatomical of graft processing, especially on the unity of vascular bundle (*Xylem* and *Phloem*) between rootstock and scion. The objectives of this research are to studies anatomical grafting processing of several methode of grafting and position of scion.mangosteen. The slow growth of grafted mangosteen seedlings caused by several factors, including:
1). Scion have not used a specific (unknown entres grow the best stadia, scion from the best of buds shoots Ortotroph or Plagiotroph, 2). Not yet known with certainty the connection between the root stock with scion, especially the merging of *xylem* and *phloem* tissue (a long time and the presence or absence of spin on the vascular network of vessels) in the merging area.

Based on the need to do further study microscopically, the anatomical tissue of the merging area of the grafted seedlings. Aim of these research are anatomical studies on the merging area of grafted seedlings to obtain grafted mangosteen seedlings with the rapid growth and canopy are symmetrical).
The study was designed as a factorial in a completely randomized design (CRD) 2 factor. The first factor is the methode of grafting, which consisting of: M0 (gap grafting, Φ-different), M1 (gap grafting, Φ-alike), M2 (gap

grafting V), M3 (diagonal grafting without a lapse), M4 (diagonal grafting with hose), M5 (horizontally grafting with a hose) and M6 (horizontally grafting with the pegs). The second factor is the position scion, which include: Position scion P0 (1 section), P1 (¾ sections), P2 (the section-2) and P3 (1¼ sections).
Result of these research showed that percentage growth of grafted mangosteen seedlings of all graft methode was significant high (average 95 %). Based on anatomical studies of graft process on the merging area showed that the V slit grafting method and the position of scion on the section-2 (M_2P_2) is the best treatment combinatioan than another treatments.

Key words: Anatomi, Seedling, Grafting, Root stock, Scion, Juvenile

REPRODUCTIVE BIOLOGY OF THE JANITOR FISH *PTERYGOPLICHTHYS* SPP. IN MARIKINA RIVER, PHILIPPINES

Joycelyn C. Jumawan[1], Benjamin M. Vallejo[2] and Annabelle A. Herrera[3]
[1] CARAGA State University, Agusan Del Norte, Philippines,
[2] University of the Philippines,
[3] University of the Philippines-Diliman, Quezon City, Philippines

ABSTRACT

Life history traits and reproduction of successful invaders are scarcely documented but could offer insights to their invasion in new environments. This study described the ultrastructural and histologic characteristics of the gonads and the reproductive phenology of the highly invasive *Pterygoplichthys* spp. from Marikina River, Philippines for one year (July 2010-June 2011) to elucidate its reproductive strategies and seasonality of reproduction. Transmission electron micrographs show that the testis is of an unrestricted spermatogonia testicular type while the spermatozoon is classified as type 1 ect aquasperm. Female *Pterygoplichthys* spp. possessed cystovarian ovaries containing three cohort oocyte diameters suggesting a group synchronous mode of oocyte development. Males attained peak spawning during the rainy months (June to August), have overlapping regression and recrudescence during December to January and prolonged recrudescence during the dry months (February to May). Females have a relatively short spawning period (June to September) coinciding with the rainy season, followed by a short regression phase (October to December) which overlapped with the long recrudescent stage (October to early June).

Keywords: reproductive phenology, invasive fish species

GEOMETRIC MORPHOMETRIC VARIATION AMONG AMBASSIS INTERRUPTA FISH POPULATIONS FROM THE RIVER, RIVERMOUTH AND SEAWARD AREAS OF LINAMON, LANAO DEL NORTE

Sherryl Lipio-Paz
Caraga State University, Ampayon Butuan City, Philippines

ABSTRACT

This study investigated the morphological variation of amphidromous *Ambassis interrupta* fish population from Linamon River, River Mouth and Seaward part in Linamon, Lanao del Norte (November to December, 2007). 60 samples were caught from Linamon River, 53 from the River Mouth and 60 from the Seaward. Using the geometric and morphometric methods based on the landmarks on the lateral orientation of the fish samples, the results generated by Partial Warp, Relative Warp, Principal Component, Euclidean Distance Matrix and Discriminant function Analyses showed that the *A. interrupta* fish populations from the different habitats varied in

shape and interlandmark sizes. The distance between anterior-most tip of the snout or the upper lip to the origin of the pectoral fin highly contributes to the variation of interlandmark sizes among the three populations. Moreover, significant discriminating factors among the *A. interrupta* fish populations were the snout or mouth region, pelvic fin, dorsal fin, caudal fin, margin of the operculum and the eye portion. The results suggest that fish populations from the different alternative habitats exhibited morphological variations. Further investigation on genetic divergence is recommended among these fish populations in order to assess the extent of speciation and thus, resolve their taxonomic delineation.

Keywords : morphological variation, population, landmarks

CONSTRUCTIONAL CONSTRAINTS IN MINIATURIZED BUT FUNCTIONAL DESIGNS: CRANIAL SYSTEMS IN FISHES AND IMPLICATIONS TO LARVAL AQUACULTURE AND FISH CONSERVATION IN THE PHILIPPINES

Jimmy T. Masagca, Manrico T. Masagca[2]
Pacific Island Institute for Pedagogy, Technology, Arts & Sciences, Inc. Catanduanes State Colleges, Virac, Catanduanes

ABSTRACT

Previous studies attest that the way an animal is built, reflects the result of natural selection acting upon the performance of animals, by itself intricately linked to a species' ecology. A number of studies on teleosts have demonstrated that morphological variation can be strongly correlated with trophic ecology. Functional studies on the larval and adult feeding mechanism in teleosts can lead to an understanding on the relationship between morphology and performance, where such a performance gradient is then a proxy for fitness. Success of survival is hereto determined not just by feeding performance at the adult stage, but even more during the early life history. Knowing that larval fish are size constrained, the structural repertoire to form functional feeding apparatuses is limited, making them more vulnerable to starvation. Surprisingly, several lineages within teleost fishes have given rise to taxa that remain miniature during their whole life cycle. To what degree they have dealt with size constrained development and functioning of a feeding apparatus within an evolutionary context, largely remains unresolved.

This paper focuses on the morphology of the feeding apparatus in miniature fishes, in order to have perspectives on their functional morphology, ecomorphology and evolution. Studies have shown that the mechanics of jaw movement are closely related to the structural and functional design, as well as with other cranial structures which can influence feeding performance. The economically important food fishes of the families Gobiidae and Eleotridae (considered as highly successful clades of teleost fishes) comprise the most diverse group of teleosts from large to minute gobies in the Southeast Asian (SEA) countries. In the Philippines, mature males of the diminutive gobioid, *Pandaka pygmeae* reaches only up to 1.1 cm, while the females can grow up to 1.5 cm (only 4 to 5 mg bodyweight on average). Studies on on gobies show the unusual gonad structure of paedomorphic species and others focus on the life span of the smallest gobiid fishes. However, little to no information is available on the musculoskeletal system of the feeding apparatus. On the miniature goby (*Mystichthys luzonensis*), found in the riverine and lacustrine environments of Buhi and Bato (Bicol Region Philippines) reports show the reduced sizes of this goby and another miniature goby, *P. trimaculata* from Japan. The current dearth of studies on miniature or paedomorphic fishes does not yet allow to answer questions on structural, functional and evolutionary patterns that are linked to constraints imposed because of size reductions.

It is of special importance considering the endangered status of several of these miniature gobies not only in the Philippine waters but in other SEA countries like Indonesia and Malaysia by relying on functional characterization of musculoskeletal lever systems within their cranial designs. Finally, the impact of

miniaturization on feeding performance can be better understood, and hence the level at which natural selection may have moulded the structural evolution within miniature vertebrates in general can be better understood if inquiries along these areas on functional morphology and ecomorphology will be carried out in the near future with implications on larval feeding in aquaculture and perhaps fish conservation initiatives.

Keywords: Gobies, miniaturization, functional morphology, paedomorphy, ecomorphology, larval feeding

STATUS OF MANTAYUPAN RIVER ECOSYSTEM

Alfredo C. Neri, Virgie P. Wee, Glenn B. Hoyohoy
Cebu Technological University

ABSTRACT

The Mantayupan River is among the most important source of water in Cebu, Philippines. This study was conducted to evaluate the physico-chemical and microbiological characteristics of its ecosystem and monitor the uses of its water. The descriptive research method was used.
Results showed that Mantayupan river's water quality index (WQI) indicated only a "medium or average water quality" at the source spring and way down the river channel during dry season. In rainy season, the river's WQI scaled a "good water quality" at the source spring and water falls but declined to "medium or average water quality" at its downstream. These indicate

IN-VITRO GERMINATION OF DENDROBIUM *(Dendro bium sp.)* SEED POD USING DIFFERENT LEVELS OF CONCENTRATION OF CULTURE MEDIA

Andresa A. Pasaje, PhD, Marise C. Bendanillo, Teodoro A. Cabillo, Wilson U. Llegunas Jr.
Cebu Technological University

ABSTRACT

The study was conducted at the Tissue and Embryo Culture Laboratory of CTU-Barili Campus from July 22, 2011 to August 22, 2011 or for a period of 31 days. The main purpose of the study was to evaluate the in-vitro germination of Dendrobium seeds using different levels of concentration of culture media. One hundred ten days old pods of Dendrobium were used as experimental seeds. There were four treatments with three replications arranged in a completely randomized design (CRD).Control (T_0) were seeds cultured using the standard concentration of culture media, 300 ml each of Knudson C components, 50 ml tomato puree, 200 ml coconut water, 20 g sugar, 0.06 g vitamins and 300 ml gulaman (10 g/300 ml of water; T_1 were seeds cultured using 200 ml each of Knudson C components, 50 ml tomato puree, 200 ml coconut water, 20 g sugar, 0.06 g vitamins and 300 ml gulaman (10 g/300 ml of water); T_2 were seeds cultured using 250 ml each of Knudson C components 50 ml tomato puree, 200 ml coconut water, 20 g sugar, 0.06 g vitamins and 300 ml gulaman (10 g/300 ml of water); and T_3 were seeds cultured using 350 ml each of Knudson C components 50 ml tomato puree, 200 ml coconut water, 20 g sugar, 0.06 g vitamins and 300 ml gulaman (10 g/300 ml of water).
Findings revealed that using different levels of concentration of culture media in germination of Dendrobium seeds affect significantly the number of days to germination, color of the seedlings and livability rate of the seedlings. Therefore, modifying the standard concentration of culture media for the dendrobium is not suggested.

Keywords: dendrobium, embryo culture, in –vitro germination

THE EFFECT OF POPULATION DENSITIES ON THE PRODUCTION OF SWEET SORGHUM

Mohamadtaha S. Pendaliday, Adonis Gumba

ABSTRACT

A study on Effect of Planting Distance on the Production of Sweet Sorghum (*Sorghum Bicolor L.*) Under CCSPC Satellite Campus, Under Rebuken, Sultan Kudarat Maguindanao, Cotabato City State Polytechnic College, College of Agriculture.
A Randomized Complete Block Design (RCBD) was laid out in five (5) treatments and replicated three (3) times.

The study was conducted to evaluate the effect of population densities on the agronomic characteristics of the sweet sorghum in terms of Plant Stand, Days to 50% Flowering, Plant height, Lodging Score, Thousand Seed weight, Grain Yield and the cost and return analysis. The study was carried out in Randomized Complete Block Design (RCBD) with five (5) treatments and replicated three (3) times.
The yield of sweet sorghum as influenced by different population densities showing that the highest weight revealed in treatment 5 (100,000) with a mean of 1881.11 grams, followed by treatment 1 (300,000) having a mean of 1622.22 grams, treatment 4 (150,00) with a mean of 1616.52 grams, treatment 3 (200,000) having a mean of 1527.21g, and got the lowest weight was treatment 2 (250,000) having a mean of 1299.38 grams.
The analysis of variance did not significantly affect the grain weight as influenced by different population densities.

Based on the result, plant stands, Days to 50% flowering, plant height, Seed weight, panicle weight and grain yield did not vary significantly, this further indicates that population densities of sweet sorghum did not affect significantly the growth and yield.

THE IMPORTANCE OF NON-WOOD FOREST PRODUCTS IN THE LIFE OF THE LOCAL PEOPLE IN TALAKAIGAN WATERSHED, PALAWAN ISLAND, PHILIPPINES

Lita B. Sopsop
Western Philippines University, Aborlan, Palawa

ABSTRACT

An interview was conducted to the direct users of the forest ecosystem in Talakaigan watershed to determine their socioeconomic characteristics and to examine the role of Non-wood forest products (NWFP) in their household economy.
The direct users of the forest were poor Indigenous Peoples and migrants from the Visayas region who were dependent on the NWFP as their immediate main source of income hence gathering of such products becomes intense and seemed less and less sustainable in ecological and socioeconomic terms.
The local government unit of Aborlan and other organizations should help create employment opportunities for the local people and help strengthen the community's farming system practices to increase their income. The people must be empowered to maximize their full potentials in exploring various livelihood opportunities without depleting the forest resources.

Key words: Non-wood forest products, source of income, migrants, Tagbanua

BACK TO NATURE BACK TO PARBOILED RICE

Sri Wuryani* Oktavia S. Padmini, D.A Puspitaningrum
Universitas Pembangunan Nasional "Veteran" Yogyakarta, Indonesia

ABSTRACT

To improve nutritious organics rice, parboiled rice is one of theoption. The objective of thisresearch was to determine the appropriate steaming time of parboiled rice made from free chemical fertilizer and pesticides paddy for improving the physical and nutritional quality. Completely randomized design single factor was used in this experiment,the factor was steaming time that comprises 4 levels (0, 10, 20 and 30minutes). Quality parameters measured were whiteness Index, percentage of husk, brand and rice, dietary fiber, amylose, amylopectin, digestibility, fat, protein, vitamin B, ash and moisture content. Analysis of Variance and Duncan Multiple Range Test at α 5% were subjected to the data.

The result of this research showed that steaming parboiled rice during 10 minutes resulted the best physical quality, meanwhile the best nutritional quality resulted from steaming paddy for 20 minutes. Moreover, physical as well as nutritional quality showed significantly different between parboiled and white rice (non parboiled rice), thus, economically parboiled rice has many advantages.

Key words: parboiled rice, steaming time, physical and nutritional quality

OBSERVATIONS AND EXPERIENCES OF SMALL ISLAND COMMUNITIES TO THEIR SURROUNDINGS IN RELATION TO CLIMATE CHANGE

Diosdado P. Zulueta
Marinduque State College

ABSTRACT

Marinduque is an island province with 15 peripheral islands. Majority of these islands have low lying communities with 5,146 residents and therefore vulnerable to the extreme events of climate change. The study involved 83 residents from the small island communities with age bracket of 50 and above. They were approached individually and asked to cite 10 observations and experiences they have encountered, which affect their environment and livelihoods and rate then at the scale of four, such as: frequently observed and experienced, almost in a monthly basis (4); occasionally observed and experienced, quarterly basis (3); hardly observed and experienced, once a year (2); rarely observed and experienced, every two years (1) and not observed and experienced (0).

Results of the study revealed the following observations and experiences of the islanders: felt intense heat in the surroundings (x = 3.966), dwindling fish catch (x = 3.912), bleaching of corals (x = 3.876), low agricultural productivity (x = 3.806), prevalence of diseases (x = 3.710), prevalence of pests (x = 3.662) and erosion of the foreshore areas (x = 3.623). All of these were frequently observed and experienced by the community people, and there were no significant differences in ranking these 10 cases at 5% level of significance.

The increasing salinity of deep wells (x = 3.152), effects of strong typhoons (x = 2.856) and destruction of the mangrove forests (x = 2.812), were all rated as occasionally observed and experienced in a quarterly basis. For the individual islands; intense heat, dwindling fish catch and increasing salinity of deep wells were frequently observed and experience by the community people of Maniwaya, Mompong and Salomague, with a rating of (x = 4.00).

This is same with the case of Polo Island, wherein the respondents made mentioned, intense heat (x = 3.95), dwindling fish catch (x = 3.81) and increasing salinity of deep wells (x = 3.76). The over-all rating for the 10 cited cases was highest in Salomague Island (x = 3.90), followed by Mompong (x = 3.835), Maniwaya (x = 3.792) and Polo Island (x = 3.576). Lowest was in Gaspar Island with a mean rating of (x = 2.589).

Keywords: climate change, experiences, Marinduque, observations, small island communities.

MULTILOCATIONAL ADAPTIBILITY OF THREE MANILA HEMP (*Musa textilis* L. Née) VARIETIES IN SOUTHERN MINDANAO, PHILIPPINES

Florence Lasalita-Zapico, Catherine Hazel M.Aguilar, Jaime A. Namocatcat , Joey Real Marie I. Barbosa, Deocyth Sarsalejo, Sittie Rokaiya Banisil
Mindanao State University-Fatima, General Santos City 9500 The Philippines

ABSTRACT

Varietal adaptability of three Manila Hemp (*Musa textilis* L. Née) varieties (*Maguindanao, Tanggonon and Bongolanon*) was tested across three locations in Southern Mindanao utilizing five yield-related agronomic characters – height, suckering ability, percentage survival, base and tip circumference of stalks.
ANOVA revealed no significant differences for variety, location and (GxE) interaction, suggesting that these varieties exhibit wide range of adaptability to diverse local agro-ecological conditions. Factor analysis via principal component analysis (PCA) resulted in the extraction of three factors, where the first factor (F1) accounted for 98% of total variance observed in the data set, while F2 and F1 were disregarded due to their low discriminating power. ANOVA and factor analysis further underscored the similar adaptability of the three abaca varieties to conditions in the study sites suggesting their growth responses had a very strong genetic component. Results strongly support the recommendation of the Philippine Fiber Industry and Development Authority (FIDA) for a widespread cultivation of these three varieties in Mindanao.

Keywords: Musa textilis, Field testing, Principal Components Analysis

BIODIVERSITY OF HERPETOFAUNA AND MACROINVERTEBRATES IN SELECTED CAVES OF RAJAH SIKATUNA PROTECTED LANDSCAPE

Steve Michael T. Alcazar, Adela C. Duran, [2]Rosalyn P. Alburo, Hemres M. Alburo,
Cebu Technological University-Argao Campus, Argao, Cebu, the Philippines
Boholl island, Philippines

ABSTRACT

We documented 26 caves across study sites in Rajah Sikatuna Protected Landscape (RSPL) on the island of Bohol to study the biodiversity of herpetofauna and macroinvertebrates. Results of the study are integrated into the CHED- Cave Biodiversity Database - one of the major objectives of the study. Taxonomic composition of the terrestrial fauna varied, but Arachnids and Reptiles together had dominated. The results showed a total of nine species (5 sp. acquatic and 4 sp.terrestrial) of cave-associated herpetofauna recorded across study sites. Macroinvertebrates represented by arachnids and crustaceans were the dominant taxon but the lack of taxonomic knowledge resulted in family or genus identification and leaving some macroinvertebrates unidentified. The study reports new probable distributional records for hypogean shrimps (*Caridina endehensis and Macrobrachium mamillodactylus*). A crab species, *Sundathelphusa cavernicola* may be also a new distributional record for the island. The study employed cruising transect walk, quadrat sampling method, hand-

grabbing, trapping and scoop netting. Biophysical variables which include humidity, temperature, and light availability that influence the cave ecosystem are also recorded.

Bohol island should be regarded as a unique island as a compliment of its vast karst limestone areas forming caves particularly in RSPL that holds diverse species of herpetofauna and macroinvertebrates-all of which facing conservation crisis of intense man-induced threats and disturbance. Bohol may be a model island for conservation efforts but before conservation and management plans will be implemented more cave biodiversity surveys should be conducted.

Keywords: herpetofauna, macroinvertebrates, CHED-Cave Biodiversity Data Base, and RSPL-Bohol

SEASCAPE AND CLIMATE CHANGE: WOMEN FISHER'S PERSPECTIVES AND INSIGHTS

Fe L. Alcantara- Andico,Ph.D.
Pangasinan State University, Lingayen

ABSTRACT

This study deals with women fishers' knowledge of Sual Bay- its physical environment, the transformations that has occurred, and their insights on climate change. The locale is a community along Lingayen Gulf, in Western Pangasinan. The respondents are women in subsistence fishing. This study attempts to generate data on *Women fisher's definitions of the sea- its topography, the immediate coastal environs; and perspectives on climate change; *Women's observation of the physical changes in the sea and the coast these last two- and- a half decade; and identify *Climate- changed coastal fishing resource areas. Women are producers of knowledge, yet there may be scarcity of data and/or recorded data on the vast experiences of women in various contexts which may possibly generate concepts and insights for theoretical studies and/or practical use.

An area of inquiry into women's experiences may be those which deal on women's definition of the sea, the surrounding environs and recently, on how they understand climate change. Although knowledge produced by women's experiences need no verification as to its validity- as women's realities are true, data in this study may be analyzed from a positivist- based methodology and thus, may enhance feminist research. The findings in this study may also be bases for resource rehabilitation and management policy or program by the Department of Agriculture or by the Bureau of Fisheries and Aquatic Resources.

The study is a continuing investigation on the various possible areas of inquiry in the life and experiences of subsistence women fishers in a community along Lingayen Gulf. Some of the data used in this study are therefore, from previous researches. Data are from interviews conducted with key informants and some folk in the community, participant observation, and ocular visits in relevant areas in the locale. The study proponent had also stayed for short periods with some families in the site. The study reveals that women's experiences consist of a vast array of valuable information on the physical characteristics of the sea and its environs. Keenly observant and with intuitive skill nurtured by a life lived at sea, women have produced knowledge and insights on climate change and its impact on the land and the sea.

Keywords: seascape, climate change, perspective, insights

THE COMPLEX DIVERSITY OF ASIA PACIFIC WILD RICES AND ITS CONSERVATION IMPLICATIONS

Maria Celeste N. Banaticla-Hilario[1,2], Nigel Ruaraidh Sackville Hamilton[1], Ronald G. van den Berg[2], and Kenneth L. McNally[1]
[1]T.T. Chang - Genetic Resources Center, International Rice Research Institute, Los Baños, Laguna, Philippines, [2]Biosystematics Group, Wageningen University and Research Center, Wageningen, The Netherlands

ABSTRACT

Conserving wild *Oryza* species is vital in improving rice production in the face of climate change and population expansion, particularly since they are sources of tolerance to abiotic and biotic stresses. This study explored the diversity within and among the three closest relatives of rice in Asia-Pacific namely: *O. rufipogon*, *O. nivara* and *O. meridionalis*. One hundred twenty-three accessions were phenotyped and genotyped with 29 SSR markers. Numerical methods suggested strong eco-geographical influence on species morphology as *O. rufipogon* appeared distinct from the two phenotypically similar species that occupy identical niches. Meanwhile, SSR analyses recognized the uniqueness of *O. meridionalis* and Nepalese populations of *O. nivara*, and revealed global overlapping and local differentiation between *O. nivara* and *O. rufipogon*. Bayesian inference detected four, and at a finer structural level, eight genetic groups that corresponded to geographic populations of the three taxa. *O. nivara* had less diverse but more differentiated subgroups than *O. rufipogon*. Genetic diversity was mainly contained among accessions (64%) rather than within accessions (26%) or among species (10%). Morphological and molecular data harmoniously indicated: regional subdivisions in *O. nivara*; the distinction of Australasian populations from the rest of *O. rufipogon*; and greater differentiation of these two species in South Asia.

Keywords: Oryza rufipogon, O. nivara, O. meridionalis, wild rice, diversity patterns, conservation

IMPORTANCE OF RIPARIAN FOREST FRAGMENT ON AVIFAUNAL DIVERSITY OF SWIDDEN LANDSCAPE IN SAGPANGAN, ABORLAN, PALAWAN

Alejandro A. Bernardo Jr.
Western Philippines University
Aborlan, Palawan, Philippines

ABSTRACT

Characterized by steep slopes and shallow arable soil, the riparian areas of upland streams were left intact and spared from shifting cultivation. To understand its importance on avifaunal diversity of swidden landscape, this study compared the avifauna of riparian forest fragment with nearby swidden farm and primary forest in Sagpangan, Aborlan, Palawan, Philippines from August to November 2010 using a standard point count method.The results showed that riparian forest fragment have the highest bird species richness, diversity index and abundance compared to swidden farm and primary forest. The high index of community similarity with swidden farm and primary forest indicated that its avifaunal community was an assortment of species that thrive in the forest and swidden farm. Eight out of the 10 Palawan endemic species and 19 Palawan endemic races recorded in the forest were also found in the riparian habitat. Moreover, four out of the six near threatened and one out of two vulnerable species recorded in the primary forest were also found in the riparian habitat.
The high abundance, species richness, diversity, presence of endemic and high conservation priority species highlights the significance of riparian forest fragment in avifaunal diversity of swidden agricultural landscape.

Keywords: avifauna, diversity, riparian, swidden landscape

OCCURENCE AND ABUNDANCE OF FRUIT BATS IN SOME CONSERVATION AREAS OF NORTH COTABATO

Lothy Fernandez Casim, R.N., M.S.,' Marion John Michael M. Achondo, Aimee T. Riñon
University of Southern Mindanao, Kabacan, Cotabato

ABSTRACT

A study on the occurrence and abundance of bats was done in some conservation areas in North Cotabato: Barangay Balabag, Kidapawan City (part of Mt. Apo National Park) and Cotabato Provincial Forest and Ecotourism Park (CPFEP), Brgy. Amas, Kidapawan City. Conservation status and endemicity of bats were also determined. A total of 449 individuals of fruit bat fauna (Family Pteropodidae) were captured and identified. These belong to eight species in which three were endemic to the country and one threatened species (*Megaerops wetmorei)* were noted.
Between the two sites surveyed, CPFEP had a higher number of fruit bat species recorded (87%). The abundance of fruit bearing trees and its low altitude compared to Balabag may account for the abundance of bat fauna in the area. The most abundant species is *Cynopterus brachyotis*, which accounted for 59% of the bats captured. Findings also revealed that *Ptenochirus* sp., (which was probably *Ptenochirus minor*) was 27% of the captures in Balabag while *P. jagori* with *Rousettus amplexicaudatus* were 10% of the captures in Amas. Considering the importance of fruit bats in regenerating forest, urgent conservation measures are highly recommended.

Keywords: Fruit bats, Conservation Areas, North Cotabato, abundance, Megaerops wetmorei, endemic species, threatened species

THE PRE-SPANISH ENVIRONMENTAL HISTORY OF PANGASINAN, PHILIPPINES

Irene A. De Vera
Pangasinan State University Binmaley Campus Binmaley, Pangasinan

ABSTRACT

Concern about the environment is a global phenomenon. Looking at the local level, the province of Pangasinan environmental problems and issues persist because humans and technology have become so widespread and potent. In the next few decades, the province' environment and inhabitants will drastically change. It is in this light that there is a need to recall the province' environmental history, and to take preventive action to preserve its environment in support of sustainable development. Environmental history surely goes back to the origin of humanity. The lack of environmental wisdom and appropriate action throughout centuries and during the preSpanish period has had enormous impact on the province' environment. The information that could be learned from this study can be used effectively to help Pangasinan people make the fundamental changes needed to build a province that can sustain many generations of Pangasinense with a decent standard of living while minimizing human impact on the natural environment.

Pangasinan was called by Chinese traders as Sanfotsi Kingdom in early 13th century. It covered the present areas of Zambales, some part of Bulacan, Pampanga, Tarlac and La Union. Early settlers were Negritoes and Austronesian migrants. The Austronesians, seasoned travellers of the ocean (travelled in convoy to distant parts of the world), brought with them some plants and animals, art, culture, religion and even agricultural technologies like kaingin which up to now is widely practice in the province.

Some Austronesian migrants settled linearly along the coastal areas called Luyag ed Panag-asinan, and others in clustered settlement in the interior part of the province following the headwaters of now called Agno, Toboy-

Tolong (Sinocalan), Angalacan, and Bued rivers. The interior portion was called Luyag ed Caboloan. Salt-making was done along the coastal shores hence, the place called, Panag-asinan while Caboloan where bamboos abound. The constant interaction, trading of these two kingdoms through exchange of goods, and gradual expansion of population displaced the Negritoes to western portion of Sanfotsi called Zambales
The two kingdoms depended on the land and resources they have which made them expert of their chosen crafts. The Panag-asinan were skilled in boat-making, salt-making, fishing, and drying fish. They exchange their goods to Caboloan people and other foreign traders. The Caboloan people were expert in land cultivation and forest product gatherings. Rice and other crops, honeys, bamboo products and others were transported to Panag-asinan area through dugout boats made of palomaria or bitaoi.
Aside of the serene seawater and smooth grayish sandy shore, the province was considered a major and most wanted trading center because of the honesty and hospitality of the Pangasinan people to the Chinese and other Asian traders.The Pangasinan people's concept of land use, resources, and ownership was one of sharing the land and resources with gods, ancestors, kindred, and future descendants. Hence, their dead ones were buried with gold and other valuable belongings mostly under the ground of their bamboo made houses called alulong or in caves and cliffs.

The land and resources – Panag-asinan and Caboloan people relationship can be regarded of strong but inverted relationship. The people slowly but progressively modified the environment, its land and resources through trading, innovations, technologies and even arts and culture.

Keywords: Sanfotsi Kingdom, Luyag ed Caboloan, Luyag ed Panga-asinan, Pangasinan

WATER QUALITY AND POLLUTION IN CAMATIAN RIVER (QUEZON PROVINCE): A TRIBUTARY TO LAGUNA LAKE

Maria Luisa A. Enal, Ma. Joeylynn V. Magallanes, Ann Joy P. Quindoza, Shiela A. Babia, Jacquilyn A. Bañal, Florence C. Maranan, Fidesmarie A. Villenas and Wilma L. Comia
Southern Luzon State University, Lucban, Quezon

ABSTRACT

Lucban, Quezon has seven rivers that drain to Laguna Lake; Camatian River is one of them. The increasing population in the vicinity of Camatian River makes it and other tributaries exposed to rising environmental impacts brought by domestic and agricultural wastes. This study was conducted to assess the quality of water and pollution in Camatian River. Samples of epilithic algae were collected from three (3) stations in Camatian River from June to November 2008. Algal samples were analyzed for species abundance and diversity. Surface water was analyzed for physico-chemical parameters and coliform bacteria. Biological indices like algal pollution index and Shannon diversity index were also determined.
Results showed high levels of total and fecal coliform bacteria (2.0×10^7 and 1.4×10^7 MPN/100 ml sample, respectively), total dissolved solids (291 µS/cm), NO_3-N (1.63mg/L) and dissolved PO_4^- (0.98 mg/L) but low level of dissolved oxygen (4.46 mg/L).

Microscopic analysis showed that there were 32 algal species present in Camatian River, 19 were Bacillariophyta (59% of the population) with *Nitzchia palea* as the most dominant. For biological indices, it has high algal pollution index with 16-28 and low Shannon diversity index (1.404-2.349).
Parameters imply that Camatian River is moderately to heavily polluted. The quality of water threatens the remaining aquatic organisms and falls under Class D water body according to National Standards.
Data were presented to the Local Government Unit as baseline for the development of a comprehensive rehabilitation and monitoring program for Camatian River thereby reducing public health risk.

Keywords: water quality, pollution, Quezon province, Laguna Lake, epilithic algae

THE LAKE OF BAY IN HISTORY AND MEMORY

Dwight David A. Diestro
University of the Philippines Los Baños
College, Laguna

ABSTRACT

The Lake of Bay is literally in the contours of Philippine history as it lies in the heartland of the Southern Tagalog region. There is a strategic configuration that exists: the lake, Pasig River and Manila Bay. The paper aims to trace the historical trajectory of Laguna de Bay from its geological beginnings to the 1980s and 1990s when the Manggahan Floodway and Napindan Hydraulic Control Structure were constructed. The earliest written source on Philippine history is the Laguna Copperplate Inscription dated 900 CE. The Noli Me Tangere and El Filibusterismo have an unusual number of references to the lake because Dr. Jose Rizal, the Philippine national hero was from the lakeshore town of Calamba.
The government has paid attention to the social, environmental and political aspects of the lake. Legislation was enacted in the 1960s to form the Laguna Lake Development Authority. Numerous scientific studies have been conducted starting in the 1900s because of the collective desire to maintain the ecological harmony of the place. Power relations are evident in the management of any resource. Conflicts have been recorded among the users of the lake, for example the fishpen capitalists against the ordinary fisherfolk. Changes and continuities across time will be made prominent in the presentation.

Keywords: environmental history, Philippine history, Laguna de Bay

SALINITY TOLERANCE OF THE PROGENIES OF TWO RED TILAPIA STRAINS AT INCREASING SALINITY LEVELS

Jennie B. Fernandez, Sotero M. Aban
Pangasinan State University, Binmaley Campus, Binmaley, Pangasinan

ABSTRACT

The study was conducted to determine the salinity tolerance of the progenies of two Red Tilapia strains at increasing salinity levels, specifically, the study sought to determine the salinity tolerance in terms of survival.
The experiment which consisted of two treatments with four replications in a Completely Randomized Design (CRD) was conducted for 37 days in aquaria. Each aquarium was stocked with ten pieces of Red tilapia with size ranging from 5 to 10 grams. After acclimating the fish at 0 ppt for seven days in their respective test aquaria, the saline water was administered in the treatments via water to fish method to avoid stress. The interval of progressive salinity increase was 3ppt/day adapting Lemarie protocol.

Results showed that the median lethal salinity (MLS) of the two strains, Red Florida and Red Taiwan, were 70.02 ppt and 51.30 ppt, respectively. In terms of mean salinity tolerance (MST), the obtained values were 45.0 ppt and 34.38 ppt for Red Florida and Red Taiwan, respectively. The optimum salinity tolerance (OST) for Red Florida was 50.89 ppt while 32.43 ppt for the Red Taiwan. The median lethal salinity, mean salinity tolerance and optimum salinity tolerance were highly significant ($P<0.05$), indicating that there is a difference on the salinity tolerance of the two strains.

Based on the findings of the study, Red Florida strain are more saline tolerant compared to Red Taiwan strain.

Keywords: Red Florida, Red Taiwan, Salinity, Strains

FISHERIES RESOURCES OF DASOL BAY IN WESTERN PANGASINAN, PHILIPPINES

Armando C. Garcia, Sotero M. Aban, Cornelia E. Ibarra, Rene B. De Vera,
Rey S. Raguindin and Dante M. Mendoza
Pangasinan State University, Binmaley Campus,
Binmaley, Pangasinan, Philippines

ABSTRACT

The coastal zone of Dasol Bay covers an area of about 18,570 ha and of this, 84% is designated as the municipal fishing ground while the other 16% is allocated for seaweed culture and other sustainable uses. The registered number of commercial fisherfolks is 40 who operate 4 commercial fishing vessels in the bay while 1,320 municipal fisherfolks were registered operating 650 motorized and 20 non-motorized boats. A survey was then conducted to determine the fisheries resources of Dasol Bay in terms of the type of fishing gears used and the species composition of marine fishes caught by the fisherfolks.

Ten fishing gears commonly used by the fisherfolks in Dasol Bay were identified and these include gill net, hook and line, trawl net, fish traps, spear without compressor, spear with compressor, scoop net, drive-in net, muro-ami and long line. Gill net was found to be the most commonly and the most frequently used by the fisherfolks in capture fishing. Survey showed that the peak season for fishing is Dasol Bay is from January to May and from October to December. In these said months, fishing is favorable even for deep-sea fishing because of the calmness of the sea. A total of 70 species of marine fishes are found in Dasol Bay belonging to 13 families, namely: Leoignathidae, Carangidae, Scombridae, Serranidae, Labridae, Belonidae, Hemiramphidae, Exocoetidae, Istiophoridae, Balistidae, Theraponidae, Nemipteridae, and Siganidae.

Many of the fisherfolks consumed 10-12 hours of fishing, others spent 4-6 hours and some spent 7-9 hours while very few spent fishing for 13-17 hours. Almost all of the fisherfolks go fishing in the evening 5-7 days a week. The catch per unit of effort of most of the fisherfolks ranges from 1-10 kg of small to medium-sized fish per trip using gill net while 30-200 kg per trip for those using long line, and hook and line in catching tuna and other big fishes and squid.

Key words: marine fishes, fisheries resources, fishing gears

SEAGRASS RESOURCES OF DASOL BAY IN WESTERN PANGASINAN, PHILIPPINES

Armando C. Garcia, Sotero M. Aban, Cornelia E. Ibarra, Rene B. De Vera,
Rey S. Raguindin and Dante M. Mendoza
Pangasinan State University, Binmaley Campus,
Binmaley, Pangasinan, Philippines

ABSTRACT

The coastal municipality of Dasol has eight coastal barangays which are abundant with seagrasses. These seagrass beds serve as breeding/spawning ground of commercially important marine fishes and invertebrates. Resource inventory and assessment showed that three coastal barangays, namely: Macalang, Petal and Hermosa have sandy-muddy substrate with 80-88% seagrass cover that are in excellent condition, while the coastal barangays of Amalbalan, Malacapas and Uli have muddy substrates with seagrass cover ranges from 60-96% that are in good to excellent condition. The other two coastal barangays of Tambobong and Osmeña with substrate that is sandy have 56-71% seagrass cover that are also in good condition. This results indicate that muddy and sandy-muddy substrate are suitable for seagrass growth.

Seven species of seagrasses were identified from Dasol Bay which include Thallasia hemprichii (dugong grass), *Syringodium isotifolium* (syringe grass); *Halodule uninervis* (fiber-strand grass), Halodule pinifolia (fiber-strand grass), Enhalus acoroides (Tropical eel grass), Cymodocea serrulata (toothed- seagrasses, and Cymodocea rontudata (round-tipped seagrass. It was observed that barangay Hermosa has the widest seagrass area 27.20 ha, followed by Barangay Tambobong with 1678 ha. Barangays Macalang, Malacapas, Uli and Osmeña has seagrass areas of 7.50 ha, 4.32 ha, 2.35 ha and 0.90 ha, respectively.

Key words: seagrasses, bay, muddy substrate

PESTICIDE RESIDUE ANALYSIS OF COMMON SOLANACEOUS GREEN LEAFY VEGETABLES IN BAGSAKAN CENTERS OF KORONADAL AND TACURONG CITIES, PHILIPPINES

Erlindo P. Lalisan, Junito P. Marcelino, Ph.D
Sultan Kudarat State University
Lutayan Sultan Kudarat, Philippines

ABSTRACT

A study on pesticide residue analysis of common solanaceous green leafy vegetables in bagsakan centers of Koronadal and Tacurong cities, Philippines was conducted to analyze and calculate the extent of pesticide contamination of these leafy vegetables sold in those market outlets from December 2011-January 2012. Cabbage (Brassica oleracea), Chinese cabbage (Brassica rapa), pechay (Brassica cheninses Linn), jute (chorchorus olitorius)and swamp cabbage (ipomoea aquatica) samples were taken and tests for pesticide analysis was conducted at the Office of the Provincial Agriculture (OPAG), Koronadal City .
The concentration of organophosphorous pesticide residue for graded common leafy vegetables from bagsakan centers of Koronadal and Tacurong cities showed a significant difference based on their computed means. However ungraded common leafy vegetable samples from bagsakan centers of Koronadal and Tacurong cities showed no significant difference based on their computed means.

On the other hand, concentration of organophosphorous pesticide residue for graded leafy vegetable samples taken from bagskan center of Koronadal City showed significant difference based on their computed means at three consecutive market day interval while there was no significant differences for ungraded leafy vegetables. Similar trend of no significant differences in the concentration (in ppm) of organophophorous pesticide residue for graded and ungraded common leafy vegetable taken from bagsakan center of Tacurong City based on three consecutive market day interval.
All vegetable samples analyzed contain organophorous pesticide residue. However, analysis revealed that the level (ppm) is below the standard residue limit set by FAO and WHO. Hence, these common green leafy vegetables are still safe for consumption. Consumers have the option to buy them or to grow or produced their own vegetables to ensure that these are safe for consumption without pesticide residue contamination.

DIVERSITY, DISTRIBUTION AND IMPLICATION FOR CONSERVATION OF FRUIT BATS (MAMMALIA, CHIROPTERA, MEGACHIROPTERA) IN NASIPIT, AGUSAN DEL NORTE, PHILIPPINES

Neil Jun S. Lobite, Sheryl L. Paz, Msc.
Bachelor of Science in Biology, Caraga State University, Ampayon Butuan City, Caraga State University,

ABSTRACT

Nasipit represents a potentially important site for several fruit bat species since it is still largely forested but no reliable information is available for the assemblages of fruit bat species in the area. The five month study (June–November) undertook mist netting to assess fruit bat species composition, abundance, geospatial distribution and conservation status of fruit bat species present and provide relevant ecological observations to underpin future conservation action. Seven species were found in the area representing 28% of the total Philippine fruit bat fauna. Most abundant species were *Cynopterus brachyotis* and *Ptenochirus jagori* comprising over 68% of Nasipit fruit bat assemblage. The low relative abundance of the vulnerable *Megaerops wetmorei* (1.40 bats/meter-hour) and the presence of three endemic species *Haplonycteris fischeri, Ptenochirus jagori* and *P.minor* implied conservation value of the area. The results suggest that Nasipit needs conservation attention to minimize habitat destruction for bats especially for the endemics and threatened fruit bat species including forest loss and anthropogenic disturbances e.g. illegal logging, land-use changes and hunting. A long term study on bat and habitat relationships will yield more information on trends in the diversity, distribution, and abundance of Nasipit fruit bats and in attaining proper bat conservation strategies.

Keywords: Chiroptera, Diversity, Bat conservation, Nasipit fruit bat, Nasipit.

BIOSORPTION OF DRY BIOMASS OF ASPERGILLUS ORYZAE AND PENICILLIUM CHRYSOGENUM

Joefrhym D. Merillana
University of Southern Mindanao,Kabacan, Cotabato

ABSTRACT

Aspergillus oryzae and *Penicillium chrysogenum* were used as test organisms in this study. They were tested to determine their biosorption capability using chromium, lead, and mercury. Biosorption process was carried out in varying time interval (1st and 4th hour) and biomass dose (100mg and 500mg). Result shows that both test organisms were capable of biosorbing chromium, lead, and mercury. Effect of both biomass dosage and varying time interval in biosorption differs in fungal species. Maximum uptake of chromium, lead, and mercury by *P. chrysogenum* were 71.2 mg/L, 67.52mg/L, and 62.4 mg/L respectively. On the other hand, biosorption of chromium, lead, and mercury by *A. oryzae* were 68.6mg/L, 69.2mg/L, and 44.7mg/L respectively.
Furthermore, statistics revealed that *P. chrysogenum* is more efficient compared to *A. oryzae.* The ability of both fungi to biosorbed heavy metals such as chromium, lead, and mercury can possibly be used for waste management particularly for water treatment.

Keywords: biosorption, fungi, Penicillium chrysogenum

ENVIRONMENTAL FACTORS ON THE GROWTH OF JATROPHA AT POTORONO VILLAGE YOGYAKARTA INDONESIA

M. Nurcholis, S. Sumarsih, Rr. R. Brotodjojo and D. Haryanto
UPN "Veteran" Yogyakarta Jl. Lingkar Utara Condongcatur Yogyakarta, 55283. Indonesia

ABSTRACT

Jatropha curcas is included as perennial crops, and it had been understood by Indonesian people since more than seven decades as a plant producing renewable biofuel. At the present decade, plants producing biofuel are expected to be developed to overcome the lowering nonrenewable fuel reserves. There are a myths that jatropha may grow well on the marginal lands and draught condition, good performance plant on the non fertile soils, no need agronomic management and it resistances to all plant pests and diseases.
The present study was conducted to identify the environment factors that influenced the growth of jatropha at marginal land on Potorono village, Yogyakarta Province. Jathropha was already planted by local people on the village road sides and on the marginal land field at the local governmental land of this village. They grew jatropha on these areas with the purpose was to prevent the competition to area for foodstuff crops.
The results showed that the growth of jatropha was restricted by low content of organic matter, plant nutrition and the worst soil drainage. Applications of manure and macro nutrients (N, P and K) to this crop were able to increase the crop performance. There were shown that the amounts of shoot, flower and fruit bunch were increase by manure and nutrients treatments. Result of the field observation shown that there were identified several kinds of the plant pest, such as *acarina*, *scutellarids*, grasshopper, and mealy bugs, that attacked the plant leafs and fruits. There were plant leaf necrotic symptom also observed that was attacked by pathogenic fungi. Accordingly, jatropha is like the general plants that needs a good agro-ecological condition to grow well and producing large amount of jatropha fruit.

Keywords: jatropha, marginal land, plant nutrition, pests, diseases

CORTICOLOUS LICHEN SPECIES AT SOUTHERN LUZON STATE UNIVERSITY COLLGE OF AGRICULTURE, LUCBAN, QUEZON, PHILIPPINES

LEO L. PASTOR[1] AND AMALIA E. ALMAZOL
Southern Luzon State University, Lucban, Quezon

ABSTRACT

The study was conducted to determine the corticolous lichens at Southern Luzon State University—College of Agriculture, Lucban, Quezon. Specifically it sought to determine the species composition, Importance Value, Distribution and Species Diversity.
Results of the study revealed that a total of nine species were identified comprising of 3,900 individuals belonging to eight genera and five families. *Phaeograpina* sp. dominated the lichen of the area in terms of its number of individuals, its cover or the basal area they occupied and high frequency of occurrence. Clumped distribution was observed and a diversity of H' = 0.751 considered as low.

Keywords: lichens, importance value, species

THE ROLE OF WEEDS IN SPREADING VECTOR OF PEANUT STRIPE VIRUS (PSTV)

Mofit Eko Poerwanto, Siwi Hardiastuti Endang Kawuryan
Universitas Pembangunan Nasional "Veteran" Yogyakarta, Indonesia

ABSTRACT

Peanut stripe virus (PStV) is the most impediment disease in citrus production in the world. It mainly vectored *Aphis* sp. Intensive application of insecticides is ineffective and also costly. Various weeds species in peanut plantation area are suggested as alternative host of vector. Research on the preference of *Aphis cracivora* on the various weeds is needed for completing the integrated PStV disease management program. Five dominant weeds gained from vegetation analysis were arranged randomly in circular fashion inside the nylon mesh cage, and 50 *A. cracivora* adults, which previously starved for 24 hours, were released in the middle arena. The position and number of *A. cracivora* were recorded daily (24 h). Analysis of variance and DMRT were done on data. Most of *A. cracivora* stayed for feeding on *Cyperus iria* (71.20%) and were able multiply their population up to 347,60 in day 17. It was significantly different to *Pertulaca oleraceae* (22,00%), and also to *Boerhavia erecta* (6,80%), *Digitaria longiflora* (0,00%), and *Oxallis barrelieri* (0,00%), which the population of 63.20, 45.80, 0.00, and 0.00 in day 17 respectively.

Key words: preference, alternative host, Aphis cracivora

ZONING A PROTECTED AREA: THE CASE OF MT. MANTALINGAHAN RANGE PALAWAN ISLAND, PHILIPPINES

Lita B. Sopsop
Western Philippines University, Aborlan, Palawan

ABSTRACT

This paper contains the results of the quick floral survey in Mt. Mantalingahan Range, Palawan Island, Philippines with the main goal of assessing the optimal shape/zone of protected area.
A survey was carried out in the periphery of the forest in the pre-identified 4 barangays of the 4 municipalities in south Palawan (*i.e.* Bgy. Pulot Interior, Sofronio Española; Bgy. Maasin, Brooke's Point; Bgy. Inogbong, Bataraza; and Bgy. Campong Ulay, Rizal) following the Variable Transect Method for Rapid Assessment of Tropical Plant Communities.

The periphery of the forest in Mt. Mantalingahan Range had diversified flora of at least 351 species distributed to 214 genera and 92 families. Floral species endemism was remarkably high of at least 57 species of which 10 are only found in Palawan. The area had high number of rare species with narrow habitat range. Economically important species were abundant while many species in the different threatened categories based on IUCN criteria wre found in the periphery of Mt. Mantalingahan.

This mountain range can be considered as one of the most important sites in Palawan Corridor for conservation and the best and strictest measures should be done to prevent any degradation of such a rich genetic resource. Based from the different criteria used in choosing the priority area for protection, Rizal obtained the 1st rank, followed by Bataraza, Sofrono Espaйola, then by Brooke's Point.

Key words: Flora, priority area for protection

THE PREVALENCE OF THERAPEUTIC INJECTIONS IN ETHIOPIA: FROM THE PATIENTS' AND HEALTH CARE PROVIDERS' PERSPECTIVES

NasirTajure Wabe, Azeb Zewdie
University, Jimma

ABSTRACT

Administration of therapeutic injection is among the most frequently performed medical procedures in the healthcare sector. Most of the injections are unnecessary, ineffective or inappropriate and result in transmission of infectious disease. The aim of the study was to determine the prevalence and perception of the patients and health care providers of therapeutic injection. A descriptive study where data was collected from inpatient, outpatient and health care providers was conducted from February to March 2010 in Holeta town. A structured questionnaire for patients and health care providers was designed to assess the frequency and perception of patients of the therapeutic injection use. The data was edited and were entered in Epi Info Version 6.0 and analysis was conducted using statistical package for social sciences (SPSS) version 16.0.

A total of 200 patients, 10 health care providers were participated. Eighty four (42%) of the patients preferred injection for their illness. Twenty three (31%) patients believed that injections were quicker acting than oral medications. Seventy five (37.5%) of the patients thought that injection was more effective than other dosage forms, while 83 (42.5%) said injection and other dosage forms were equally effective. Most (93) of the patients (46.5%) thought that unsafe injections could transmit a fatal disease, 62 (31%) did not know any risk associated with inappropriate injections, and 55(24.5%) thought that used needle could not transmit disease. The health care providers believed that diseases which were better treated with injection medication were pneumonia, tonsillitis, urinary tract infection, tuberculosis, acute febrile illness, meningitides and severe pain. The study revealed that the frequency of the therapeutic injection use in health facility was low. Most people, in general, do not have preference for injection. Most of the study participants were aware that HIV infections could be transmitted through contaminated sharp tools. However, health education to the community should be given to further increase the awareness of the people about HIV. The main reasons reported for prescribing injection were severity of illness and when the patient cannot take oral medications. Training of health workers on rational prescribing should be promoted.

Keywords: Ethiopia; health care providers; perception; therapeutic injection

COLIFORM CONTENT OF SHELLFISH (*Anadara antiquata*) IN DAVAO GULF

Rosie Lynn P. Tejada
Davao del Norte Stat College , New Visayas, Panabo City

ABSTRACT

Davao Gulf is very rich of marine resources utilized for food consumption or sources of livelihood particularly in the coastal waters of cities of Panabo and Tagum, Davao del Note, and Pantukan, Compostela Valley. Among these resources are the bivalve shellfish likes clams, gastropods, oysters, cockles, scallops and geoducks which are filter feeders that accumulates contaminants in the shorelines. Usually, these shellfish are contaminated by water borne infectious diseases that are transmitted through a fecal-oral route deposited on land surfaces that became detrimental to human health most especially to consumers in the Gulf. Among these causal pathogens noted affecting the bivalves was *Escherichia coli* and other coliform bacteria found in bodies of water.

The coliform counts in clam, *Anadara antiquata,* collected from the three sanctuaries of shellfish in Davao Gulf have exceeded the critical limit of 230 MPN/g. In the coastal areas of cities of Panabo and Tagum, Davao del Norte where the coastline was highly populated got 240 MPN/g, likewise, in Pantukan, Compostela Valley, where the counts of the *E coli* was very high but mostly found in the estuary and near mangrove areas of the community with 460 and 240 MPN/g, respectively.

Further, the total colony count of coliform in *A. antiquata* from the three sites of the study was generally high. Highest count of coliform was in Panabo City at 2,688 followed by shellfish obtained from Tagum City with 2,642. The lowest colony count of 1,590 coliform was taken from shellfish gleaned from Pantukan.
The length, weight, and meat weight of shellfish was found negatively correlated with the total colony count of coliform but the length of shellfish could best predict the total colony count of coliform. Moreover, the physico-chemical parameters in three coastal communities of Davao Gulf was within the optimum limit for the survival for microorganisms in the body of shellfish.

Key words: Anadara antiquata, coliform, sanctuary

MULTILOCATIONAL FIELD TESTING OF THREE MANILA HEMP (*Abaca*) VARIETIES IN SOUTHERN MINDANAO,PHILIPPINES

Florence Lasalita-Zapico, Catherine Hazel Aguilar, Jaime Namocatcat, Joey Real Marie Barbosa, Deocyth Sarsalejo and Sittie Rokaiya Banisil
Mindanao State University-Fatima, General Santos City 9500 the Philippines

ABSTRACT

Varietal adaptability of three abaca (Musa textilis L. Née) varieties (Maguindanao, Tanggonon and Bongolanon) was tested across three locations in Southern Mindanao utilizing five yield-related agronomic characters – height, suckering ability, percentage survival, base and tip circumference of stalks. ANOVA revealed no significant differences for variety, location and (GxE) interaction, suggesting that these varieties exhibit wide range of adaptability to diverse local agro-ecological conditions.
Factor analysis via principal component analysis (PCA) resulted in the extraction of three factors, where the first factor (F1) accounted for 98% of total variance observed in the data set, while F2 and F1 were disregarded due to their low discriminating power. ANOVA and factor analysis further underscored the similar adaptability of the three abaca varieties to conditions in the study sites suggesting their growth responses had a very strong genetic component. Results strongly support the recommendation of the Philippine Fiber Industry and Development Authority (FIDA) for a widespread cultivation of these three varieties in Mindanao.

Keywords: Manila hemp, abaca, multilocational testing, adaptability

ETHNOGRAPHIC ACCOUNTS ON THE USE OF MEDICINAL PLANTS OF ALBAY, PHILIPPINES

Ida F. H. Revale
Bicol University,Legazpi City

ABSTRACT

An ethnobotanical study was conducted from June, 2010 to June, 2011 in randomly selected barangays of the province of Albay. This study aimed to investigate the medicinal plants utilization and preparation practices by the herbolarios. Information was gathered from 20 informants coming from 3 districts of Albay province, and were randomly selected using snowball respondent identification.

The 34 medicinal plants identified were sambong (*Blumea balsamifera*), Buyo (Piperbetle), artamisa (*Artemisia vulgaris*), Abokado (*Persea americana* Mill), Tuba (*Jatropha curcas*), bayabas (*Psiduim guajava*), Sampalok (*Tamarindus indica),* Oregano(*Coleus amboinicus Lour),* Tanglad (*Cymbopogon citratus* (L) DC*),* Banaba (*Lagerstroemia speciosa* (L) Pers*),* Puli *(Justician gendarussa),* Anonang*(Cordia dichotoma)*, Malunggay *(Moringa oleifera),* Papaya *(Carica papaya),* Cacao (*Thebroma cacao),* Atis (*Annona squamosa), Talanisog (Tabernaemontema pandacaque), Makahiya (Mimosa pudica),* Alagaw *(Premna odorata blanco),* Sweldan/Pobreng kahoy *(Euphorbia tirucalli),* Tala-onod *(Ercyles amboinensis),*Yerba Buena *(Mentha arvensis*), Kamantigue *(Impatiens balsmina),* Kalabasa *(Curcubita maxima* Dushene*),* Mansanilya *(Chrysanthemum indicum), and* Abaca*(Musa textilis).*

From the survey on medicinal species used by the Healers to treat 20 ailments,14 are consider minor ailment ("surep", pasma, bone fracture, loose bowel movement, fever, cough, gas pain ,Insomia, joint pain ,inflammation, *kulibra*, stomachic ,wounds and rheumatism and (6) are major ailment like Tuberculosis ,Urinary Tract Infection, Chest pain, High Blood, Appendix, kidney disorders.

The medicinal Plants used by herbolarios belongs to 21 families, 19 orders and 24 genera. Identifying growth forms are 10 tress, 6 herbs, 4 shrub , 2 vines and 1grass.The most frequently utilized plant part was the leaves (88%) followed by the stem bark (21%), fruits (8.33%), seeds (4.16%) whole plant (4.16%)and sap (4.16%).

Poultice is the most frequently use preparation (63%), followed by Decoction (43%), Infusion (17%), Liniment (4.16%), and Raw-eaten plant part (4.16%).Most of the administration route are oral and external.

BIO-PHYSICAL CHARACTERIZATION OF THE COASTAL WATERS OF BACON DISTRICT, SORSOGON CITY, PHILIPPINES

Ida F. H. Revale /Arnelyn D. Doloiras
Bicol University, Legazpi City

ABSTRACT

The coastal waters of Bacon District, Sorsogon City characteristically supports more production of the marine organisms because of the diverse plankton community and good water physical characteristics. There were twenty-one different species of phytoplanktons and eight species of zooplanktons identified and taxonomically classified. The phytoplanktons identified belonged to six phyla – Bacillariophyta, Ochrophyta, Ciliophora, Dinophyseae, Prasinophyta and Cyanobacteria. *Amphisolenia bidentata* is the most abundant of the phytoplankton species and *Acanthocyclops robustus* is the most abundant zooplankton. San Juan has the most diverse plankton community, and the abundance of phytoplanktons in the area supports more production of marine organisms, since planktons are indicators of a healthy and productive bay.

The physical characteristics of the sea water surrounding Bacon District such as salinity, pH, temperature, turbidity and conductivity complied with the standards set by DENR-EMB in DAO-34. Normal growth of aquatic bios-systems are observed and is likewise favored by the water quality, however, this marine habitat is so fragile that any alterations to this aquatic environment including the observed optimum condition of such environment will render them unfavorable for both aquatic organism and to the inhabitants residing the island. There is a need to sustain the management of the marine sanctuary in the area so that the richness of the marine resources is maintained. While there is the presence of mariculture in the area, there should be constant counter monitoring of the water quality for sustainable development.

ASSESSMENT OF THE COMMON AND ENDEMIC MEDICINAL PLANTS USED IN VARIOUS HOUSEHOLDS OF ALBAY, PHILIPPINES

Ma. Teresa A. Mirandilla, Ph.D. /Elizabeth P. Abalon
Bicol University, Legazpi City

ABSTRACT

Bicol region is considered as one of the poorest regions in the Philippines. However, in terms of biodiversity, the region is considered as one of the richest areas in the entire country because of its mountain ranges which are home to various species of flora and fauna. Also, the region is rich in traditional practices when it comes to alternative medicines. This research aimed to conduct diversity assessment of medicinal plants and to gain insight on the distribution of traditional health knowledge in the province of Albay. The study was conducted in the three districts. Each has two sampling areas, one rural and one urban, with three barangays each representing the three ecological zones namely, upland, lowland and coastal. A total of 540 respondents were interviewed from the 18 sampled barangays.

Modified Line Plot Method was employed to determine the diversity of medicinal flora and ecological indices were calculated to compare the different sampling sites. The three most important species include *Musa paradisiaca* (batag), *Colocasia esculenta* (natong/apay)and *Mangifera indica* (mangga). In terms of biodiversity, ANOVA showed highly significant difference among the three districts. Pairwise comparison revealed that the First District emerged as the most diverse having recorded a total of 190 species of medicinal flora compared to the 170 and 119 species identified in the second and third districts, respectively. On the other hand, 5 out of ten households surveyed use *Blumea balsamifera* (lakadbulan) which is considered as the most commonly used medicinal plant in the province. Other most commonly used species were oregano, lagundi, anonang and bayawas.

UTILIZATION DOCUMENTATIONS OF THE MEDICINAL PLANTS USED BY HEALTH PRACTITIONERS OF ALBAY PROVINCE, PHILIPPINNES

Jean Annette S. Ibo
Bicol University College of Nursing

ABSTRACT

This study provides insights about the health practitioners' utilization of medicinal plants in the province. It will likewise generate information that could improve or strengthen the use of medicinal plants for the prevention and treatment of common ailments thus making health care services affordable, accessible safe and effective.

The respondents were the health practitioners who are assigned in health units and centers namely the Barangay Health Workers (BHW), Barangay Nutrition Scholar (BNS), nurses and midwives. The areas covered of the research included a city and or a municipality from the three districts of Albay. Specifically it covered Tabaco City and Tiwi from the District 1: Manito, Dita and Puro for District 2; and Ligao City for District 3.

The health practitioners generally belong to middle adulthood to aged ranging from ages 40-80 years old. The nature of being a health practitioner of the respondents includes being a Barangay Health Workers (BHW), midwife, nurse and Barangay Nutrition Scholar (BNS). Many of the health practitioners are married, About 11.76% of the health practitioners is able to graduate in college and finished a diploma and vocational course. Beliefs and practices are usually affected by the educational attainment. The average monthly income of the health practitioners commonly range from less than 10,000 pesos. Television and radio are the most utilized communication media among them, 17.64% of them make use of cellular phone,

The health practitioners utilize medicinal plants and advocate its use in the management of common ailments in the community. The practices in the utilization of medicinal plants of health practitioners are majority based on folkloric. The health practitioners experienced problems and offered solutions relative to the use of medicinal plants in the management of common illnesses. The health practitioners are willing to enhance their knowledge and skill in the use of medicinal plants.

HYDROLOGIC FREQUENCY ANALYSIS OF RAINFALL IN REGION X- NORTHERN MINDANAO

Joy V. Lorin- Picar
Davao Del Norte State College
New Visayas. Panabo City
Davao Del Norte, Region XI, Philippines

ABSTRACT

This study was conducted to determine types of rainfall based on rate per precipitation, look into the highest seasonal percentage (%) variation, the trend analysis equation, probability of occurrence as well as the recurrence interval time based on computed probability. The study accounted the annual time series rainfall of Northern Mindanao, Region X in the last thirty (30) years (1979-2008) obtained from Philippine Atmospheric Geophysical and Astronomical Services Administration (PAG-ASA X Station), Cagayan de Oro City.

Results revealed that in the last 30 years, there is an increase occurrence of moderate, heavy, very heavy, and extreme types of rain. For moderate rain there was a 60% increase occurrence; 200% increase occurrence for heavy rain; 5.6% increase occurrence for very heavy rain and 12.94% increase occurrence for extreme rain. This suggests there are more runoff incidents to be expected in the coming years which would eventually cause more flashfloods in the region.

It was observed that from 1979-1988, the actual rainfall exceeded more than 400mm^3 than the expected normal rainfall with the highest seasonal % variation ranging between 10-20%. The trend equation defined a positive trend. The succeeding 10 years, 1989-1998 showed greater rainfall 500mm^3 in the actual curve. It has a positive trend equation with an increment of 16.5 The last ten years showed the highest trend equation with a factor of 20 which means that rainfall trend has increased twenty more in the last ten years.

Generally, the hydrologic frequency analysis revealed that the three (3) decade maximum rainfall has a recurrence interval of 31 years with a probability 0.03 (3.23%). Its lowest maximum rainfall has a recurrence interval of 1 year with probability 0.97 (96.77%). However, it was noted that the both most and least maximum rainfall in thirty years is classified as **extreme rain**. This further suggests that possible run offs will occur in the coming years

.
Therefore, it is strongly recommended that the concerned local government unit will take precautionary measures in order to prevent catastrophic damages within the region. Since this area is located with coastal vicinities, intensive environmental protections shall be made.

DIVERSITY OF MEDICINAL FLORA IN THE PROVINCE OF ALBAY, LUZON ISLAND, PHILIPPINES

Phil V. Morano
Bicol University
College of Science, Legazpi City

ABSTRACT

Bicol region is considered as one of the poorest regions in the Philippines. However, in terms of biodiversity, the region is considered as one of the richest areas in the entire country because of its mountain ranges which are home to various species of flora and fauna. Also, the region is rich in traditional practices when it comes to alternative medicines. This research aimed to conduct diversity assessment of medicinal plants in the province of Albay. The study was conducted in the three congressional districts. Each has two sampling areas, one rural and one urban, with three barangays each representing the three ecological zones namely, upland, lowland and coastal.

Modified Line Plot Method was employed to determine the diversity of medicinal flora and ecological indices were calculated to compare the different sampling sites. The three most important species include *Musa paradisiaca* (batag)*, Colocasia esculenta* (natong/apay)and *Mangifera indica* (mangga). In terms of biodiversity, ANOVA showed highly significant difference among the three districts. Pairwise comparison revealed that the First District emerged as the most diverse having recorded a total of 190 species of medicinal flora compared to the 170 and 119 species identified in the second and third districts, respectively.

ASSESSMENT OF ECOLOGICAL HABITAT OF DEAGAN ISLAND, MAGCARAGUIT, DIMASALANG, MASBATE, PHILIPPINES

Prof. Ronnel R. Dioneda Sr., Anne Retuerma-Dioneda,Aurea Borromeo, Skorzeny De Jesus
Bicol University, Legazpi City

ABSTRACT

The three ecological habitats namely coral reef, mangroves, seagrass/seaweeds are present in Deagan Island. The benthic lifeform of the island revealed a range from poor to fair coral cover condition. Soft corals abound in the area rather than the reef building corals. Fishes in coral reefs were also seen but not in enormous quantity.

Dense community of mangrove was also noted in the southeastern part of the island. The species present belong to genera Rhizophora and Avicennia genera. Rhizophora species dominated the mangroves observed both in terms of basal area, density and frequency. Sapling and seedlings were also dominated by the two Rhizophora species in all stations.

Thirteen (13) species of seaweeds were identified, six belong to Family Chlorophyta, four under Family Phaeophyta and another three from Family Rodophyta. The biomass estimates of seaweeds as indicator of

health of marine grazing areas as revealed that *Sargassum, Halicoryne* and *Turbinaria* had the highest biomass both in wet and dry respectively.

Six (6) species of seagrass belonging to two (2) families were also found and identified. The biomass estimates of seagrass showed that *Haludole pinifolia* had the highest wet and dry biomass followed by *Cymodocea rotundata*. The rest of the species showed very minimal contribution to the estimated wet and dry biomass.

The coastal ecosystem of Deagan Island and the whole area of Barangay Magcaraguit are diverse and comparably better than its counterpart in many assessed parts of Bicol, however, with the poor social and economic conditions, there is however serious threats to these rich ecosystem. Destructive form of fishing is becoming community-based in practice, promoting strong tolerance to these destructive forms of fishing.

STATUS OF MANTAYUPAN RIVER ECOSYSTEM

Alfredo C. Neri, Virgie P. Wee, Glenn B. Hoyohoy
Cebu Technological University
Barili Campus, Barili, Cebu

ABSTRACT

The Mantayupan River is among the most important source of water in Cebu, Philippines. This study was conducted to evaluate the physico-chemical, and microbiological characteristics of its ecosystem and monitor the uses of its water. The descriptive research method was used.
Results showed that Mantayupan river's water quality index (WQI) indicated only a "medium or average water quality" at the source spring and way down the river channel during dry season. In rainy season, the river's WQI scaled a "good water quality" at the source spring and water falls but declined to "medium or average water quality" at its downstream. These indicate that bathing or any recreational water contact activity is safe only during wet season at the source spring down until the Mantayupan falls but not after and until the downstream.
The denser population of coliforms along the river indicated that Mantayupan falls is not even safe to bath and do any recreational water contact activity during both seasons.
Existing major water uses and water quality analyses showed that Mantayupan river still sustained its recent beneficial use for agricultural and industrial purposes. However, the threat to its domestic or tourism use and maintenance of its ecosystem is alarming.

Keywords: Water quality, river pollution, water uses, eco-tourism

Partnership

MANGROVE REHABILITATION BY COMMUNITY-BASED FOREST MANAGEMENT AGREEMENT (CBFMA) HOLDERS IN WESTERN PANGASINAN

Rene B. De Vera and Irene A. De Vera
Pangasinan State University Binmaley Campus Binmaley, Pangasinan 2417

ABSTRACT

This study evaluated the condition and characteristics of community of mangroves in mangrove rehabilitation sites by Community-Based Forest Management Agreement (CBFMA) holders in Western Pangasinan.
It was conducted in Anda and Bolinao, Pangasinan. The sites were chosen because of the on-going mangrove rehabilitation through CBFMA. Another reason for choosing these sites was that both on-site and off-site key informants were available in these municipalities. Also, there were no threats regarding peace and order in these areas. Purposive sampling with sample size of 20% of the total population was used in selecting the respondents. The respondents' levels of participation were determined with the use of survey type of questionnaire.

On the Condition of the mangrove rehabilitation sites (MRS) as habitats in Anda and Bolinao, three variables were considered to describe the condition of MRS as habitats in Bolinao and Anda in terms of the following namely: percent crown cover; number of regeneration per square meter; and average height.
Mangrove habitat condition of MRS in Awile, Anda was classified in good condition while MRS in Pilar, Bolinao, Victory, Bolinao and Tori-Tori, Anda were in poor condition.
On the Characteristics of Community of Mangroves (Resources) in Mangrove Rehabilitation Sites (MRS) in Anda and Bolinao, four variables were considered to describe the community of mangroves in the mangrove rehabilitation sites (MRS) in Bolinao and Anda in terms of species diversity indeces namely: species diversity, species richness, species dominance, and species evenness.
The low species diversity, richness, and evenness, and high species dominance indices of all MRS were attributed to the planting of not more than three mangroves species per quadrat in all sites.
The difference in species diversity of community of mangroves in mangrove rehabilitation sites (MRS) in Anda and Bolinao revealed that the probability of selecting mangrove species in all MRS in Anda and Bolinao were similar.

On the Level of participation of CBFMA Holders, the CBFMA Holders in Awile, Anda exhibited high participation, the rest with moderate participation. The participation by CBFMA holders in mangrove rehabilitation activities was important in increasing species diversity.
On the relationship between Level of Participation of CBFMA Holders and Species Diversity, the overall level of participation b y CBFMA holders in mangrove rehabilitation activities contributed positive effects to the mangrove species diversity.

The study recommends that there is still a need to rehabilitate the MRS. Rehabilitation through enhancement planting and planting different endemic mangrove species should be made to increase mangrove diversity and productivity in the MRS. Planting of mangrove propagules should be observed landward (toward the shores) and not seaward to avoid high tide and ensure high survival. Increasing the level of participation by the CBFMA Holders as well as encouraging non-members to join in the mangrove rehabilitation and maintenance should be done through intensive information, education and communication (IEC) by the CBFMA Officers with the support of the DENR, Dep Ed, SUCs and LGUs. A training needs assessment should be conducted for the CBFMA Holders by the DENR and LGU for the sustainability of the mangrove rehabilitation project. Further, there is a need to conduct similar study to confirm the findings.

Key words: mangrove rehabilitation, Community-Based Forest Management Agreement, species diversity

GENDER PARTICIPATION IN COMMUNITY BASED MANGROVE FOREST MANAGEMENT ALONG TAMBAC BAY, ANDA, PANGASINAN, PHILIPPINES

Nerda C. De Vera, Diana Cristina N. Item, Aeron Wilfred D. Ortega, and Irene A. De Vera
Pangasinan State University Binmaley Campus Binmaley, Pangasinan 2417

ABSTRACT

Gender participation in community based mangrove forest management is very crucial in bringing development in the coastal communities as well as in the country. This study investigated the participation of men and women in the Community Based Mangrove Forest Management along Tambac Bay of Anda, an island Municipality of Pangasinan.

The study was conducted in barangays Poblacion, Macandocandong, Awile and Toritori with a total of ninety-nine (99) officers and members of the organized People's Organizations. The survey type of interview was used in conducting the primary data gathering.
With the aid of SPSS (Statistical Package for the Social Sciences) software program the researchers were able to answer the specific objectives. For objectives no. 1, 2, 3 and 4, determine the number of men and women holding elected positions in community based mangrove forest management (CBMFM) organization; identify men and women's reasons in joining CBMFM; and determine the level of attendance and participation of men and women in the CBMFM activities, frequency counts and percentages were used. The level of attendance and participation made use of three point scale. Attended more than three times and high participation were given a score of 3; attended two or three times and moderate participation were given a score of 2; and attended once or not and less participation, a score of 1. The Chi-square test was used in objective no. 4, correlate demographic and economic variables with the level of participation of men and women in CBMFM activities.

Out of ninety-nine PO, 23.3% were from Awile, 28.3% Macandocandong, 14.1% Poblacion and 34.3% Toritori. Majority of the PO were 60.6% male and 39.4% female. Majority of them were in middle age with 69.7% and 92.9% married. Monthly income of the PO ranged mostly from P 1, 000 - 3, 999 only because of low educational attainment. Based on the findings most of the PO were Roman Catholic.
The CBMFM organizations prepared CBMFM plan which was approved by Department of Environment and Natural Resources. The CBMFM plan includes the following activities: a) CBMFM planning in terms of meetings, seminars, and workshops; b) nursery establishment activities i.e nursery site selection, nursery site planning and establishment, selection of mangrove species, selection of nursery workers, propagule collection, treatment and storage, potting, fertilizing, disease and pest control; c) plantation establishment activities i.e formulation of aims of plantation, planning and designing of plantation, cleaning of plantation site, spacing measurement, holing or marking and planting; and d) protection and maintenance activities i.e. removal of dead plants and debris, replanting, pest control, patrolling, and monitoring.
Most men were holding elected positions than women. Also, men were greater in number than women in the CBMFM organization membership. Men did not involve women in holding elected positions and memberships for domestic constraints. CBMFM planning in terms of meetings was the most attended by the respondents. Workshops and seminars were regarded time consuming. The reason most considered by men and women in participating CBMFM was planting for the next generation's use . Planting activity was the most highly participated by them. The reason for less participation by men and women in CBMFM activities was domestic constraints followed by health constraints.
As men and women become old, stay long in membership in the organization, and belong to a common religion, their level of participation increases in all CBMFM activities.
The study recommends that gender sensitivity need to be increased in all CBMFM organizations in terms of strengthening the IEC on role of men and women in community based mangrove forest management by the LGU, NGO and government agencies concerned. Time management and scheduling should be emphasized in the CBMFM organizations in order for members to appreciate the value of planning in terms of seminars and workshops and supporting the CBMFM activities. A system and a standardized scheme particularly on monetary

incentives in all CBMFM activities should be prepared by officers in cooperation by agencies concerned. Involve young generations in the CBMFM for them to appreciate sustainability of their parents' undertakings. There is a need to conduct further study on social differences of men and women to further appreciate development and sustainability of a program or project. Further, there is a need to conduct similar study to confirm or validate the findings.

Keywords: gender participation, Community Based Mangrove Forest Management, domestic constraint

USING TRISECTORAL APPROACH TO SOLVING PHILIPPINE WASTE DISPOSAL PROBLEM

Li Jia
University of the Philipines,Diliman
ABSTRACT

The Philippines has a garbage problem that is not in consonance with Republic Act (RA) 9003 which calls for the best environment practice in ecological waste management. The National Waste Management Commission shows that there are 1,000 open and controlled dump sites (National Solid Waste Management Commission) existing in the country in areas such as Rizal, Baguio City; Mindoro Oriental; Cagayan de Oro, Iloilo City and Laguna. Such is illegal under the RA since landfills and open dumps account for 34 percent of human-related methane emissions to the atmosphere and fuels global warming gas that has 23 times more heat-trapping power than carbon dioxide.

The reason for this scenario is that the Philippine government as well as individual local governments throughout the country is incapacitated to implement a ecologically appropriate waste disposal system. It is therefore postulated that new approaches be explored for sustainable solutions to address this. Tri-Sectoral Partnership is one of these frameworks. This involves process of bringing the three key institutions of society—government, business and civil society—together to address how they can collectively bring about comprehensive sustainable solutions to complex problems. These allow them to raise their differing perspectives, strengths, and resources to a higher level to advance comprehensive sustainable development in the country.

The paper aimed to explain how the tri-sectoral partnership approach can be applied in finding a sustainable resolution to the garbage problem of the Philippines. Qualitative in nature, the paper gathers the participation of representatives of the three sectors and their individual capacities. The results of the paper details the specific capacity of the three sectors: government, business and civil society, and the scope of activities on capacity building, management, review and sustainability of their collaboration towards the endeavor.

Keywords: Tri-sectoral partnership, Government, Garbage problem

ROLE OF NON-GOVERNMENTAL ORGANIZATIONS (NGOS) IN DISASTER MANAGEMENT: THE CASE OF DARAGA, ALBAY

Antonio Santos
Department of Social Sciences, CAS ,UPLB

ABSTRACT

In 2004, a powerful typhoon lashed out the Province of Albay wreaking havoc to both persons and property in several towns. One of the severely hit towns is Daraga. In light of the calamity, several individuals, groups and

other entities, both public and private responded to the call for assistance and rehabilitation of the affected victims.
This paper focuses on the role played by non-governmental organizations, ranging from local to international, to the succor of the victims in the town of Daraga. It purports to have a closer look at some selected NGOs, both local and international and weigh and analyze the role they have played in alleviating the impact of the disaster to the town of Daraga.

DEAGAN ISLAND: RETRACING ITS HISTORY, DOCUMENTING HEALTH REMEDIATIONS, UNDERSTANDING FAMILY RELATIONS AND GENDER ROLES IN AGRICULTURE AND FISHERIES

Angelo P. Candelaria, Ramil C. Chavenia, Ida H. Revale, Guilbert O. Oraye, Amelia A. Dorosan, Laarni D. Pancho and Emilio C. Valenzuela[2]

Bicol University,Legazpi City

ABSTRACT

This paper aims to document local traditional activities on a minimum set of data base on women as well as men's roles in the communities of Deagan Island in Dimasalang, Masbate. This is to fully understand the background on how Deaganons relate to their surroundings. Traditional knowledge as an important input to management is based on the premise that local folks hold vital experiences and knowledge and since management inevitably involves them both as direct beneficiaries and partner, this knowledge should find harmony with scientifically backed up management approach. Some experts call this marriage of culture and science in natural resource management. The study intends to do an inventory and documentation of some local knowledge in fisheries, farming, health remediation, rituals, governance, education, language and beliefs. This in a way would give a cultural view of the households in the island.

Field observations and the qualitative approach to data collection were utilized. Survey of key informants was administered in selected areas of the island using a purposive sampling to gather information. Focus group discussions were also applied to gain insights and deepen understanding of the culture of the residents and to determine the validity of the information generated. An analysis of secondary data from the information derived from various sources like the Department of Agrarian Reform Provincial Office, the Provincial Environment and Natural Resources Office and the Local Government Unit of Dimasalang was also conducted to give and in-depth analysis of the socio-political and cultural conditions of the area. The information derived from the data gathering techniques applied were subjected to a descriptive examination relative to the objectives of the study.

The interview and focus group discussions with the households of the island revealed how the community was first established in the early 1930's from which came the first batch of island inhabitants now occupied by at least 1,210 individuals. From this historical account of Deagan, it could be concluded that the Deaganon culture is structured by various influences brought about by the change of administratorship of the island. Health remediation also showed the very diverse culture on how the Deaganons practice health care together with the accompanying concerns affecting them.

Family relations play a vital role in the life of every resident, as most are closely-knit as revealed by the interviews. Deagan is relatively peaceful; people try to help each other in times of difficulties. A typical Deaganon family is God-fearing and most of the time very dependent to the support of other members especially the father as head and sole breadwinner.

Farming in Deagan seems to be an alternative activity. However, today, fish catch is just enough for their family's daily consumption, which leave them becoming idle most of the time. While some have the options to either fish or till their farm, mostly are hard up and tend to derive income from other sources. Despite the local

knowledge generated on agriculture and fisheries, the women are often neglected and overlooked as recipients of the transfer of technology.

Keywords: Local/Traditional Knowledge

INDIGENOUS KNOWLEDGE IN FISHING: ITS EFFECT TO COASTAL RESOURCES AND ITS ADAPTATION TO CLIMATE CHANGE

Lilibeth S. Galvez/Jannette C. Estioca /Luzelyn C. Traya
Mati City, Davao Oriental

ABSTRACT

This research is a qualitative study that documents the indigenous knowledge (IK) in fishing of the four coastal barangays in Cateel and Baganga in Davao Oriental. It presents the indigenous fishing methods, beliefs and practices as observed by the Mandaya in the area. It also shows the communication approach used in the transmission of this IK and discussed their adaptation on the climate change. Data Gathering employs the semi-ethnographic approach which are key informant interview (KII) and focus group discussion (FGD).

Profile of the fourteen (14) informants shows that most of them are only elementary level, aged between 35 to 75 years old; mostly males since they are whose who are indulged in fishing; most of them are married, and they all belong to the Mandaya tribe. Some of them are also indulged in alternative livelihood when fishing is not possible due to seasonal change.

Production of fish varies according to the fishing gear used. Most of them can catch 10 kilos up to 50 kilos a week depending also on the kind of fishing boat. Seasonal calendar shows that fishing is not possible all throughout the year, since there are months in a year where they cannot fish due to big waves and scarcity of fish catch, while there are times of the year when fishing is possible since seas are calm and these are the months where fish are also abundant.

Informants agreed that most of the indigenous fishing methods have low effect to coastal resources. However, illegal/fishing methods/gears such as dynamite, compressor, chlorine and decis (pesticides) are still used by some fishers who want to have voluminous catch but destroying the coral reefs, *lusay* (sea grasses) and *katunggan (*mangrove).

Some of the IK practices have adapted to climate change; such as during northeast monsoon, they still can catch fish as seas become calm nowadays. Fishers adapted to changes of climate by wearing jackets and sunglasses to protect themselves from extreme heat of the sun.

RED TIDE: THE CASE FOR SORSOGON BAY

Michael Montealegre,/Charmaine Malonzo,/Ida Revale,/ Ma. CrispinaBaltazar,/ Nera Galan,/ Noemi Madrid,/ Ma. Corazon Barrameda,/ Eden Ante, /Anne Retuerma,/ RonnelDioneda,/ Phil Morano,/ Ma. Bernadette Bongais,/ Magdalena Bobier,/ SalvacionTabo, /Carlos V. Cortes Jr.,/ Joseph Dechavez,/ Emmer Beltran,/ Psyque Denso,/ Jeff Cañada

Bicol University, Legazpi City

ABSTRACT

Since 1983 harmful algal blooms (HAB) or commonly known as red tide has recurred several times in Sorsogon Bay. The latest episode of poisoning started in September 2006 and overextended to the present inflicting hundreds of Bicolanos with poisoning cases with more than 20 fatalities of different ages. It is the longest and most crippling of all HABs that happened in the baycaused by the plankton *Pyrodiniumbahamense var. compressum (pbc).* It displaced many fishers and wasted the multi-million shellfish industry.

Bicol University attempted to understand the red tide phenomenon of Sorsogon Bay with an ultimate goal of finding holistic strategy to mitigate its harmful effects.This report covers the findings of the studies while integrating the information gathered to create a meaningful analysis of the status of red tide in Sorsogon Bay.

The plankton *PBC* has been the dominant species to cause red tide in the bay. From 2008 to 2009, the highest population density of the bloom has recurred starting September to December when temperature was noted to decrease while there is the abundance of nutrient sources and heavy clay-silt deposits observed along the coast. Toxin analysis of contaminated shellfish were observed to peak during those months. Poisoning cases were recorded high from Casiguran and Sorsogon City by consumption of known contaminated shellfish. Water and sediment analyses suggest population of *pbc* accumulates in the southeast of the bay in accordance with the velocity driven by monsoons and current fields.

Environmental Governance

SUSTAINABILITY OF MAGINDANAWN UPLAND RICE FARMING SYSTEM IN COTABATO PHILIPPINES

Dr. Zainudin M. Adam, Dr. Onofre S. Corpuz
Cotabato Foundation College of Science and Technology

ABSTRACT

The study was undertaken to determine the sustainability of the Magindanawn upland rice farming system in Cotabato, Philippines. The study was conducted along the Rio Grande de Mindanao covering four municipalities: Carmen, Kabacan, Matalam and President Roxas, all of Cotabato, Philippines. Sustainability was measured using the following indicators: ecological friendliness, social justice/equity, cultural acceptability, economic viability, and technological soundness. Results showed that sustainability of the Magindanawn upland rice farming was rated moderate. Farm size, tenure status and farm income were found to have significant relationship with sustainability. Also, access to agricultural information was the farming support factor that was significantly associated with sustainability while crop pest incidence and soil fertility were the biophysical factors that significantly correlated with sustainability of Magindanawn upland rice farming. Moreover, cropping patterns, harvesting, drying and rituals were the farming practices found to be significantly associated with sustainability of upland rice farming.Farm income, crop pest incidence, educational attainment and access to agricultural information were the significant predictor of Magindanawn upland rice farming sustainability in Cotabato Philippines. The pressing problems identified by were farm to market roads and mobilization of different agencies to cater to the pressing needs of the Magindanawn upland rice farmers. Resolution of these problems was claimed to help attain peace and order because these are the key in the holistic development in the area.
Keywords: Sustainability, ecological friendliness, social justice, cultural acceptability, economic viability, and technological soundness.

SOLI-SOLI AND CASSAVA AS A FESTIVAL EMBLEM AND AS AN AGRICULTURAL RESOURCE OF CAMOTES ISLAND, CENTRAL PHILIPPINES: THEIR STATUS, PROCESSING AND PROPOSED CONSERVATION OPTIONS FOR SUSTAINABILITY

Berenice T. Andriano ,Serapion N. Tanduyan(*) and Ricardo B. Gonzaga
Cebu Technological University, San Francisco Cebu Campus

ABSTRACT

Soli-soli (*Typha latifolia*) and Cassava (*Manihot esculenta*) were taken as names of the festivals of San Francisco and Tudela of Camotes Islands, Central Philippines. This was made due to the numerous uses of soli-soli in San Francisco and the numerous uses of cassava of Tudela where the inhabitants valued them much. Soli-soli plant was converted into bags, belts, caps, and mats where tourists usually buy them because of their unique material (the soli-soli). Soli-soli festival is done every third Sunday of March in San Francisco where it depicts the soli-soli plant which abounds around lake Danao and a freestyle street dancing competition using the soli-soli plant as the dominant material for the costumes of the participants. Cassava festival in the Municipality of Tudela is a yearly celebration of the bountiful harvest of the plant every 8th of December each year. This time the farmers display their various cassava-based products and share varied technical experiences in producing and processing of cassava. These two festivals are visited and watched by the tourists and the local governments of the two municipalities are developing projects of the two resources for its sustainability and conservation and as the focus of the social activities for tourists' attraction.

Keywords: Soli-soli, Cassava, festival emblem, Camotes Islands,Philippines

ALTERNATIVE WATER FACILITY MANAGEMENT SYSTEM OF CEBU TECHNOLOGICAL UNIVERSITY-MAIN CAMPUS

Reylan G. Capuno
Cebu Technological University-Main Campus Cebu City

ABSTRACT

The study was conducted at Cebu Technological University-Main Campus, Cebu City. It assessed the Cost Benefit of Alternative Water Facility Management System. Descriptive method particularly survey research was employed in this study. Questionnaires were given to 40 school personnel and 120 students by purposive sampling for evaluation. It was found out that majority of the respondents used the MCWD water with an average monthly consumption cost of 80,510.43 pesos. The school did not have an alternative water facility in which the respondents are aware on its uses and importance. The total cost benefit of Alternative Water Facility for one year was 250, 064.06 pesos. It has significant reduction on the water consumption cost. Based on findings, the university does not have an alternative water facility. Having been using the MCWD source more often than the deep well source, the University expensively allocated in water consumption cost. Conversely, the appropriate and efficient use of the alternative water sources would reduce the water consumption cost of the University. It is recommended that the University should not solely depend on MCWD water source; adequate supply of water should be provided to the University populace; alternative Water Management System should be appropriately implemented.
Keywords: alternative water facility, cost benefit

ENVIRONMENTAL DIMENSIONS AND LIVELIHOOD PRACTICES of BADJAO OF SURIGAO CITY, PHILIPPINES

Prof. Carlos H. Donoso
Surigao State College of Technology,Del Carmen Campus , Surigao City, Philippines

ABSTRACT

This study aimed to determine the environmental dimensions and the livelihood practices of the Badjaos in Surigao City. This also determined the profile of the respondents, and measured the significant difference on the practices of the respondents when grouped according to their profiled variables. Data were collected from 82 respondents using a researcher-made questionnaire. Results were analyzed and interpreted using appropriate statistical tools like Frequency Count and Percentage, Mean, One-Way Analysis of Variance (ANOVA), and Scheffe' Test.Most of the Badjaos in Surigao City are uneducated, do not have large family because their sources of income or living are unstable. They have no capacity to own a house, no toilets for waste disposal and less concerned about the environment. They have a stable culture like performing rituals asking permission from the spirits but do not give offerings to the them. They fish, dive for coins, excavate , extract corals and other seashells but refrain from illegal use of dynamites. They do not practice reforestation nor participate in social gatherings. They respect the rights of other people, do away from using deadly weapons, and avoid abusive language. Educated Badjaos are more concerned with environment and their sanitation. Those who are living near the sea have good health because of improved sanitation practices. Those who graduated in Elementary only have more stable cultural and spiritual practices and more concerned with peace and order than those who are much educated or less educated. Also, those who do not have a house are perpetuating their culture better than those living in junk materials. Those who are living farther the sea are concerned of their cultures better than others.

Keywords: Environmental dimension, Livelihood practices, Badjao, Environment, Coastal

SUSTAINABLE RESOURCE MANAGEMENT IN ANCESTRAL DOMAINS AND LANDS

Li Jia
University of the Philipines,Diliman

ABSTRACT

The Philippines is hailed in Southeast Asia for being at the forefront of recognizing the rights of the country's estimated ten to twelve million indigenous people. This is embodied in the Indigenous Peoples' Rights Act of 1997, currently being implemented by the National Commission on Indigenous Peoples.
Indigenous Peoples are descendants of original inhabitants of lands that boasted of rich cultures… before they were ravaged by colonizers". This resistance against colonial occupation by the tribal Filipinos is viewed as a struggle to maintain their cultural identity and dignity through the years as distinct peoples. As a consequence, their ancestral domain and territories located in remote mountain areas greatly helped in maintaining their distinct identity from the Filipino majority.
Pampanga, Philippines is a home of more than 17,600 of indigenous people (data from National Commission of Indigenous People Region 3 survey). Much known as "AYTA" tribe, normally located in the mountainous portion of the province. Nevertheless, given the natural calamities brought about by climate change that have recently overwhelmed several cities and provinces in the region, questions have been raised with respect to sustainable natural resource management especially for vulnerable groups such as indigenous peoples communities who thrive on natural resources in their ancestral domains.

The paper explored how changes in the environment today have impacted indigenous people's access to natural resource vital to their existence in their ancestral domains and lands. The parameters of the evaluation in their domains includes housing settlements, access to water, hunting grounds and farm lands for livelihood. The study was qualitative in nature with a participation of around 490 youths from the communities of Bucaran, Malabni, Tirya, and Sampalok communities. Data was gathered through the use of research questionnaire and interview guide translated in the dialect of the tribes and implemented through the assistance of local translators.

The analysis shows that the "Aytas" has been greatly impacted by relocation from their ancestral domains and lands which have prevented from living off the natural resources for their livelihood. Majority of the "Aytas" are living in occurrence of poverty. Basic necessities like food, potable water, livelihood, health provisions and education are unavailable. In view of this, the indigenous peoples have to hike further up the hills and some have to resort their means of living elsewhere. They have expressed that the natural resources that use to sustain them in their domains has already been depleted and they cannot live off their land like they used to. They also express that local traders whom they engage in trade take advantage on their plight. This was attributed from not having enough education and skills that makes them susceptible to exploitation.

Keywords: Sustainable Resource Management, Ancestral Domains, Land, Aytas

DEVELOPMENT OF SOLID WASTE RECOVERY MODEL FOR A UNIVERSITY USING SYSTEM DYNAMICS

Ryan B. Laytani, M.Eng.
University of Cebu Sanciangko St., Cebu City, Philippines

ABSTRACT

A solid waste recovery model for University of Cebu is developed using system dynamics. The model focuses on cyclical cause-and-effect relationships about the solid waste system in the university. Dynamic behavior of three recovery policies is analyzed in the model using field information and justified assumption. A software

package called Vensim® is utilized in designing modeling structure, mapping formulated equation, and performing computer simulation. Vensim® is also used in generating graphics illustrating the system's behavior during the first 10 years of policy implementation, i.e. 2012-2022. Time-series graphs suggest policy 3 (Recycling and Composting) are most appropriate to be implemented in the university. Such policy sets the least amount of residual waste and greatest amount of solid waste management fund savings in the entire phase of simulation. The study recommends some improvement measures about the SD model that specifically aimed in building more comprehensive modeling structure and achieving more reliable simulation result. Initial strategies about implementing policy 3 are further recommended and addressed to the university's decision makers, i.e. providing a strong foundation in managing such policy, adopting an institutional goal of developing environmental programs, and upholding a core value concerning environmental stewardship.

Keywords: Composting, materials recovery facility, recycling, solid waste management, system dynamics, vermicomposting

GENDER PARTICIPATION IN MITIGATING CLIMATE CHANGE IN ARGAO, CEBU, PHILIPPINES

Edgardo P. Lillo, Steve Michael T. Alcazar
Cebu Technological University, Argao, Campus

ABSTRACT

The study aimed at obtaining information about gender participation in the mitigation and adaptation of climate change in Argao, Cebu Philippines.
The result shows that 65.33% of the information was taken from the wife who has an age bracket of 41-50 years old. Moreover, 50% of the respondents have reached and graduated from high school. Most of this respondent (38.67%) was house keeper and 16% are farmers. The respondents have stayed in the area for almost 31-40 years. Furthermore, the respondents have a household size of 1-5 or 69.33% and 95% were already working.

Majority of the respondents get their main income from farming (52%). Only 28% were members of the organizations and mostly in women's organization and senior citizen. The result also shows that 89.33% of the respondents were conducting tree planting and 100% were doing cleaning the environment. However 68% are still doing burning of garbage. The result also signifies that most of the respondents have already knowledge about climate change (85.33%). Wherein the female provide greater concern to the environment compared to male. This environmental related activity includes planting of trees with 50% and 25% from cleaning the area, and 22% from no burning of garbage.

The result revealed further that there is a significant difference between the relationships of gender and its participation to related environmental activities.

Keywords: climate change, gender, participation, argao. Mitigating climate change

ASSESSMENT OF GENDER ROLE IN FARMING SYSTEM AMONG MAGINDANAWN TRIBES

AbdulkadiL M. Makalin, Dr. Onofre S. Corpuz, Dr. Zainudin M. Adam, Dr. Lumina L. Cabilo
Cotabato Foundation College of Science and Technology, Cotabato

ABSTRACT

This study was conducted to determine the gender role in farming system among Magindanawn tribes in President, Roxas, Cotabato using Focal Group Discussion (FDG) and interview guide.
Survey on the socio-demographic characteristics reported that 40% of the respondents were 41 years old above, 20% were 21-40 years old and the remaining 10% were age range 26-35 years old. Majority of the respondents were married women. The semi-annual gross income of the respondents were PhP6,000 to PhP7,000 which were very low and cannot sustain their daily basic needs. The number of siblings of respondents were 60% range from 1 to 5 and 40% (6 to 10 children). Majority of them (65%) were only elementary level. All the respondents had a farm size of 1 to 2 hectares (untitled) with typical house made of round wood and cogon roofing.

Result of FDG and interview on mono cropping revealed that50% of the respondents were planting corn crops. Sixty-five percent practicing rice-corn intercropping. For plantation crops, 60% were planting coconut. Boundary planting of cassava, seasame, banana and gmelina were also practice by the respondents.
For farming activities, land preparation such as slashing (85%) done by male, burning of plant residue (60%) done by male, plowing (70%) done by male, harrowing (80%) done by male. Planting operation; farrowing (80%) done by male, seed sowing (100%) done by women, basal application of fertilizer (65%) done by women farmers.
In farm maintenance, it was revealed that weeding (70%) were done by women, farrowing (85%) done by male, fertilizer application (70%) done by women, pesticide and herbicide application (90%) done by men respondents.
During harvest,(85%) were done by women and product transportation (80%) done by the male respondents.

Keywords: Magindanawn, farming system, farming activities, intercropping, boundary planting, mono-croppingr

ESTABLISHMENT OF COMMUNITY-BASED MARINE PROTECTED AREA (CBMPA) AT SITIO RECUDO, BRGY. YOOK, BUENAVISTA, MARINDUQUE: A PEOPLE'S INITIATIVE ON THE CONSERVATION OF MARINE AND OTHER RESOURCES

Doreen R. Mascarenas
Marinduque State College, School of Fisheries, Banuyo, Gasan, Marinduque

ABSTRACT

This paper discusses the issues, status, management plans and the lessons learned from establishing the Community-Based Marine Protected Area (CBMPA) at Sitio Recudo, Brgy. Yook, Buenavista. The establishment of this MPA is only a part of the Municipal Integrated Coastal Resource Management Program (MICRMP). This CBMPA was established through legislations and being managed by the Local Government Units (LGUs) at the municipal and barangay levels, in collaboration with national government agencies, like DENR and BFAR, academic institution like MSC, and people's and non-governmental organizations (POs and NGOs). The concerned sectors are using this as a tool to ensure the sustainability of the conservation of marine and other resources with strong support from political leadership and community participation.

Keywords: Community-Based Marine Protected Area, Municipal Integrated Coastal Resource Management Program

WASTE MANAGEMENT AT THE AUTOMOTIVE SHOPS IN METRO CEBU

Pedro Y. Quemada and Cecilio S. Baga
Cebu Technological University, Main Campus

ABSTRACT

The Automotive Repair Code of Practice is a regulation for managing the proper disposal and containment of automotive wastes such as petroleum products; also regulated are heavy metals and wastes such as grit and sand. It is a mandatory requirement for automotive and small engine repair businesses in the region. Automotive repair includes all collision and mechanical repair shops, boat motor repair shops, service stations, oil change, auto detailing and engine washing stations, vehicle dealerships and recycling operations. This study aims to assess the waste management practices of the different Automotive Service Shops in Metro Cebu. The study employed descriptive method of research using the researcher-made questionnaire as the main instrument in data collection. As perceived by the respondents, most of the all-service shops had no formal trainings or seminars on waste management and environmental laws, contrary to the new car dealer shops, 100 percent had undergone formal training and indicated the availability of waste management facility and equipment. Automotive service shops employed waste management practices like collection, segregation, storage, treatment, disposal and recycling. However, treatment of waste was not fully utilized due to the presence of garbage collectors and waste treatment facility in the community. The production of more hazardous wastes of all service shops could be attributed to its service category of catering service and repair for old and used vehicles, thus partial awareness of the respondents in the compliance with environmental laws indicates a failure on the part of implementing agencies in providing needed information about waste management and environmental laws. In order to intensify the implementation of environmental laws, a law must be enacted making it a requirement for every establishment to submit an approved waste management system before issuing them a license to operate.
Keywords: Automotive shops, Metro Cebu, Philippines

INDIGENOUS RICE FARMING SYSTEM IN LIGAWASAN MARSH, MINDANAO PHILIPPINES: A CONSERVATION TECHNIQUE FOR CLIMATE MITIGATION

Dr. Harris M. Sinolinding, Dr. Onofre S. Corpuz, Ph.D
CFCST-Arakan Cotabato

ABSTRACT

The Ligawasan Marsh in Mindanao with an area of 288,000has. is a home to hundreds of thousands of Magindanawn tribes whose basic means of livelihood is wild fishing and indigenous rice farming. This study assessed the indigenous knowledge system (IKS), and conservation practices in rice farming and the sustainability of the marshland for climate mitigation. A peaceful co-existence was preserved between the barangays and traditional religious and the Bangsamoro mujahedeen leaders to enable residents to work in unity amidst some diversity. An exclusive open access and rights to control over accessibility and utilization of the marshland was highly practiced.The physico-chemical properties of the marshland were within normal range, indicating that the area remains an ideal habitat for fish and other aquatic resources.
The overall level of sustainability: ecological soundness, cultural acceptability, social justice, economic viability and technological appropriateness were rated moderate. This indicates that the marshland has gained some degree of degradation due to the occurrence of natural calamities and centuries of utilization by the residents.
A sustainability framework was put forward to strike a balance between the socio-economic, bio-physical environment, IKS, and laws to enhance sustainability of the Ligawasan for climate management.

Key Words: Indigenous Knowledge System, Climate management, Conservation, Sustainability

ISLANDNESS", AS A FORM OF LIVING AMONG HOUSEHOLDS IN GASPAR ISLAND, TRES REYES ISLANDS, MARINDUQUE

Virginia M. Sotto Ed.D.

ABSTRACT

Marinduque is an island with peripheral islands that are inhabited by people. It has about 15 islands and islets, but five of them have existing communities. One of them is the Gaspar Island, the biggest amongst the three islands that composed the Tres Reyes Group of Islands. What puzzled us was why the people live in the island with very limited resources and far from development? The study was focused on the social structure of the 67 households in the island, their concept about "islandness" and their development outlooks in the island.

The study involved series of fieldworks between 2007, 2008 and 2009 applying six focused group discussions, six story circle sessions, six participant-observer approaches and four oral history sessions. Results revealed that the households have mean age of 40, the eldest was 72 years old; mean residency of 36.57; household size of seven; majority are considered as tenants, despite their forefathers started living in the island, mean income of Php 160.45 per day, mostly from farming and fishing; majority are elementary school graduate; 20% of the children are malnourished and majority of their homes are made of light materials available in the island.

The islanders defined "islandness" in the following descending order: peacefulness or tranquility, poverty and solidarity or belongingness, simple way of life but fight for their rights over the island, hardship and survival, remoteness, limited resources, isolation and indigenous technology. Their preferred development concerns in descending order are as follows: freshwater supply, autonomy in governance, resource management, education, medical services and related knowledge, handicraft livelihood, decent shelter and electricity, ecotourism, comfort room and postharvest facilities.

Keywords: Gaspar Island, islandness, Marinduque, Nissology, social

RANGELAND MANAGEMENT IN SAGARMATHA (MOUNT EVEREST) NATIONAL PARK AND BUFFERZONE, NEPAL: SOCIO-ECONOMIC PERSPECTIVE

Thakur Prasad Upadhyay, PhD, Khem Raj Bhattarai, PhD
Lakehead University Thunder Bay, Ontario Canada, Department of Plant Resources, Kathmandu, Nepal

ABSTRACT

Prudent management of rangeland ecosystem under changing climatic and socioeconomic variables has direct implications for conservation of biological diversity and promoting local livelihood in a biomass based subsistence economy of Sagarmatha(Mount Everest) National Park and Buffer Zone (SNPBZ). This study aims at analyzing the integrated rangeland management issues of SNPBZ taking into account the socioeconomic and cultural factors and their interdependence to rangelands as well as potential risks and uncertainty. We employed qualitative sociological study approach and logical reasoning method to explore the case, and found the livelihood of communities in SNPBZ is strongly connected with rangelands from historic time.

We found a significant reduction in snow-capped land area between the years 1976 and1996; an apparent impacts of climate change. This has brought down the community in the region to a significant vulnerability, thereby exposing the rangeland system to a greater risk and future disaster.

The field evidence suggests that the management of rangeland has not been in line with scientific bases coupled with socio-economic factors as yet, and the incorporation of socio-cultural and economic factors as well

asrisk and uncertainty in future rangeland management plans for SNPBZ in an integratedgovernance framework can prove to be a win-win situation for both the localcommunities and the government entities. We found a dire need for further detailedlong term studies on rangeland productions under various risk and uncertainty scenarios, and their impacts on local economy for the improved decision makings andsustainability of the rangeland in the future.

Keywords: Climate change impacts, integrated framework, livelihood, rangeland production system, risk and uncertainty

PERCEPTION, AWARENESS AND ADAPTATION STRATEGIES ON THE EFFECTS OF CLIMATE CHANGE IN SOUTHERN CEBU, PHILIPPINES

Eva A. Agbay
Cebu Technological University-Argao Campus, Lamacan, Argao, Cebu

ABSTRACT

The earth's climate has been changing regularly for millions of years but the climate change people talk about today seems to be different. It is the crisis the world is now experiencing. A survey was conducted to determine the perception, awareness and adaptation strategies on the effects of climate change to 240 households in southern Cebu. Results revealed that majority of the households are aware of climate change.. They perceived that climate change is the occurrence of earthquake, extreme hot temperature, landslide, heavy rain, floods, strong typhoons, drought, rise of sea level, hurricane, and drying of water sources. They claimed that climate change resulted to the increase of their cost of living, vulnerability to diseases, and low farm production and income. Amid new climate, farmer-respondents practiced crop-livestock integration, multiple cropping, intercropping, composting, contour farming, planting crops that withstand extreme weather conditions, and manual watering of plants during drought. Majority rely on radio, television, and people as sources of information. On disaster preparedness, households sported a positive outlook to surmount disasters through appropriate information and education. Access of information and proper education on environmental risks are important for the community's security. Hence, it is best to equip them with knowledge, skills, and equipment in managing situations during calamity.
Key words: climate change, adaptation strategies, environmental risks, calamity, information and education

SOLID WASTE MANAGEMENT IN THE PACIFIC AREA OF SOUTHERN LEYTE

Amelia Girly L. Aranas, M.P.A., D.P.A., Ph.D.
Cebu Technological University ,Cebu City

ABSTRACT

The study determined the existing practices in disposing solid wastes generated in Pacific Area of Southern Leyte. The descriptive method of research was used in this study. It described the types and volumes of solid waste generated in Pacific Area of Southern Leyte as to their level of perception of solid waste management disposal, generation of waste, present practices and the problems encountered by the populace.
Specifically, this study answered the queries on the types of solid waste generated from the areas of residential, commercial and agricultural areas; the extent of practices of waste implemented as to: collection, handling/transport and disposal; the degree of information and education campaign efforts of concerned agencies, and the problems encountered by the respondents in solid waste management.

The following observations were generated. As to extent practices of waste implemented in collection, transporting, and disposal when appropriate solid waste management practices were seldom observed. Information and education campaign efforts of concerned agencies were made. The functional element of Municipal Solid Waste was important. However, the existing solid wastes practices in the pacific area of Southern Leyte were partially accepted by the constituents. Therefore, the local government units have to come up with more information campaign and proper practices in solid waste disposal system.

The Environmental Practices of Eva Aetas: The Future Amidst Degradation

Chona Camille E. Vince Cruz
De La Salle University,Taft Avenue, Malate, Manila

ABSTRACT

The Eva Aetas are custodians of a degraded upland environment in Sitio Pita Bayan-bayanan, a small community on the edge of the town of Orion, Bataan, Philippines. Having lived there for seven decades, they have watched their ancestral land decay from a previously lush forest to barren grassland. Acknowledging the fact that they have played an active role in its degradation, the Eva Aetas have transformed their environmental practices in order to adapt to their situation. From crop choice to harvesting methods and ethnomedicine, they provide various means to maximize the minimal outputs of grasslands and possibly allow for its eventual rehabilitation. Current policies, based on the recommendations of the United Nations together with the Asia Indigenous Peoples Pact (AIPP) and the Indigenous Peoples Act of 1997 provide hope as to how their current situation could be remedied.

Keywords: indigenous environmental practices, degraded upland environment, environmental policies for indigenous peoples

SOCIO-ECONOMIC, ENVIRONMENTAL, AND LIVELIHOOD PRACTICES OF INDIGENOUS PEOPLE RESIDING IN THE VICINITY OF PARANG-PARANG WATERSHED, SURIGAO CITY, PHILIPPINES

Prof. Carlos H. Donoso
Surigao State College of Technology,Del Carmen Campus , Surigao City, Philippines

ABSTRACT

This study aimed to determine the environmental and livelihood practices of the indigenous people in the vicinity of Parang-Parang Watershed, Surigao City. This also endeavored to determine the profile of the respondents. The significant difference on the practices of the respondents when grouped according to their profile variables was also measured. There were 166 indigenous people in the vicinity of Parang-Parang Watershed, Surigao City who served as the respondents of the study. A researcher-made questionnaire was utilized to gather data from them. Results were analyzed and interpreted using appropriate statistical tools like Frequency Count and Percentage, Mean, One-Way Analysis of Variance (ANOVA), and Scheffe' Test. It was found out as revealed from their profile that the most respondents are living in the vicinity of Parang-Parang Watershed, Surigao City for less than 11 years, non – elementary graduate or uneducated, engaged in farming and making charcoal, have 2 or more members in the family, with unstable shelter. The respondents describes as Much Practiced their engaging in desirable activities for their health and sanitation, culture and religion, livelihood and peace and order. The indigenous people in the vicinity of Parang-Parang Watershed, Surigao City have settled in the place for quite a long time, do farming and make charcoal for a living, but they do not have stable shelter, uneducated, and have big family size. They have healthy and hygienic living. They also have rich culture and

are religious people. They are entrepreneurs in small-scale, used fertilizer for farming, and sorted trees that were down but they less engaged in reforestation, gold mining, and tree cutting. Farmers and beggars have better health and sanitation practices than those who do nothing for a living. Also, those who make charcoal are more inclined to observe their culture and religion than others; they also have better livelihood practices and peace and order practices than those who were engaged in doing small scale business. Those who are living along the watershed are less concerned to health and sanitation, culture and religion.

Keywords: Socio-economic, environmental, livelihood practices, indigenous people, watershed

CLIMATE CHANGE ADAPTATION AND FARM ECONOMICS IN HIGH AND LOW INPUT AGROECOSYSTEMS IN THE HIGHLAND BENGUET, PHILIPPINES

Abner O. Lawangen
University of the Cordilleras .Baguio City, Philippines

ABSTRACT

Climate change and adaptations became the focal concern of research among the scientific community because of its complex impacts to different ecosystems. Empirical evidences were gathered to understand and predict the consequences. However, most existing extrapolations of climate change impacts and adaptation economics represent a wide-scale-generalize analysis, which often misrepresent local-scale situations. Climate change impacts are geographically specific, thus, analysis should be similarly scaled. This study presents a local level analysis of climate change adaptation and its impact to farm economics among high and low input agroecosystems in the highland Benguet, Philippines. It investigates the adaptation and coping activities of local farmers in respect to their local resources and capabilities and analyzes its impacts to their economic yield.

Adaptation practices among high input ecosystems (HIEs) are more costly than low input ecosystems (LIEs) but with higher economic return. HIEs mostly focus on improving farm facilities and implements (water system, greenhouses) while LIEs managed to strategies their farm management (crop selection, crop diversification, altering cropping calendar). Comparisons of adaptation cost and its economic relevance between these two ecosystems determine the most suitable adaptations applicable to each ecosystem.

Keywords: climate change adaptations, climate change adaptation and economics, agroecosystem and climate change

SOLID WASTE MANAGEMENT PRACTICES IN CARCAR, CITY, CEBU, PHILIPPINES

Edgardo P. Lillo, Steve Michael T. Alcazar
Cebu Technological University, Argao, Campus

ABSTRACT

The study aimed to assess the Solid Waste Management Practice in Carcar City,Cebu Philippines. A self made survey questionnaires had been used in the study.

Result shows that majority of the respondents were the wife which has a percentage of 53.3%. Mostly they have an age ranges from 21-40 years old (60%) and most of them came from the barangay ocaña and bolinawan. These respondents were already married (76%) and graduated from high school (49.3%).

The respondents have a household size of 1-5 (56%) with 3 members working and helping the family in their living (96%). However, these respondents have only an income of 1000-5000 (62.7%), which mostly goes to the food procurement. The houses of the respondents were semi-concrete (58.7%). Each household has invested 1-5 appliances (88%) and were member of the senior citizen organization (42.7%).
Most of the respondents were practicing solid waste management particularly on segregation (55.6%). However these respondents encountered the following problem; the in availability of trashcans (31.6%), no proper dumpsites for garbage (28.4%), the availability of garbage trucks (28.4%), and less cooperation among the respondents (4.2%).

According to them the possible solution to the problem on solid waste management in the site was the cooperation among the community member and the availability of time in doing proper solid waste management (71.5%) and the project prioritization of the barangay/LGU. Based from the chi – square distribution there is a high significant difference between the income of the respondents and the respondents practicing the solid waste management

Keywords: solid waste management practices, carcar city, cebu.

ETHNOBOTANICAL USES OF OLAGAK **(*UVARIA* SP.) AND** APALANG **(*BARRINGTONIA* SP.) BY THE TAGBANUA TRIBE IN ABORLAN, PALAWAN, PHILIPPINES**

Eva Niña B. Lopez[1] and Mildred P. Palon[2]
[1]Western Philippines, [2]University ,Palawan Environmental and Ethno Research
Holy Trinity University, Puerto Princesa City, Palawan, Philippines

ABSTRACT

The Tagbanua tribe in Aborlan, Palawan Island, Philippines is rich in indigenous knowledge particularly the plants in their environment. Almost all of the plants within their ancestral domain are linked with their day to day activities.

Uvaria sp. (Olagak) and *Barringtonia* sp. (Apalang) are two of the most important plants by the Tagbanuas as the former is used to treat cough and colds while the latter is used to remedy fresh wounds, used as fish poison and as insecticide.

Results of the phytochemical analysis revealed the presence of alkaloids, flavonoids and tannins both for *Uvaria* sp. and *Barringtonia* sp. The distribution of such substances, however differs in the different parts of the plants.

Keywords: apalang plant, alkaloids, ethnobotanical uses, flavonoids, olagak plant, Tagbanuas, tannin

GOVERNANCE OF MPAS FOR EFFECTIVE ENGAGEMENT AND MANAGING STAKEHOLDERS: CASE STUDY ON THE AGOJO FISH SANCTUARY AND MARINE PARK IN CATANDUANES ISLAND, PHILIPPINES

Jimmy T. Masagca[1 2] , Sonia R. Vargas[1], Asuncion V. Asetre[1], Estrella T. Tribiana[1 2]
[1]Catanduanes State Colleges, Philippines, [2]Pacific Island Institute for Pedagogy, Technology, Arts & Sciences, Catanduanes, Philippines

ABSTRACT

The Philippines has emerged as a well-documented success story in the management of Marine Protected Areas (MPA) due to the achievements generated on community-based approaches to management. But looking into the benefits, there are several attempts to explain whether effectiveness is achieved in the context of conservation. This paper looks into how contextualization in the governance of an MPA in an isolated island in Bicol Region by focusing on effective stakeholder management and managing stakeholder inputs. Concepts on stakeholders' identification, engagement and inputs are discussed here. The paper ends with the presentation of the proposed and on-going programs and projects contributing the effective engagement of MPAs in this isolated island province in the Philippines.

Keywords: Marine protected areas (MPAs), stakeholders, fish sanctuary, Catanduanes

STATUS OF COMPLIANCE OF GASOLINE STATIONS IN LEYTE TO OCCUPATIONAL SAFETY AND HEALTH (OSH) POLICIES AND STANDARDS OF THE DEPARTMENT OF LABOR AND EMPLOYMENT (DOLE)

Edgar I. Peque
Eastern Samar State University,Borongan City, Eastern Samar

ABSTRACT

Compliance to Occupational Safety and Health (OSH) of gasoline stations in Leyte was assessed through the seven program components set by the DOLE-OSH national policies and standards between and among the identified variables.
This study covered 63 gasoline stations or employers and 388 employees who were assessed using a self-structured questionnaire. Results from the survey reveal that out of the seven program components constituting of OSH, the Fire Protection and Control confirmed a very high of compliance both from the employers and employees. Housekeeping show high compliance from the two respondents. Safety Training and Education and Inspection and Maintenance of Machines result a low of compliance from the two respondents. Safety and Health Management component shows difference in compliance between the two respondents with low from employers and very low from the employees. Personal Protected Equipment was observed very low of compliance from both employers and employees. Accident Records and Investigation revealed for having non-compliance from both respondents.

In conclusion, the study revealed that compliance to Occupational Safety and Health policies and standards of gasoline stations in Leyte is inadequate. From the seven components, only Housekeeping and Fire Protection and Control were shown with high and very high in compliance.

Keywords: Occupational Safety and Health (OSH) Standards, Compliance, Gasoline station

INDICATORS OF SUSTAINABILITY OF INDIGENOUS FOREST MANAGEMENT SYSTEM OF THE ITURKAW IN TINGLAYAN, KALINGA NORTHERN LUZON

Robert A. Rodolfo, Teodoro R. Villanueva,Arturo SA Castillo, Armando M. Palijon, Myrna G. Carandang
Kalinga-Apayao State College ,Bulanao, Tabuk City, Kalinga,University of the Philippines Open University,Los Baños, Laguna, Philippines

ABSTRACT

With heightened interest on the discussion of forest management brought about by climate change and the criteria and indicators of sustainable forest management in the international and national level, the study is intended to generate sustainability indicators which are simple and easily understood by the local communities which is useful in the conservation of our remaining forest and possible policy recommendation for the payments of environmental services.

Through focus group discussion and guided interviews, the Iturkaws have identified simple and easily understood 15 biophysical and 14 socioeconomic indicators to measure the sustainability of their indigenous forest management systems. Examples of the biophysical indicators are: a) No further clearing is made in dense forest for swidden farming; b) The soil is black/dark and soft; and c) There are wild pig, deer and other mammals in the forest. Examples of the socioeconomic indicators are: a) No occupancy in communities' forestlands; b) Communities' land rights to areas such as former villages and graveyards are acknowledged; and c) Equal access to forest resources in the ancestral domain. They also identified and developed a scoring system for the existing condition of their indicators. Of the 20 indicators they selected for scoring, 14 were rated as good, 6 were rated as fair, and the overall rating was good. This means that the existing condition for the indicators of indigenous forest management in Tulgao is sustainable.

Keywords: sustainability, socioeconomic, biophysical, indicators, indigenous, forest, management system

AGROTOURISM A FORM OF PUBLIC PARTICIPATION IN ENVIRONMENTAL AND NATURAL RESOURCE SUSTAINING

Soeharto
Universitas Pembangunan Nasional "Veteran" Yogyakarta

ABSTRACT

Agrotourism development have a positive impact on local communities is to encourage increased participation by local organizations, encouraging the persistence of traditional culture and art and support conservation of natural resources and environment. This research aims to describe and obtain the participation of rural communities in the development potential of the Village and reviewing policies Bantul regency administration in the development of environmentally oriented agrotourism. In Bantul, Yogyakarta special region there are 24, tourist village, only six rural tourism and the sale value able to bring in traffic. Six tourist villages are Kasongan, Manding ,Krebet, Wukirsari and KebonAgung. This study used descriptive research method. The result showed that 1) The village agrotourism has the potential to be built and developed as a forum for public participation environmentally oriented development. 2) Support the development of village tourism at Tourism Village with the of environment mentally oriented agro. 3) Model of agrotourism development by developing agro cultivation as a tourist tractions able to encourage the involvement of village communities participate in conserving natural resources and environment.

Key word :agrotourism, community participation, environmental protection

SOLID WASTE MANAGEMENT PROGRAM (SWMP) OF PACIJAN ISLAND ,CEBU, PHILIPPINES: THE LEVEL OF PARTICIPATION OF THE INHABITANTS, EFFECTS AND PROBLEMS

Isaac Soringa, Crisniel Bacat, Cliff Harold Bensi[1] and Serapion N. Tanduyan,Cebu Technological University, San Francisco, Campus

ABSTRACT

The solid waste management program of Pacijan Island, Cebu, Philippines was conducted to answer the pollution problem of the Island which focused on the level of participation of the inhabitants, effects and problems which will serve as basis for solid wasre management sustainability plan
This study used interview guide and actual field visits in gathering the data
Results shows that out of 15 barangays in Pacijan Island, there are 5 barangays whose inhabitants have 70% level of participation; 5 barangays have 60% participation and 5 barangays also have 40% level of participation.
Clean and healthy environment, unity and cooperation among the inhabitants are the felt effects of the program.
Solid waste management practices include waste segregation, house to house evaluation by the purok officials, consolidation of the evaluation results during monthly meetings, record keeping of SWM violators per purok and penalizing violators by means of community service and paying fines. Adoption of municipal solid waste management ordinances, construction of waste depository or redemption centers, training on vermi-composting, prohibiting open dumping of mix wastes and IEC campaign in all puroks about SWM program were made by the local officials.
Insufficient dumpsites and garbage trucks are the problems on solid waste management implementation.

Keywords: SWMP, Pacijan Island, Effects,

INDIGENOUS HEALTH REMEDIATION: THE CASE OF DEAGANONS OF MAGCARAGUIT GROUP OF ISLANDS, DIMASALANG, MASBATE

IDA F. H. REVALE, CARLOS V. CORTEZ, PHIL V. MORANO, ANGELO P. CANDELARIA
Bicol University, Legazpi City

ABSTRACT

Traditional knowledge on health in Deagan Island is very rich. There is no available Health Center in the island. Because of this factor, medical and health needs are rarely attended to, except for those who can afford to go to the health center in the town proper for check-ups.

The propagation and use of medicinal plants as medication and first aid remedies for common illnesses is commonly observed in every household. Childbirth is difficult as there are no midwives available in the island. Child delivery in the island is mostly aided by the four *hilots* or *comadronas* that are actual residents of the island. Absence of health workers and the geographical isolation of the island make sanitation monitoring and transport of emergency cases difficult and childbirth risky. *Hilot* is among other local means in which the community depend from whenever somebody is ill. *Parahoyop* are ready to administer their craft to those who are sick with rituals ranging from the use of various leaves, bark of trees, eggs and essential oils accompanied by the prayers or *oracion.*

Deaganons are mostly fisherfolks and farmers and the culture of indigenous health remediation had been enriched with their understanding of nature's bounty along with their day-to-day agricultural and fisheries activities for livelihood. Important marine and terrestrial materials had been identified and recognized, not only with their food values, but with the medicinal values as well.

Green Technology

EFFICIENCY OF THE TWO TYPES OF GEARS FOR EEL FISHING IN THE COASTAL WATERS OF CARMEN, CEBU, CENTRAL PHILIPPINES

[1]Hector C. Abdon, [1]Venerando D. Cunado, [2]Rachel Luz V. Rica [1]Gloria G. Delan, [3]Ruben M. Ungui and [3]Rowena P. Dato-on
Cebu Technological University- Carmen, Cebu Campus, 6005,[2]Cebu Technological University- Cebu City Campus, 6000, [3]Cebu Technological University- Daanbantayan Campus, 6013

ABSTRACT

The efficiency of the two types of gears (bamboo and plastic eel pots) for eel fishing were measured in terms of the average volume of catch / month for one year fishing activities with reference to the two tide conditions (high and low tide).Throughout a year of fishing operation, 11 species of eel were caught from the two types of gear which were dominated by the *Echidna* spp., family Muraenidae. Regardless of the tide condition, the bamboo gear is 7% higher in terms of the total weight of catch obtained compared to the plastic gear. Comparatively, in terms of the total number of eels caught, the plastic eel pot catch was higher by 41 % than the bamboo gear. Through ANOVA at 5% level of significance, the monthly catches of eel were found to have significant difference. Post hoc analysis revealed that the plastic gear at low tide fishing showed significant difference among the samples. On t-test at 5% level, the average monthly catch of the two gears have no significant difference on separate fishing with the two tide conditions. Whether fishing was done during low or high tide, these conditions did not affect the efficiency of the two gears since these are passive gears. Thus, empty plastic containers can be utilized as a gear for eel fishing which may be a good substitute for the use of bamboo in making eel pot.

Keywords: Echidna spp., eel pot, tide condition, eel fishing, efficiency

SOLI-SOLI AND CASSAVA AS A FESTIVAL EMBLEM AND AS AN AGRICULTURAL RESOURCE OF CAMOTES ISLAND, CENTRAL PHILIPPINES: THEIR STATUS, PROCESSING AND PROPOSED CONSERVATION OPTIONS FOR SUSTAINABILITY

Berenice T. Andriano ,Serapion N. Tanduyan, Ricardo B. Gonzaga
Cebu Technological University, San Francisco Cebu Campus

ABSTRACT

Soli-soli (*Typha latifolia*) and Cassava (*Manihot esculenta*) were taken as names of the festivals of San Francisco and Tudela of Camotes Islands, Central Philippines. This was made due to the numerous uses of soli-soli in San Francisco and the numerous uses of cassava of Tudela where the inhabitants valued them much. Soli-soli plant was converted into bags, belts, caps, and mats where tourists usually buy them because of their unique material (the soli-soli). Soli-soli festival is done every third Sunday of March in San Francisco where it depicts the soli-soli plant which abounds around lake Danao and a freestyle street dancing competition using the soli-soli plant as the dominant material for the costumes of the participants. Cassava festival in the Municipality of Tudela is a yearly celebration of the bountiful harvest of the plant every 8th of December each year. This time the farmers display their various cassava-based products and share varied technical experiences in producing and processing of cassava. These two festivals are visited and watched by the tourists and the local governments of the two municipalities are developing projects of the two resources for its sustainability and conservation and as the focus of the social activities for tourists' attraction.
Keywords: Soli-soli, Cassava, festival emblem, Camotes Islands,Philippines

UTILIZATION AND CURATIVE PRACTICES OF HERBAL MEDICINE

Eva A. Agbay
Cebu Technological University-Argao Campus
Lamacan, Argao, Cebu

ABSTRACT

Plants have been used for health and medical purposes for several years. Interest on herbal medicine and their utilization have been rapidly increasing in recent years. A survey was conducted in southern Cebu to determine utilization and the curative practices of herbal medicine. Traditional healers and users of medicinal plants were considered as informants. Results revealed that a total of 97 species of medicinal plants were used to treat 41 common ailments. Commonly used species were *Euphorbia hirta* L., *Vitex negundo* L., *Psidium guajava* L., *Anona muricata* L., *Moringga oliefera Lam.* The common diseases included diarrhea, stress (bughat), fever, cough, and hyperacidity. Majority used leaves to treat ailments and sources of plants healers were from uncultivated areas and from other people's farm. They preferred to use fresh materials thus only very few practiced air-drying and keeping in storage for future use. The collection pattern was influenced by the need of its use and did not consider time and weather condition. Poultice was the common preparation method and drinking was the preferred practice of application. This suggests that herbal medicine is still practiced in southern Cebu, however healers and users need motivation and technological information in the propagation and utilization of medicinal plants to keep traditional healing from being lost.

Key words: Euphorbia hirta L., Vitex negundo L., Psidium guajava L., Anona muricata L., Moringga oliefera Lam.

TRIGONA BIROI (STINGLESS BEES*)* IS POTENTIAL FOR SUSTAINABLITY *OF* PAGBILAO MANGROVE FOREST, QUEZON PROVINCE, PHILIPPINES

Amalia E. Almazol, PhD
Southern LuzonState University, Lucban, Quezon

ABSTRACT

*Trigona biroi (*Stingless bees) is a meliponine species and closely related to honeybees. They lack sting but they defend by biting when their nest is disturbed. They are active all year round. Since they are small they produce only small quantity of honey. However, even small, this meliponine is a good pollinator. They can collect pollens from different sources as the other honey bees do.

The study was conducted to detremine the pollen sources of stingless bees in Pagbilao Mangrove Forest. Introduction of colonies of stingless bees were done. The pollen analysis revealed that *T. biroi* collected 38 species of plants, belonging to 19 families and 38 genera. This shows that the species can exploit more species of plants.It is recommended that this species should be mass produced as part of the mangrove ecosystem management.

Keywords: Stingless bees, Trigona biroi, mangrove species

REVEGETATION AS IMPROVEMENT EFFORTS OF THE POST-SAND MINING LAND IN YOGYAKARTA

Dyah Arbiwati, Abdul Rizal AZ.
Yogyakarta Indonesia, Jl. SWK 104 (Lingkar Utara) Condongcatur Yogyakarta, 55281

ABSTRACT

Sand mining contributes negative impacts on the environment. Open pit mining activities, starting from land clearing, topsoil erosion, dredging and land-filling give negative impact on the environment by increasing rate of erosion, surface runoff, sedimentation, decreasing soil productivity, soil compacting, and destructing watershed areas as well as disrupting the stability of the land. Other impacts are disrupting biodiversity of local species of plants and animal habitat, damaging the original landscape, disrupting of security and health of the human population, and changing microclimate.

Revegetation activities on the land post sand-mining need to be applied, to improve land stability, and to reduce soil erosion, as well as to improve the microclimate conditions and soil fertility, in the long time becoming more productive. Revegetation is very difficult, because of the soil compaction, low of nutrient content, potential mineral poisoning, low of organic matter, low level of CEC (Cation Exchange Capacity), and low of soil microbial populations and their potential activity. It takes a long time to restore soil fertility. In the early stages of revegetation, timber plants is cultivated, as well as non-timber plants that can be utilized by the surrounding community. Plants species are selected accordance with local conditions, which are fast-growing and adaptive to post-mining land with fast forming canopy and easily decomposed. In the next stage, food crops can be cultivated with the addition of organic matter and fertilizer so as to improve the welfare of local communities.

Key words: revegetation, sand mining, soil fertility, land stability

BENEFITS AND COSTS OF TOURISM IN PALAWAN

Dr. Lourdes S. Arcilla
Western Philippines University,Palawan

ABSTRACT

This study was conducted among the 62 registered travel and tour agents, using the descriptive research design. Survey questionnaire made up of four (4) parts was the instrument used in gathering of data supplememted with casual conversation. Result revealed that most of the travel and tour operators in Puerto Princesa City Palawan are operated by sole proprietors from one to more than five years and have served clients, who are 60% local and 40% foreign tourists.
As to services offered by the respondents, all of them have airport transfers, package tours, and services of licensed tour guides. Most of them offered services of masseurs, van and motorcycle rentals, accommodation and catering services. Some offered purifying and diving equipment rentals.
As to package tours offered by travel and tour agents, city tours, underground river tour and Honda Bay Island Hopping are most availed. Very few wanted Tabon Cave Tour and Batak Tribe Tour.
On the other hand all respondents perceived that it provided employment both skilled/unskilled, increased income and governmental revenues, provided tourist and recreational facilities which maybe used by local population and created an impressive worldwide image of Palawan as tourist destination.
Most of them identified other benefits of tourism such as generating supply of needed foreign exchange, complemented with other economic activities, spreads development, improve the quality of life and justified environmental protection.

For their perceived costs or disadvantages of tourism, most have identified excess demand for resources, caused inflation, degraded the natural, physical and cultural environment and increased pollution. Most of them also believed that it contributed to the spread of diseases, caused economic fluctuation and enhanced transportation problems.
Majority of them also perceived that tourism resulted in unbalanced development, created social problems such as incidence of crime and prostitution.

THE GLOBAL AND LOCAL MARKETS OF *Penaeus monodon* IN BOHOL ISLAND, PHILIPPINES: GENDER ROLE IN HACCP IMPLEMENTATION

Cecilio S. Baga*, Miguelito A. Lauglaug and Corazon P. Macachor
Cebu Technological University, Main Campus,R. Palma St., Cebu City, Philippines

ABSTRACT

Penaeus monodon is one of the most common species of farmed crustaceans in the Philippines. It found global and local market through a prawn processing plant in Bohol Island which has been implementing Hazard Analysis Critical Control Point (HACCP) practices. The university researchers of Cebu Technological University facilitated the HACCP certification of the prawn processing plant from 2004 until 2006. They assisted on the preparation of plant set-up, standards of practice, hazard analysis worksheet, and HACCP Plan toward registration. Gender role in HACCP implementation was assessed and was revisited in 2010.

The study investigated the gender roles in prawn processing and marketing, where the gender division of labor was most prominent. Results confirmed that in prawn processing, 80% of workers were young female; most are in the age bracket of 18 to 21 (64%) and 25-30 (34%).

These women were the core workers in implementing HACCP practices. Among these women who were involved in post-harvest activities of the plant, 50% of them were engaged in other entrepreneurial activities after work/shift, like local marketing of processed prawn which failed to meet the export quality. 30% of them were engaged in gardening, small-scale farming, and household chores, and the other 20% were confined to household activities after work. Men, who composed of 20% of the workforce, were engaged in lifting/transferring of processed prawn to and from conveyor. All men workers were engaged in farming and cattle-raising after their work/shift. Although all employees worked in an eight-hour shift, only 10% were regular/permanent workers, 10% provisional, while 80% (60% women and 20% men) were “on-call” or contractual-basis employees. They were called to work when there was enough harvest.

Fifty percent of the respondents seemed to like the idea of working in a HACCP certified plant, and they wanted their children to follow the trade they are engaged in. The other 50% wanted their children to be engaged in other professional jobs, because they feel that they are stuck in this “on-call” job because of their lack of higher education – within the range of Grade 6 – 10. It is recommended that continuing education for women workers be introduced in HACCP-based processing plant in order to keep a constant supply of trained workforce for post harvest activities of diversified fishery products, other than prawn processing.

Key words: Postharvest, Cebu Technological University, prawn processing

DISTRIBUTION OF BENGUET LILY (*LILIUM PHILIPINENSIS*) IN BANIG, TAWANG LA TRINIDAD ANDKM. 46, PAOAY, ATOK, BENGUET.

Zeverine P. Banganan, Romeo A. Gomez, Ph.D

ABSTRACT

The study was conducted to assess the distribution of Benguet Lily in the selected sitios in Km 46, Paoay, Atok (Study Site I) and Banig, Tawang, La Trinidad, Benguet (Study Site II). It sought to compare the species diversity of the two areas. Moreover it aimed to determine the edaphic factors such as pH, moisture content and texture of the soil in the study area that may have influenced the growth of Benguet Lily.
It was found out that the lily is limited in distribution in areas with fewer disturbances of human activities. Through line intercept method, it was revealed that Study Site I had greater number of individual plant with 48 compared to the other area with 35 plants, this translate to about 0.32 plants/m^2 in Site 1 and 0.23 plants/m^2 in Site II. Study site I is characterized as rugged and rocky that favors the growth and number of the plant. The temperature in the area ranges from 15-25^{o}C which is colder than Study Site II which ranges from 20-25 ^{o}C. There were a number of other plants species that are associated to be common in both study areas such as banig osa, alam am, borbortak and blady grass. The pH of both areas is slightly acidic. Further, moisture content of both areas is sufficient to support the plant.

Keywords: Benguet lily (Lilium philippinensis), distribution

SURVIVAL AND GROWTH RESPONSE OF OUTPLANTED MALAPAPAYA TREATED WITH MYKOVAM AND MYCOGROE

Francisco N. Beltran, Antonio Manila, Joyce Zarate
Southern Luzon State University, Lucban, Quezon

ABSTRACT

Malapapaya (*Polycias nodosa* (BLUME) Seemann) a member of family Araliaceae is one of the most valuable tree species because of their economic and environmental importance. This species is an indigenous and fast growing tree but the increasing demand for finished products command an increasing demand for raw materials. And because the survival and growth response in trees was affected by silvicultural treatment such as fertilization, thinning, weeding and others. This is need to investigate the survival and growth response of outplanted malapapaya in the duration of 4 years treated with Mycovam and Mycogroe. Results of the statistical analysis revealed significant effect in survival, height and diameter. The highest annual percent survival was observed using Mycovam + Mycogroe with 60% giving 122% increase over untreated one. On the other hand the highest average mean height was observed using mycogroe with 6.64m and MAI of 1.69m however the highest average mean diameter was observed using mykovam with 9.43cm and MAI of 2.26cm. Soil analysis revealed that the most important nutrients such as Nitrogen and Phosphorous were found highest in plant treated with mykovam+mycogroe with 0.11% and 2.63ppm compared to untreated one with only 0.07% and 0.09ppm. Mycorrhizal spores were observed in all treatments. The highest spore count was in the combined Mykovam and Mycogroe treatment. Majority of the spores were of the single spore belonging to the genus Glomus. However, some Acaulospora, and Gigaspora spores were also observed.

Keyword: Malapapaya, mykovam, mycogroe, survival and growth

MILLET (*Panicum miliaceum*) INSTANT CEREAL FORMULATION FOR FOOD PROCESSING TECHNOLOGY: INSTRUCTIONAL GUIDE

Anjin Pleiadess P. Cabrera, Genes M. Pasaje, DPA
Cebu Technological University Barili Campus, Cebu

ABSTRACT

A single factor experiment arranged in a complete randomized design (CRD) was used in the study with five treatments representing five different concentration levels of millet (20%, 35%, 50%, 65%, and 80%) and five different concentration levels of skimmed milk powder (80%, 65%, 50%, 35%, and 20%). The main purpose of this study was to develop an instant cereal product as basis for instructional guide in Food Processing Technology.

The results of the study showed that significant differences were noted on the sensory attributes in terms of color, aroma, taste, flavor, mouthfeel and the overall acceptability of the millet instant cereal product. The treatment having a concentration mixture of 20% millet and 80% powdered skim milk (4 g millet and 16 g skim milk for a 30g serving size) was considered to be the most acceptable.
Proximate analysis of the millet instant cereal product showed that it contains 4.5 % moisture, 2.6 % ash, 0.3 % crude fiber, 3.96 % fat, and 8.6 % protein.

Based on the prevailing market price of millet (₱ 200.00/kg.) and skim milk powder (₱175.00/kg.), treatment 5 has the least partial cost with three pesos and sixty centavos ₱ 3.60 per serving size of 30g.
Based on the significant findings of the study, an instructional guide for Food Processing Technology, specifically on the Processing of Millet Instant Cereal was formulated.

Keywords: millet, proximate analysis, instant cereal, instructional guide.

VULNERABILITY OF TERMITE SOLDIERS AND WORKERS (CASTE) TO *ALLAMANDA CATHARTICA* L. LEAF EXTRACTS.

Frank Britz V. Cadavis, Facundo Rey M. Ladiao
Leyte Normal University, Tacloban City, Philippines

ABSTRACT

Termites ingest most plant materials that cause damage to timber or wooden structures. Currently, chemical termiticides are used to contain this problem but may pose environmental hazards. Secondary plant products are defense mechanism of plants to herbivory. This tested the mortality rate of termites to potential organic alternative to chemical based temiticides.
Ten soldiers and 10 workers for each *Macrotermes gilvus* and *Nasutitermes luzonicus*, were used to assay the potential termiticidal property of *Allamanda cathartica* leaf crude extract (CLE), decoction and diluted (40% and 80%) methanolic extract solutions (MES); that were sprayed, using fine mist sprayers to avoid flooding and drowning, to moisten the test organisms. Then, the numbers of dead termites were counted after ten minutes from application.
The 80% MES was the most effective that showed 90% death rate across all test organisms followed by 68% from 40% MES, 50% in leaf decoction, and CLE that killed 40% only of the termites. The Duncan test revealed, the CLE and the 40% MES has comparable effects, while the leaf decoction has the least effect with three dead *N. luzonicus* workers on the average. Furthermore, the 80% MES exhibited the highest mortality of *N. luzonicus* workers with 10 dead on the average. Conversely, *A. cathartica* leaf decoction, CLE, and 40% MES has the

equivalent termiticidal effects against *M. gilvus* soldiers while the 80% MES has a significant number of dead soldiers. Therefore, among the four treatments, the 80% MES was the most effective in killing the termite samples.

Keywords: Termite soldiers and workers, Macrotermes gilvus, Nasutitermes luzonicus, and Allamanda cathartica

ON-FARM PERFORMANCE OF ORGANICALLY GROWN LOCAL UPLAND RICE VARIETIES IN ARAKAN

Ms. Merla V. Cajandig, Dr. Pendatun E. Dalam, Dr. Onofre S. Corpuz
LGU Arakan, Cotabato/CFCST, Doroluman Arakan, Cotabato/CFCST-Arakan, Cotabato

ABSTRACT

The study was conducted to evaluate the field performance of the twenty local upland rice varieties grown organically using a group balanced block design with three replications. Upland ric varieties 1-4 were assign as group A, varieties 5-8 as group B, varieties 9-12 as group C, varieties 13-16 as group D and varieties 14-20 as group E.

Result reveals that group E significantly mature earlier (121 days) regardless of varieties as the analysis reported insignificant differences on varieties. For plant height, its group A (179.75 cm average height) with variety 1 (Communel)(192 cm) that gives highest height and is significantly different from the other varietal group and variety within group.

In terms of panicle length, it was found out that varietal group C (30.27cm) with variety 11 (Kapalawan)(43cm) that significantly longer compared to the other four groups . Varietal group 5 with variety 20 (malundiang) gives the longest grain length of 16mm. in terms of grain diameter, it was found out that varietal groups and variety within group did not significantly varied. However, in terms of the weight of 1,000 grain, it was found out that Varietal group A and B significantly higher in weight compared to the other groups.
In general, variety group A with variety 1 (Communel) has the highest yield of 4,953kg/ha followed by variety 3 (Kanayo)(3,990kg/ha) of the same varietal group. The lowest yielding variety was found in group E (972.25Kg/ha in average) with variety 20 (Malundiang of only about 483kg/ha grain yield).

Keywords: Local upland rice variety, maturity date, plant height, panicle length, grain length, grain diameter, grain yield

SENSORY QUALITIES OF SHRIMP COOKIES: AN IMPROVED RECIPE

Charena J. Castro
Cebu Technological University – Main Campus

ABSTRACT

Shellfish and finfish processors are faced with increasing problem on waste handling and disposal of raw materials. As to the shrimp waste requires studies of their composition and potential natural products to the maximum utilization of all parts to minimize the waste product of the shrimps. Hence, a research has been conducted using an experimental method in a randomized complete block design of five (5) pineapple jam and shrimp powder concentration to determine its sensory qualities. The five (5) varying concentration of pineapple jam and sixty gram (60g) shrimp powder obtained the “highest sensory rating” scores in color and texture

sensory attributes. The product had a “light brown” color, moderately distinct shrimp flavor and moderately crunchy texture with an acceptability rating of “like very much.” After a series of analysis on the acceptability of “pineapple shrimp cookies” as revealed from the data gathered both from laboratory and perceptions of the experienced and consumer panelists Only “0”g pineapple jam and “60”g shrimp powder concentration are appropriate to be added to cookies with margarine egg, baking soda, flour and sugar.

EGGSHELLS AS CEMENT EXTENDER

Jade V. Colmo, Rommel M. Lagumen, Ph.D.

ABSTRACT

This research study entitled “Eggshells as Cement Extender” is one of the innovations of the researcher of Sultan Kudarat State University, College of Engineering, major in Civil Engineering.
This study was conducted to produced alternative concrete hollow blocks for the construction.
It also enlightened the researchers and readers the feasibility of mass production of the said hollow blocks so as to benefit the low income earning families in the Province of Sultan Kudarat nearby regions in constructing their houses and also a livelihood
.
Result of the study may encourage other sectors to invest in the mass production and adoption of the said concrete hollow blocks.

Eggshells as Cement Extender (ECE) aims to make eggshells as an alternative cement extender that found within the locality.

The volumetric ratio of Eggshells as Cement Extender (ECE) is (0.75:0.25:7) that was cured in 28 days, 14 days and 7 days. The Eggshells as Cement Extender (ECE) were fabricated to assess its potential suitability in the manufacture of ECE that would be compared to commercial Concrete Hollow Block (CCHB). The most acceptable ECE cured is in 28 days sample because of its high compressive strength and the least acceptable cured ECE is 7 days curing because of its low compressive strength.

The ECE may be used as partition walls, fences or any non-load bearing structures provided that it plastered with cement void deterioration.

Further investigation in improving the properties of ECE is recommended. Simple approaches should be considered, such as adjusting the mixture.

STEM CUT PROPAGATION TECHNOLOGIES FOR RUBBER TREES

Dr. Onofre S. Corpuz
Cotabato Foundation College of Science and Technology, Doroluman Arakan 9417 Cotabato Philippines

ABSTRACT

Stem cut rubber was tested for sprouting and rooting growth potentials as affected by stem parts and levels of ANAA diluted in water. The experiment used split-plot design in data analysis. Results indicated that at 75 days of observation, brown cut rubber significantly has higher survival rate of 74% as compared to 41% in green cut stem parts. The levels of ANAA also shows significant variations. The control treatment is significantly lower in survival (48.3%) compared with 65.8% and 58.3% in 1tbsp/3 lit. H_2O and 1tbsp/1lit. H_2O respectively.

At 17 days after planting, green stem significantly performed better than the brown stem cut as affected by levels of ANAA. However, the growth trend reversed after 45 days, 60 days and 75 days. Brown stem cut found to perform better than the green stem. The 1tbsp/1lit.H2O levels of ANAA significantly gives better sprouting potentials compared to no ANAA application and the 1tbsp/3lit.H2O levels in all data collection date. Number of soaking hours did not show significant effect on sprouting and rooting potentials of the stem cut rubber plant. Significant interaction effects of the parts of stem cut with levels of ANAA were observed during 17 days while significant interactions of the three variables (parts of stem cut, levels of ANAA, and soaking time) were observed during 17 days, 60 days and beyond.
On the other hand, significant interactions of the levels of ANAA with soaking time were observed during 60 days and beyond.

Keywords: Stem cut, rubber tree, sprouting, rooting potentials, ANAA, survival rate

STUDY OF CUTTINGS TYPES AND CONCENTRATION OF IBA ON GROWTH OF RED MANGROVE (*Rhizophora stylosa)* PROPAGULE

F. Deru Dewanti, Ratna Rositawati, Agus Sulistyono
UPN "Veteran" East Java. Jl. Raya Gunung Anyar Madya Rungkut Surabaya, Indonesia

ABSTRACT

Provision of mangrove seedlings through cuttings vegetative propagules is an important way to develop and increase a mangrove forest quickly and economically. Vegetative propagation method is common used for seed production in some forest tree species such as *Tectona grandis* (teak), *Acacia mangium* and *Eucalyptus pellita*. The success of this technique requires a balance of hormones, temperature humidity, and media properties that collectively determine the status of the regeneration of root cuttings propagules. This study used an experimental method a Completely Randomized Design (CRD). Factor I; kind of cuttings propagule: whole propagule, the bud part of propagules, the bottom part of propagules. The second factor was concentration of IBA: without IBA, 50 ppm, 100 ppm, and 150 ppm. Percentage of live cuttings of *Rhizophora stylosa* from whole propagule was 100%, 96% from the bud part of propagules, and 0% from the bottom of the cuttings. The percentage of live cuttings increased in the lower concentration of IBA (50-100 ppm), while concentration of 150 ppm IBA could maintain the percentage of live cuttings propagule by 56%. Types of cuttings propagule gave influence on the seedling height at all observations. Meanwhile, concentration of IBA had effect on the number of leaves at the age of 21days after planting, on the number and length of root at the age of 56 days after planting.

Keywords: propagule, hormone, mangrove, vegetative propagation

POTENTIAL OF ASH OF AGRICULTURAL WASTE AS ALTERNATIVE SOURCE OF POTASSIUM, CALCIUM, AND MAGNESIUM NUTRIENT

Ida Ekawati, Zasli Purwanto
University of Sumenep Sumenep, East Java, Indonesia

ABSTRACT

Agricultural waste used as organic fertilizer and also used as source of energy in roof tile industries, limestone industries, and cooking activities by burning waste. Ash is resulting of burning waste that generally not used, especially in Sumenep Regency. Though the ash-contained inorganic materials such as potassium, calcium,

magneium that are needed by plants. Preliminary studies conducted to determine the potential of the ash as nutrient source of potassium, calcium and magnesium. Ash types studied are kitchen ash, industrial roof tiles ash, rice husk ash, industrial lime ash, and plant litter ash. Total content of nutrients were analyzed by using the wet combustion method HNO3 and HClO4. Determination of Ca and Mg content used titration method and the determination of K used flamefotometer. The results showed that kitchen ash has the highest potassium and calcium content if compared with other ash, while the highest magnesium content indicated by industrial lime ash. Total content of K, Ca, Mg of kitchen ash respectively 3.46 %, 7.52 %, and 0.96 %. Rice husk ash content K, Ca, Mg lower than others, which are only 0.02%, 0.45% and 0.05% for total K, Ca, Mg respectively.

Keywords: ash, agricultural waste, potassium, calcium. magnesium

NUTRIENTS ANALYSIS OF AN INDIGENOUS HOME-MADE FOLIAR FERTILIZER

Faunillan, Jolly s & Jesusa D. Ortuoste, PhD

ABSTRACT

A study on the Nutrients Analysis of Indigenous Home-Made Foliar Fertilizers was conducted from November 2011 to February 1012. Raw materials such as Neem tree, Water Hyacinth, Panyawan and mascuvado were subjected to fermentation process. Laboratory analysis of the samples were done at Sultan Kudarat Provincial Soils and Water Laboratory (PSWL) and at University of Southern Mindanao Agricultural Research Center (USMARC). The parameters gathered were the levels of macro and micro nutrients present in the home-made foliar fertilizers. Laboratory results were interpreted using the analysis of variance in a Completely Randomized Design (CRD).

A highly significant results were observed in the nutrient content (ppm) of Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, Sulfate, Iron, Manganese, and Zinc. It was found out that the combination of Goat Manure + Neem Tree + Panyawan (T_4) obtained the highest concentration of Nitrogen, Magnesium and Sulfate. The combination of Goat Manure + Neem tree (T_1) obtained the highest concentration (ppm) of Potassium, Manganese and Zinc. On the other hand goat manure + Panyawan combination obtained the highest concentration of Phosphorus. While the highest concentration (ppm) of Iron was exhibited from the combination of Goat manure +Neem tree + Water hyacinth. While the combination of Goat manure+ Panyawan+ Water hyacinth (T_6) obtained the highest concentration of Calcium.

Keywords: indigenous, nutrient analysis, macroelements, micro-elements

STEEL SOLID WASTE FIBER REINFORCED CONCRETE (SSWFRC)

Jireh Anthony Lief N. Forro, Rodolfo B. Solomon,CE
Sultan Kudarat State University,Isulan Campus, Isulan, Sultan Kudarat

ABSTRACT

During recent years, steel fiber reinforced concrete has gradually advanced from a new, rather unproven material to one which has now attained acknowledgment in numerous engineering applications.
Today, more structures and elements of concrete are manufactured filled with fibers of steel. Apart from saving time in rebar manipulation, the fibers may prevent initial fissures. In addition, since the fibers are added to the solid phase before the mixture, thinner structures can be achieved.

Thus, the importance of this study is that the wasted and excess steel from every construction site will be used as an additional material for reinforced concrete.
The finding shows that the greatest compressive strength of cured SSWFRC was achieved by treatment 3 in 28 days which has 3.0% in total concrete volume of steel fiber.
The SSWFRC may be used for concrete residential structures, pavements, walls and other concrete structures such as foundation slabs, roads, bridges, manhole covers and other various concrete applications.

Keywords: fiber reinforced concrete, steel solid waste, compressive strength

ACCEPTABILITY OF *CHEVON* TOCINO

Erlinda S. Galo, Corazon P. Macachor
CTU Main Campus, R. Palma St., Cebu City

ABSTRACT

Chevon tocino is the side meat portion of goat seasoned with pineapple juice, vinegar, spices, tocino mix and other seasonings aged for 2-3 days in a refrigerating condition. This is composed of 16% moisture, 30% protein, 4% fat, 1% fiber, 12% ash and 29% carbohydrates.

This is an experimental study using the randomized complete block design using four pineapple juice concentrations such as 125 g; 100 g; 50 g and 0 g added to the recipe of *Chevon* tocino formulated by adding four concentrations of vinegar, namely: 0 g, 50 g, 100g and 125 g to determine its acceptability and nutritive value. Out of the four varying concentrations of pineapple juice and vinegar, treatment with 125 g pineapple juice with 0 g vinegar obtained the highest sensory rating scores in all attributes. The product had a moderately red color, strong tocino flavor, slightly *Chevon* odor and firm texture with an acceptability rating of "like moderately. The most preferred *Chevon* tocino is composed of 16% moisture, 38% protein, 4% fat 1% fiber, 12% ash and 29% carbohydrate contents.

BIOMASS POTENTIAL OF MICROALGAE IN LIGUASAN MARSH, COTABATO AND ESTUARY OF ST. CRUZ, DAVAO DEL SUR

Alexter F. Generale
University of Southern Mindanao, Kabacan, Cotabato

ABSTRACT

The biomass potential of microalgae in Liguasan Marsh, Cotabato and estuary of Sta. Cruz, Davao del Sur was investigated. This study also identified the microalgae and determined the most-frequently occurring (FOM) taxa. The perceived economic value of the microalgae with great biomass potential was also explored.

A total of 58 microalgae taxa were identified in Liguasan Marsh and 25 taxa in Sta. Cruz estuary. The Bacillariophyta or Diatoms comprised the most number in both areas. Using Most Probable Number Estimate (MPN), eight FOM were observed in the Liguasan Marsh and five in Sta. Cruz estuary. Among the FOM taxa, only 9 were successfully isolated through streak plating in Bold's Basal Medium (BBM) which include *Chlorella minutissima, Gongrosira, Neochloris aquatica, Nostoc, Oscillatoria brevis, Phormidium,* and *Scenedesmus communis* from Liguasan marsh, and *Klebsormidium* and *Oscillatoria* from Sta. Cruz estuary.

Through dry weight method, the biomass (gL^{-1}) of microalgae was measured on a 6-day interval. After 42 days of incubation in BBM, *Klebsormidium* produce the lowest biomass (2.56 gL^{-1}) while *Neochloris aquatica* achieved the highest (18.2 gL^{-1}). The result points to *N. aquatica* having the greatest potential for biomass production. The economic value of another related species (*Neochloris oleoabundans*), could also be true to *N. aquatica*.

Keyword: microalgae, biomass, Neochloris aquatica

THE POTENTIAL OF BALANACAN COVE FOR SUSTAINABLE TIDAL POWER GENERATION

Engr. Alex J. Hidalgo

ABSTRACT

The continuously rising cost of oil in the global market and the high operating and maintenance cost of old diesel power plant of Napocor are causing long and frequent brownout in the province of Marinduque. It is therefore imperative to discover a new source of electrical energy which is sustainable, reliable, environmentally friendly, and financially insulated from the effect of adverse global economic conditions. This research is focused on evaluating the tidal power potential of Balanacan Cove located in Balanacan, Mogpog, Marinduque for a sustainable and renewable energy source. It is designed as qualitative and quantitative type of research. The research used statistical treatment to obtain the range, and hydrological survey to get the cross-sectional area of the water entrance of the cove.

The area of the cove is found to be 1,157,200 m^2 and the average tidal range is 1.04 m. The product of these data is the volume of water flowing to the cove in six hours. Using Simple Single-Pool Tidal System, the theoretical average power is 282 KW. Assuming a 30 % combined efficiency of the turbine and generator to be installed, the power available to the consumer is approximately 85 KW which is enough to supply the whole power requirement of Barangay Balanacan. The cost of building this tidal barrage and generating set is estimated to be Php 14M. The Balanacan Cove site Gibrat ratio is 0.000274 which is much better to La Rance in France, the most successful tidal power ever built, site Gibrat ratio of 0.36.

The direct affected area of the dam with a length of 135 m from Biglang Awa shrine to the opposite side is less than 500 m^2. With this small size of the barrage dam the unit cost and environmental impact will be minimal from the construction to the normal operational period. The 85 KW tidal power in Balanacan Cove is highly recommended as an experimental pilot project which could be a small beginning for the Philippines to demonstrate and harness the great potential of sustainable tidal power in the country.

Keywords: Balanacan Cove, Tidal Power, Theoretical Power, Range, Barrage Dam

CAROTENOIDS CONTENT OF COMMERCIAL SEAWEED IN BALI AND ITS POTENTIAL EFFECT AS ANTIOXIDANT

K. Sri Marhaeni Julyasih
UPN “Veteran” East Java
ABSTRACT

In Bali there are several types of seaweed that has long been used as a source of food by people. Types of seaweeds local name are *Bulung Boni* (*Caulerpa* spp.) and *Bulung Sangu* (*Gracilaria* spp). However studies on carotenoids content of seaweed and potential effect as antioxidant still very limited therefore need for further study.

Study consisted of descriptive and experimental research. Descriptive study was identified the types of carotenoids in *Bulung Boni* and *Bulung Sangu*. Experimental study used completely randomized design, using a total of 24 Wistar rats divided into six sample groups of equal size. The six sample groups were respectively designated as negative control group, positive control, and four treated sample groups, respectively fed orally with a dose of 20 mg and 60 mg extracts of *Bulung Boni* and *Bulung Sangu* per 100g of body weight per day.
The result in descriptive study there were nine types of carotenoids such as, neoxanthin, astaxanthin free, antheraxanthin, canthaxanthin, astaxanthin monoester, fucoxanthin, chlorophyll b, astaxanthin diester, and beta carotene were identified in *Bulung Boni* extract. In *Bulung Sangu* there were eight types of carotenoids identified consisting of neoxanthin, violaxanthin, astaxanthin free, antheraxanthin, lutein, chlorophyll b, chlorophyll a, and beta carotene. In experimental study rats were treated with high-cholesterol diet with *Bulung Boni* or *Bulung Sangu* extract at the dose of 20 mg and 60 mg/100 g bw/ day, plasma malondialdehyde (MDA) level was significantly decreased ($p < 0.05$) if compared with rats that were treated with high-cholesterol diet without *Bulung Boni* or *Bulung Sangu* extract.
This research concluded that *Bulung Boni* and *Bulung Sangu* extract function as antioxidant by lowering MDA plasma level significantly.

Key words: Caulerpa spp., Gracilaria spp., carotenoids, antioxidant, malondialehyde

INFLUENCE OF SALT CONCENTRATION ON THE FERMENTATION RATE OF FISH SAUCE FROM ANCHOVIES, *Stolephorus spp*

Hermenigelda V. Kiamco, Corazon. P. Macachor and Cecilio S. Baga
Cebu Technological University- Main Campus
R. Palma St., Cebu City

ABSTRACT

Good quality fish sauce produce from anchovies (*Stolephorus spp,* Family *Engraulidae*) that had been allowed to ferment with 15% salt concentration at room temperature for two months with the application of low temperature processing during the preparation process. Fish sauce from anchovies with 15% salt concentration has 60 days of fermentation period to attain the percent solids of 32% (FDA standards) based on simple linear regression analysis. This product was significantly different from fish sauce with 30% salt concentration based on t-test at 5% level of significance. It contained 82.2% moisture, 0.94 Aw, 15.1% protein, 0.4% fat and 1.40% ash content.
The results of the descriptive and preference tests of fish sauce with 15% salt concentration gave the significant difference results as to its flavor for descriptive tests and acceptability test based on t-test at 5% level of significance. The product has a light brown color, moderately salty flavor, fishy odor and soft texture. The bacterial count was 1.04×10^4 cfu/g, figure not greater than and falls within the range of 10^4-10^6 cfu/g for the total number of organisms. Thus, fish sauce with 15% salt concentration is safe for human consumption.

Keywords: Fish sauce, Fermentation, Fisheries

FERMENTED PAPAYA FRUIT JUICE AS ORGANIC LIQUID FERTILIZER FOR BUSH BEAN (*Phaseolus vulgaris*).

Sherwin A. Lagutin/Carlos E. Lacamento,PhD
Sultan Kudarat State University (SUNAS Campus)
EJCMontilla, Bo. 2,Tacurong City,Sultan Kudarat

ABSTRACT

Bush bean is any of various low, erect, bushy forms of the common garden bean (*Phaseolus vulgaris*). A shrubby variety of the snap bean, any bean plant with an upright, bushy growth not requiring an artificial support. Bush beans are sometimes referred to as snap beans and are very nutritious. Bush beans have long been a favorite of farmers and gardeners due to their no trellis or staking like traditional beans to grow, although sometimes gardeners still stake. Bush beans are second only to tomatoes as far as popularity in the garden.
The fermented papaya fruit juice (FPFJ) is considered natural organic fertilizer. L.M Boltican and C.P Laurean, et. al. (2009) conducted a study to determine the effect of different rates of fermented papaya fruit juice applied as foliar fertilizer on the growth and yield bush beans and soil properties. The fermented papaya fruit juice was found out to contain the following nutrients: nitrogen, phosphorus, calcium, magnesium, sodium, copper, zinc, manganese and iron. These elements are essential for the growth of plants.
The materials used in this study were as follows: bush bean seeds (Tender pods), fifteen plots with a dimension of 2 x 3m (6 sq. meter) each, shovel, rake, bolo, knap sack sprayer, sprinkler can, record book, ball pen, measuring tape, placard, measuring cups, meter stick, pale and fermented papaya fruit juice.
The study was laid out in a Randomized Complete Block Design (RCBD). Each treatment was replicated three times with fifteen samples of plants per treatment.

The study was conducted at Kematu, T'boli, South Cotabato to test the effectiveness of fermented papaya fruit juice (FPFJ) on the growth and yield of bush bean. Specifically, the study was conducted: 1) to determine the effect of different levels of fermented papaya fruit juice on the growth and yield of bush bean, 2) to determine the yield performance of bush bean at varying levels of fermented papaya fruit juice and 3) to determine the best rate of fermented papaya fruit juice application for the growth and yield of bush bean. The following treatments were used: T_1) control (untreated), T_2) 50 ml FPFJ + 10 liters of water, T_3) 75 ml FPFJ + 10 liters of water, T_4) 100 ml FPFJ + 10 liters of water and T_5) 150 ml FPFJ + 10 liters of water.

Result of the study showed that fermented papaya fruit juice influenced the growth and yield of bush bean. Bush bean applied with 100ml of fermented papaya fruit juice mixed with 10 liters of water obtained a highest yield of 3.13 ton/ha while lowest yield of 2.23 ton/ha was observed to the unfertilized bush bean. Other agronomic parameters such as initial plant height, plant height at maturity and number of pods was observed the highest when applied with 100 ml fermented papaya fruit juice mixed with 10 liters of water and was also observed lowest with regards to the number of days from planting to flowering.
Based on the above findings, it is recommended that fermented papaya fruit juice at the rate of 100 ml + 10 liters of water be used. Fermented papaya fruit juice could replace the recommended rate of inorganic fertilizer for bush bean. The utilization of fermented papaya fruit juice would minimize dependence of farmers on inorganic liquid fertilizer which, aside from being costly, is detrimental to soil and environment.

Keywords: Liquid fertilizer, fermentation, bush bean, papaya fruit juice, foliar fertilizer

SOCIO-ECONOMIC PROFILE OF SEA CUCUMBER *APOSTICHOPUS JAPONICUS* GATHERERS IN THE COASTAL AREAS OF BANTAYAN ISLAND, CEBU PROVINCE

Miguelito A. Lauglaug, Cecilio S. Baga, Bonifacio S. Villanueva, Corazon P. Macachor, PhD and Noel Dierran
Cebu Technological University, Main Campus

ABSTRACT

Sea cucumber, *Apostichopus japonicus*, locally known as "bat hanginan" is one of the marine resources in the island of Bantayan, Cebu which contributed in uplifting the economic status of sea cucumber gatherers. This study was conducted in Bantayan island, Cebu province particularly in Madridejos, Sta. Fe, and Bantayan, Cebu as research gleaning sites. The socio-economic-profile of shell gatherers from the three research sites was investigated. The sea cucumber gatherers was above the poverty-lined community who depended on fishing and gathering of sea cucumber as means of livelihood with an average gross income of PhP6,150.79 a month.

Keywords: Sea cucumber Gatherers, Bantayan island, Cebu, Phillipines

VARIETAL TRIAL OF PEANUT PLANTED ON A NEWLY ESTABLISHED SALT FARM ON DINAGAT ISLAND

Ignacio M. Lincuna, Jerry P. Bernadez, Carlos M. Dunque

ABSTRACT

The study was established in a Randomized complete Block Design (RCBD) with the three (3) peanut varieties namely: V_1 - Pn 11, V_2 - Pn 14, and V_3 - ASHA replicated three (3) times. This study was undertaken to determine which among of the three peanut varieties (*Arachis hypogaea* L.) would give better production in a newly established sloping agricultural land Technology (SALT) Farm in Dinagat Island . Each plot/treatment was planted with 20 hills with two experimental plants per hill.

The recommended cultural management of peanut were followed from seed preparation up to harvesting. Data gathered were statistically analyzed using the ANOVA on RCBD and to test the significant difference among treatments, LSD was employed..

Result showed that Pn 11 (V_1) got the highest yield of 0.950 kg per plot followed by ASHA (V_3) with 0. 910 kg/plot and Pn 14 (V_2) obtained the lowest yield of 0.89 kg/plot, respectively.

Keywords: peanut, salt, varieties, yield

ACCEPTABILITY OF SWEET POTATO [*IPOMOEA BATATAS*] TART

Jonita V. Literatus, Arcelita M. Gorgonio, Ermelinda M. Kiamco, Dr. Serapion N. Tanduyan
Cebu Technological University, 6050 San Francisco, Cebu Campus

ABSTRACT
The main concern of the study was to develop a healthy product out of Sweet Potato, which was known to be one of the healthiest food available. Sweet potato grows well in any part of the Philippines, sweet potato is the cheapest source of some important nutrients that our body needs, such as potassium, zinc, calcium vitamins like B1, B2 and B3 which is very essential for the brain and nervous system. Aside from this nutrients, it also

contain the natural sugar and glucose which nourish the brain and provide energy for the body. It has powerful antioxidants that help combat stress, delay the aging process and boost the immune system.
The study aimed to determine the acceptability of sweet potato tart. The parallel-group design in which a single variable (control group) was employed in the study. There were 5 treatments of the study. All the ingredients of tart are constant except the amount of flour and sweet potato varies To [control] consists of 100% flour and the tart ingredients.T1 is 25% sweet potato mixed with 75% flour. T2 is 50% sweet potato mixed with 50% flour. T3 is 75% sweet potato mixed with 25% flour and T4 is 100% sweet potato . All the treatments underwent sensory evaluation by the panelist using the 9-point Hedonic Scale.
All the treatments were found to be acceptable, wherein the most preferred treatment in terms of taste was T1, followed by T2, T4 and T3 .In terms of odor, T 1 and T2 were most acceptable followed by T4 and T3. In terms of texture, T1 got the first rank followed by T2, T3 and T4.With regards to the general acceptability, all the treatments were rated Like Very Much in the descriptive rating . In terms of its shelf-life, the product was still in good quality for 3 to 5 days. Further study is recommended to prolong its shelf life analysis and to determine which best packaging materials be used in the product.

Keywords. Sweet potato, acceptability and tart

EGGSHELL AND LIMESTONE AS CEMENT EXTENDER

Rodne L. Loria,
Rodolfo B. Solomon
Sultan Kudarat State University
Isulan Campus, Isulan, Sultan Kudarat.

ABSTRACT

The high cost of construction materials for low cost housing projects may need this cement extender to minimize construction material costs. Using eggshells and limestone as a cement extender have a great impact in engineering works and most importantly, to the construction industry.
Specifically, the study aimed to find out the compressive strengths of the Eggshell and Limestone Concrete Masonry Unit (ELCMU), and to determine if there is significant difference on the compressive strengths among the three treatments in seven, fourteen and twenty eight days of curing, and between the ELCMU and the Commercial Concrete Masonry Unit (CMU).
Findings of the study showed that the greatest compressive strength was achieved in twenty eight days of curing and that there is a highly significant difference between the ELCMU and the Commercial CMU.
The ELCMU could be used as partition walls, fences and other non-load bearing walls provided that it has designed reinforcing bars and plastered to minimize deterioration.

Keywords: Eggshells,Llimestone, Compressive Strength, Concrete Masonry unit, Non-load bearing wall

STRATEGIC ANALYSIS OF FRIENDLY PRODUCTS IN YOGYAKARTA, INDONESIA

Dyah Rachmawati Lucitasari, Ahmad Muhsin
Teknik Industri UPN "Veteran" Yogyakarta Jl. Babarsari 2 Tambakbayan Yogyakarta, 55281

ABSTRACT

Environmental concerns at this world have become a community issue. Future human life is largely determined by the quality of the environment at the moment. Environmentally sound economy is economic activity that has a healthy and dynamic balance between the economy and resources, based on Indonesia Law No. 32 of 2009 on the Protection and Environmental Management. In 2008 there were 76,267 industrial units in Yogyakarta Special Province (DIY). There were dominated by small and medium enterprises with a value of 99% or about 75,956 units.

The largest industry is furniture industry or processing (25.24%), followed by the timber industry (except furniture) and wickerwork (15.07%), nonmetallic mineral goods (13.31%), and food and beverages (10.37 %). Output value reached 3,528,623 million rupiah. Employment for small and medium enterprises is between 5-19 people per unit. Strategies used in policy formation and development of Environmentally Friendly Products are: Creation of awareness of businesses to produce environmentally friendly products, development of innovative businesses ability to produce environmentally friendly products, creation of atmosphere climate that encourages businesses to produce environmentally friendly products, and increase promotion, opportunities, and demand for environmentally friendly products from Yogyakarta.

Keywords: Eco-friendly products, waste, program, strategy

PROCESSING OF FRIGATE MACKEREL *AUXIS THAZARD* GENDER ROLES IN PRODUCT SAFETY

Corazon P. Macachor, Cecilio S. Baga, Bonifacio S. Villanueva
Cebu Technological University, Main Campus, R. Palma St., Cebu City, Philippines

ABSTRACT

In Danao City, Philippines, processing of "tinap-anan", or hot smoked frigate mackerel, from *Auxis thazard* is the main livelihood of about 30 fish port vendors. This is tasty foodstuff with a shelf life of three days at ambient temperature and five days if refrigerated. In 2005, research on tinap-anan histamine levels related to time after processing found that when the product was processed using traditional methods, would be safe for human consumption if properly handled. In June to December 2010, the roles of women and men in the different stages of producing a safe product were studied. The present processors are the children of the traditional processors. Eighty two percent of the present processors are female and 18% are male. Women market the product through retail stores and direct selling, while the men catch the fish, are responsible for assuring quality at sea and also purchase the raw materials from fish ports. Men deliver the processed tinap-anan to restaurants outside the fish port while women deliver it to restaurants inside the port.

Key words: Auxis thazard, Cebu Technological University, fish postharvest

SUSTAINABLE AGRICULTURAL DEVELOPMENT

Masyhuri
Universitas Gadjah Mada Yogyakarta Indonesia

ABSTRACT
There are many problems of conventional agricultural development. Some of them are decreasing land productivity, increasing critical land, increasing damage environment, decreasing real income of farmers, increasing poverty, increasing unemployment and unequal income.
There should be used a new paradigm called sustainable agricultural development (SAD). To optimize the SAD, there should have cooperation in the development of agribusiness between private enterprise and farmers. Several unsuccessful of conventional agriculture development in Indonesia are overuse fertilizer which leave chemical residual, use of pesticides, clearing widespread peat land, etc. these practices should be improved. The improvement among others are integrated pest management, rice-livestock agribusiness integrated system, various integrated agribusiness with cooperation. The concept of sustainable agricultural development is discussed. There are several alternatives of SAD applications.

COMPARATIVE STUDY OF NSIC 128 (MATATAG) AND NCT3, (IR-79913-B-176-B4) LOWLAND RICE APPLIED WITH DIFFERENT RATES OF FOLIAR FERTILIZER (California Growers).

Mohamad T. Nasa, Dr. Onofre S. Corpuz, Dr. Pendatun E. Dalam
Cotabato Foundation College of Science and Technology,Doroluman, Arakan, Cotabato

ABSTRACT

This study was conducted to compare the agronomic characteristics of two lowland rice varieties as affected by the different rates of foliar fertilizer; determine and evaluate the yield component of two lowland rice varieties; and determine what rate of foliar fertilizer application gave better in terms of growth and yield performance of the two lowland rice varieties.

Parameters measured were plant height, number of tillers, number of days to flower, number of days to maturity, length of panicles, weight of 1,000 grains and yield.

Var 1 (Matatag) gave more number of days to flower, longer panicles, more number of panicles, more number of tillers, more number of days to maturity, higher yield of grains and heavier weight per 1,000 grains. However, it gave shorter height of plants.

The findings showed that Matatag Variety is very much responsive to California Growers foliar fertilizer at the rate of 120 ml per 16 liters of water.

TOMATO PRODUCTION AS INFLUENCE BY NEEM LEAF EXTRACT AND COMPLETE FERTILIZER

Gabriel T. Nasiluan, Dr. Pendatun E. Dalam, Dr. Onofre S. Corpuz
CFCST, Doroluman Arakan, Cotabato

ABSTRACT

The study was conducted to determine the fermentation period of neem leaf extract effect as fertilizer and pesticide to tomato production using a randomized complete block design with three replication. The treatments were: T0-control (no application), T1-applied with complete fertilizer, T3-2kg ground neem leaf extract soaked at 24 hours in 1 gal H_2O, T4-2kg ground neem leaf extract soaked at 48 hours in 1 gal H_2O, and T5-2kg ground neem leaf extract soaked at 72 hours in 1 gal H_2O.

All data collected were analyzed through SAS system with respect to field lay-out. The result shows that T1-applied with fertilizer significantly produces more fruits per harvest, higher weight, higher number of quality fruits and higher total fruits harvested. However, in terms of storage time, the fruits applied with fertilizer seems to rotten earlier than that of fruits applied with neem leaf extract.

Keywords: neem leaf extract, tomato, production, soaking time

THE POTENCY OF PHYLLOPLANE SAPROPHYTIC FUNGI ON SHALLOT AS ANTAGONISTS AGAINST PURPLE BLOTCH DISEASE (*Alternaria porri*) in EAST JAVA, INDONESIA

Herry Nirwanto, Tri Mujoko
UPN “Veteran” East Java,Surabaya, Indonesia

ABSTRACT

The purple blotch disease caused by *Alternaria porri* (Ell.) Cif.is known as one of a mayor disease at shallot growing area and is responsible for a great loss.
The objective of the research is to explore various type of phylloplane and phyllosphere fungi on shallot crops which have potency as microbial antagonist to *A. porri* that cause purple blotch disease, and also to analyse its community.
The Research was conducted at Plant Pest and Disease laboratory, UPN " Veteran" East Java and was conducted from September 2009 up to January 2010. The methods used in this research is to conduct survey on shallot crops which applied pesticide. Sample were taken by purposive sampling to healthy shallot plant among diseased plants. The areas of survey lied on District of Probolinggo, Malang, Nganjuk and of Kediri at height between 150 - 600 m above sea level. Antagonism experiment was done by breading pathogen isolate and antagonist fungi isolate in Potato Dextrose Agar media.
Results of the research showed that diversity index of saprophytic fungy on shallot crops of Malang isolate equal to 2,99 and of Probolinggo is, 3,54. The research also found that the isolate of saprophytic fungi of shallot crop which have potency as antagonist is *Trichoderma sp*. and *Penicillium sp*

Key words:, phyllosphere and phylloplane fungi, antagonism, Alternaria porri, saprophytic, shallot

RESIDUAL EFFECT OF AMMONIUM SULFATE SUBSTITUTION ON SOIL PROPERTIES AND PRODUCTIVITY OF PLANT AND RATOON CANE

Nurhidayati, Abdul Basit, Sunawan
Islamic University of Malang,East Java, Indonesia

ABSTRACT

Overuse of the Ammonium Sulfate (AS) fertilizer in the long-term sugarcane cultivation had a negative impact on the soil properties which in turn can decrease soil and crop productivity. The study to compare the residual effect of AS substitute fertilizers on soil physico-chemical properties and crop productivity, was conducted at up-land in East Java during two cycles of the sugarcane growth (plant cane and ratoon cane).
There were ten treatments, which were tested consisting of three treatments using AS fertilizer, six treatments using the AS substitute fertilizer and one control (without the use of the fertilizers). The measured variables were soil bulk density, total N, SO_4^{2-} content, soil pH, and yield variables (cane yield, sugar content and sugar yield).
The results of this study showed that the use of the AS fertilizer substitute decreased soil bulk density and increased total N, SO_4^{2-} content, and soil pH at the post-harvest of plant and ratoon cane. It confirmed a better condition in the soil with the AS fertilizer substitute rather than alone AS fertilizer. The residual effect of the AS fertilizer substitute on the soil properties at the post-harvest of plant cane provided a positive impact on sugar content and yield at the ratoon cane. Soil bulk density and SO_4^{2-}content were the most important soil properties that influenced cane and sugar yield of ratoon cane. It suggests that the use of the AS fertilizer substitute is recommended on sugarcane cultivation for maintaining the soil quality.

Keywords : residual effect, soil properties, plant and ratoon cane

USE OF DIFFERENT FOOD ADDITIVES TO ENHANCE THE FLAVOR OF DRIED TILAPIA *Oreochromis spp* FOR EXPORT MARKET: AN IMPROVED RECIPE"

Benjie Oncienes, Venerando D. Cunado, Corazon P. Macachor
Cebu Technological University, R. Palma St., Cebu City

ABSTRACT

This is an experimental study using the randomized complete block design using four variables, i.e.R_0 - 4% carrageenan with 0% calamansi; R1 - 3 % carrageenan with 10% calamansi; R2 - 2% carrageenan with 20% calamansi; R3 - 1% carrageenan with 30% calamansi and R4 - 0% carrageenan with 40% calamansi concentrations which was added to the splitted tilapia to determine the effects of additives on the quality of dried tilapia. The most preferred dried tilapia was subjected to proximate analyses.
Out of the four varying concentrations of carrageenan and calamansi, treatment with 3% carrageenan and 10% calamansi obtained the highest sensory rating scores in all sensory attributes undertaken. The product had a brown color, slightly fishy flavor and odor and moderately firm texture with an acceptability rating of "like very much". The most preferred dried hybrid tilapia is composed of carrageenan with 10% calamansi concentrations composed of 22.20% moisture, 65.73% protein, 10.90% fat and 1.17% ash contents.
After a series of analyses of the acceptability and proximate composition of the most preferred dried hybrid tilapia as revealed from the data gathered both from laboratory and perceptions of the experienced and consumer panelists, the following conclusions are formulated: only 0.3 % carrageenan with 10% calamansi concentration is appropriate to be added to the splitted hybrid tilapia.
An improved recipe of drying hybrid tilapia with carrageenan and calamansi is recommended.

TESTING AND EVALUATION OF INDIGENOUS UPLAND RICE CULTIVARS IN SULTAN KUDARAT PROVINCE

Romualdo M. Ortuoste PhD, Jesusa D. Ortuoste Ph.D
Sultan Kudarat State University , SKSU-ACCESS, Tacurong City

ABSTRACT

A study was conducted AT Senator Ninoy Aquino and Bagumbayan, Sultan Kudarat
For six (6) consecutive wet and dry cropping seasons from May 2008 to November 2011 to determine the agronomic and yield characteristics and its reaction to pests and diseases.

Result showed that on the average yield of the different upland rice cultivars in six cropping seasons, Kasagpi , Kulaman and Bli outyielded the check with a mean yield of 2717,2675 and 2555 kg/ha . In terms of the agronomic characteristics, all indigenous varieties exhibited similar characteristics on the average number of productive tillers and filled grains. However in terms of plant height almost all indigenous cultivars were taller and are late maturing as compared to the check (UPL Ri 5, UPL Ri 7 and NSIC varieties). In terms of its reaction to pests and diseases, Kulaman cultivars were severely damaged with rice blast during dry season.

Keywords: upland rice, cultivars, outyielded , productive tillers and maturity

INFLUENCE OF CALAMANSI AND VIRGIN COCONUT OIL AS ACTIVE REAGENTS ON THE ACCEPTABILITY OF LIQUID HAND WASH

Anabelle T. Pantaleon, Corazon P. Macachor, Hubert G. Quiñones
Cebu Technological University (CTU) Main Campus, R. Palma St., Cebu City

ABSTRACT

The newly formulated liquid handwash with calamansi extract and 5 grams virgin coconut oil enhance its odor and foam-forming ability, respectively. The product had light yellow in color, moderately pleasant odor, slightly thick in viscosity and very foamy based on the sensory evaluation using descriptive testing as evaluated by twenty trained panelists. The general acceptability rating of the most preferred liquid handwash with calamansi extract was “Like Moderately”, while “Like Slightly”, for liquid handwash with virgin coconut oil as active reagents. The preference rating of the most preferred sample significantly differs as to its odor and foam-forming ability using ANOVA and DMRT at 5% level of significance; however its quality is comparable with the liquid hand wash of the DOST-ITDI. The product had a pH value of 6.50 and a bacterial count of 2.00×10^3 cfu/g sample, per result of laboratory analysis. The preparation of liquid handwash with calamansi extract and virgin coconut oil lowers the cost of hand washing activities of the schools, colleges and universities to prevent the influenza A(H1N1), the country’s lifestyle disease, which respond the DepEd Management Memorandum to all schools, colleges and universities in Cebu Province and to motivate the students to observe hand washing before and after eating and using the comfort rooms.

Keywords: liquid hand wash, calamansi extract, virgin coconut oil, odor, foam-forming ability

INFLUENCE OF CROP ROTATION SYSTEM ON SOIL QUALITY IN TUKUCAN FARMS IN TINOC, IFUGAO

Estella M. Paoay, Zeverine P. Banganan Leon G. Mocate Jr., Romeo A. Gomez Jr., Ph.D.
Benguet State University, La Trinidad, Benguet

ABSTRACT

The influence of employing carrot-cabbage rotation scheme on the soil quality in terms of moisture content (MC), pH, organic matter (OM), N, P, and K was assessed in a study conducted in Tukucan, Tinoc, Ifugao on February 2009 to May 2009. Farming practices that may likely to affect the soil quality were also documented.

Result of the correlation and regression analysis at 95% level of confidence revealed that the duration of carrot-cabbage rotation practice and the change in soil MC and P have moderately high correlation with r values of 0.50 and 0.59 respectively, whereas change in soil OM, N were strongly correlated (0.91). On the other hand, increase in pH and K registered a low correlation (0.21 and 0.22, respectively. The result showed that practicing rotation of carrot and cabbage would tend to decrease the soil MC, OM and N while increase P through time. Farming practices that were documented were land clearing using backhoe, manual tilling using grab hoe and Japanese hoe for bed preparation, incorporation of residue of preceding crop and 1 meter deep tillage every after 10 years or when drastic decrease in crop production is observed.

Keywords: Crop rotation system, soil quality, farming practices

HOME-MADE COMPOST AND FERMENTED ACTIVATORS: AN EFFECTIVE ALTERNATIVE TO IMPROVING YIELD IN RADISH

Pet Roey L. Pascual, Pedrito S. Nitural
Cebu Technological University (CTU) – Barili Campus, Barili, Cebu, Philippines/
Central Luzon State University (CLSU), Science City of Muñoz, Nueva Ecija, Philippines.

ABSTRACT

The use of organic fertilizer over that of synthetic fertilizer is gaining wider acceptance. For crucifer production, a short cycle and fast growing crop, compost usage may be disadvantageous due to characteristic slow nutrient release. Thus, additional known effects of fermented activators such as promotion of growth must be exploited. This study was conducted to evaluate the effect of using different fertilizers, fermented activators, and effective microorganism (EM) on the yield of radish.

Compost fertilizer application using formulated (30% Browns + 30% Greens + 50% Banana Bract) and commercial compost alone resulted to longer (32.53cm and 26.44, respectively) and larger roots (4.66cm and 4.98, respectively). On the other hand, application of Crushed Golden Snail Amino Acid (CGSAA) along with fertilization with formulated compost increased yield by 57.32 times (33.83t/ha) than those without fertilizer, fermented activators and EM application (0.58t/ha). Regarding harvest index, it is evident that root development was consistent with shoot development in all treatments except for those fertilized with inorganic fertilizer. Furthermore, a significant relationship exists between microbial population (cfu/ml) and computed marketable yield (t/ha).

Therefore, formulated compost fertilizer alone is enough for increased root length and diameter, but for optimal yield, supplemental CGSAA application is needed.

Keywords: Compost, fermented activators, *radish, yield*

IMPROVED COMPOSTING THROUGH FERMENTED ACTIVATORS AND EM® UTILIZATION

Pet Roey L. Pascual[1*] and Pedrito S. Nitural[2]
[1]*Cebu Technological University (CTU) – Barili Campus, Barili, Cebu, Philippines*
[2]*Central Luzon State University (CLSU), Science City of Muňoz, Nueva Ecija, Philippines.*

ABSTRACT

Compost production in the Philippines relies heavily on animal manure. Lignocellulosic waste makes up 44.5% of the typical municipal solid waste making it a good prospect for composting. Sadly, it takes three to four months to decompose. This study was conducted to quantify microorganisms from different fermented activators and EM, determine the duration of compost maturity, determine the percent recovery of compost, and determine the nutrient content and pH of compost as affected by different fermented activators and EM.
Significant lower temperature were registered on compost (30% Browns + 30% Greens + 50% Banana Bract) applied with commercial effective microorganism (EM) from five to eight weeks of composting than those applied with fermented activators and tap water. Such is a sign of early maturity. Meanwhile, application of Fermented Swamp Cabbage Juice (FSCJ) alone improved the percent recovery of compost by 0.36 times (46.70%) compared to those applied with tap water only (34.33%). Furthermore, application of commercial EM and FSCJ alone improved the nutrient contents (N, P_2O_5 and K_2O) of the compost after four and eight weeks of composting. For six weeks, however, higher percent nitrogen and phosphorus contents were observed on compost applied with tap water only.

Keywords: Percent recovery, nutrient content, compost, fermented activators, EM®

EFFECTS OF DIFFERENT TYPES OF MILK FAT GLOBULE MEMBRANE MATERIALS ON THE PHYSICAL AND RHEOLOGICAL CHARACTERISTICS OF SET YOGHURTS

Pet Anthony.L. Pascual[1*], Koen Dewettinck[2] and Thein Trung Le[2]
[1]*Leyte Normal University (LNU), Department of Home Arts Entrepreneurship –Tacloban City, Philippines/*
[2]*Universitiet Gent (UGent), Faculty of Bioscience Engineering, Gent, Belgium*

ABSTRACT

The study on the potential applications of milk fat globule membrane (MFGM) materials as an ingredient in processed foods has become of great interest in the dairy industry today due to the functional and bioactive properties it possessed.
The objective of this research was to investigate the effects of supplementing MFGM materials from different sources, as bioactive components in yoghurt on its various physical and rheological properties such as the water holding capacity, color, flow behavior, and thixotropy. Two major experiments were conducted in this study. The first experiment was to determine the chemical composition of the different MFGM materials. Tests on the physical and rheological characteristics of yoghurt as influenced by the different types of MFGM materials were carried out in the second experiment.
The different isolated MFGM materials differ significantly in terms of their protein, fat, ash, lactose and polar lipid contents. The enrichment with different MFGM materials significantly affected both physical and rheological properties of yoghurt. Yoghurts enriched with different MFGM materials showed shear thinning and thixotropic behaviors. Samples with MFGM materials isolated from buttermilk (BM-MFGM) and butter serum powder (BS-MFGM) exhibited higher structure loss. The addition of MFGM materials basically increased the water holding capacity of yoghurt. The brightness of yoghurts enriched with MFGM isolated from buttermilk and butter serum did not significantly differ from the control.
Further investigation should be done on the effects of MFGM materials on the various properties of yoghurt. An oxidative stability study on the MFGM enriched yoghurt should be conducted. Duration of experimental conduct

such as on the storage time can be lengthened to provide a clearer information on the evolution of yoghurt gel during storage. Study on the effects of different MFGM materials on yoghurts processed at various pasteurization temperature-time and different incubation temperature-time combinations should also be looked into.

THE COBB BROILER FED WITH VARYING LEVELS OF HONEY FEED ADDITIVES

Mohamadtaha S. Pendaliday, Ebrahim M. Ulanan
CCSPC, Cotabato City

ABSTRACT

This study was conducted at CCSPC, College of Agriculture, Forestry and Fisheries, Cotabato City from December 2008 to February 2009. This study aimed to determine the influenced of honey as feed additives to the commercial feeds on the growth of Cobb broiler chicken. The study was laid out in Completely Randomized Design (CRD) with four treatments and replicated three times.
The result of the study revealed that initial weight, final weight, weight gain, feed intake and feed conversion efficiency showed no significant variation results. The final weight of cobb broiler chicken at 35 days as influenced by honey feed supplementation, results shows that the most highest weight was noted in treatment 4 (20cc of honey) got the highest mean value of 1042 grams, followed by treatment 1 (Control) with a mean value of 1037.70 grams, treatment 3 (15cc honey) and treatment 2 (10cc honey) got a mean value of 1028 and 971.33 grams respectively.Analysis of variance revealed that the F – computed (0.30) is less than the F – tabulated (4.07) at 5% level of significant this means that there is no significant difference between and among treatment means.This results implies that the final weight of cobb broiler chicken as influenced by honey feed supplementation were not affected by different honey supplementation as used in this study and did not show any significant variations.
Finally, different rates of honey feed additives used in this experiment did not influenced significantly the growth of cobb broiler chicken, this further indicates that broiler production can be profitable without using honey feed additives.

USED TIRE (CRUMB RUBBER) AS ASPHALT MODIFIER

Anthony B. Pimentel, Mary Lynn G. Magbanua, PhD
Sultan Kudarat State University, Isulan Campus, Isulan, Sultan Kudarat

ABSTRACT

To reduce the growing volume of dumped used tires, this research study utilized used tire (crumb rubber) as asphalt modifier. It is being considered as an alternative method of recycling in a form of recycled crumb rubber as asphalt modifier to improve resistance in thermal cracking of re-surfaced and repaired highway pavement.

Specifically, the study aimed to find out the compressive strength of the treatments, and if there is a significant difference on the compressive strength among the four treatments. Findings of the study showed that the greatest compressive strength among the four treatments was achieved by treatment 1 and meet the minimum requirement for compressive strength of asphalt design.

Keywords: asphalt, modifier, used tire (crumb rubber), compressive strength

UTILIZATION OF AGRICULTURAL WASTE AND BIOLOGICAL AGENT TO INCREASE RICE YIELD

Oktavia S. Padmini, and R.R. Rukmowati Brotodjojo
Universitas Pembangunan Nasional "Veteran" Yogyakarta ,Jl. SWK 104 Condongcatur, Yogyakarta, Indonesia

ABSTRACT

Agricultural waste can be fermented into liquid organic fertilizer to provide nutrition and phytohormon for plant. The application of this liquid organic fertilizer will improve nutrient availability, the root morphology, growth and yield of plant.

The objective of this research was to examine the effect of NPK synthetic fertilizers or types of Liquid Organic Fertilizer (LOF) on plant growth and rice yield. The experiment was done at Bener Village, Ngrampal District, Sragen Regency, from March until November 2011. The experiment was arranged according to Randomized Completely Block Design with five replicates. The treatments were: LOF "Double", LOF "Plus", LOF "Bacteria", LOF "Bacteria+Plus", and NPK fertilizers (Control, without LOF). Plant growth was measured weekly on five plant samples and plant yield was assessed at harvest time.

The data were subjected to analysis of variance followed by Duncan's Multiple Range Test. The results showed that plants treated with synthetic fertilizer (NPK, Control) has the lowest plant growth and rice yield compare to those treated with LOF. Type of fertilizer applied did not affect number of tillers. Plant height and number of leaves of plants treated with LOF "Bacteria+Plus" or with LOF "Plus" was higher than those treated LOF "Double" or treated with synthetic fertilizer. Plant treated with LOF "Bacteria+Plus" or with LOF "Plus" has significantly higher number of seed/panicle, grain weight per hill, per plot and per hectare that those treated with LOF "Double" or treated with synthetic fertilizer.

Key words: Biological agents, agricultural waste, liquid organic fertilizer, rice

INFLUENCE OF SUCROSE ON THE QUALITY OF VCO-VINEGAR

Hubert G. Quiñones*, Renissa S. Quiñones, and Corazon P. Macachor
Cebu Technological University-Main Campus
R.Palma St., Cebu City

ABSTRACT

In search for the complete and practical utilization of discarded materials as the result of processing which is suitable for human consumption, this study was investigated. It aimed to determine the influence of sucrose on the quality vinegar utilizing the VCO-skim milk as an alternative raw material. There were four treatments using different levels of sugarcane added to VCO-skim milk with yeast and had been allowed to ferment at room temperature. Fermentation and laboratory analyses were carried out during the study. Results of the investigation showed that, as the fermentation process progressed, pH in all samples decreased corresponds to the increase of the Total Acidity. Alongside with the fermentation period is the lower of the bacterial plate count. Sensory properties of the samples, results show no significant difference in color (yellow-orange) and odor (sour) on all of the treatments during the fermentation periods and preference results show like very much by the panelists. VCO-skim milk derived from the water extracted from the VCO processing can be utilized as raw material in vinegar production. Thus, the large volume of VCO-water generated from VCO production industry will have an optimum utilization thereby reducing discarded waste material.

Keywords: sucrose, virgin coconut oil, vinegar

GLUTEN-FREE FLOUR BLENDS SENSORY CHARACTERISTICS

Renissa S. Quiñones, Corazon P. Macachor and Hubert G. Quiñones
Cebu Technological University-Main Campus
R.Palma St., Cebu City

ABSTRACT

The study aimed to determine the organoleptic properties of gluten-free flour blends for celiac disease patients utilizing different percentage composition of cereals and root crops. There were six treatments in replications using CRD under controlled condition.The experimental samples were subjected to sensory evaluation using descriptive test and preference test by trained panelists. Gluten-free flour treatments and control had whiter in color, pleasant odor, fine-powdery texture for control and fine-gritty texture for gluten-free treatments. Sensory evaluation of the control and gluten-free treatments has revealed that there were no significant mean differences among treatments in all of the sensory characteristics. However, gluten-free flour blend (T2) had higher level of acceptance as compared to other gluten-free flour blend treatments. Utilizing available novel/functional ingredients can produce a gluten-free flour blend with comparable sensory properties of commercial wheat flour.

Keywords: gluten-free flour blends, sensory characteristics, celiac disease

LIQUID FERTILIZER FROM FISH WASTE

Rey S. Raguindin
Pangasinan State University-Binmaley Campus
Binmaley, Pangasinan, Philippines

ABSTRACT

This study was conducted at Pangasinan St6ate University, Binmaley Campus to find out how wastes obtained from fishes and the like that could be utilized in the production of essential products such as fertilizers vital to agriculture, and to find ways how dead fish during massive fish kills can be converted into useful products and not become an environmental degrading factor when emits foul smell to the localities.Fish wastes collected were added with modified glucose solution fortified with lactic acid bacteria that enhanced the fermentation and preventing evolution of foul-smelled gas. After 7 to 10 days of fermentation or putrification, the liquid substrates were collected this formed the new product called the liquid fertilizer.

Results of the study showed that the liquid fertilizers extracted from fish wastes resembled like the fish sauce and were found to be an excellent product use for fertigation and foliant spray when diluted to lower concentrations The liquid fertilizer produced is rich in nutrients needed by plants and could be used for both fertigation and foliant spray for better growth and yield of plants. Plants treated as cash crops and vine crops showed performance better than those not treated. Plant parts such as branches, leaves and even fruits treated with new foliar spray product measured bigger in sizes, greater in volume and healthier compared to those not treated. It was also noted that plants treated with foliant spray were resistant to insect pest infestation.

A vineyard of bitter gourd or ampalaya treated with the liquid fertilizer obtained higher yield than those treated with inorganic fertilizer, though both treatments have the same area of trellis, same number of plants, same nature of soil and spacing, mode of watering and fertigation but differed only on the kind of fertilizers used. The average total weight of fruits produced per plant treated with fish waste organic fertilizer was 4.876 kg while the control was only 3.634 kg. It was noted that more fruits produced from the control treatments that were infested by fruit flies.

Key words: liquid fertilizer, fish waste, fertigation, foliant spray

ACCEPTABILITY OF CHILLED SWEETENED GOZO (*KAPPAPHYCUS ALVAREZII DOTY)* SALAD IN TWO DIFFERENT TYPES OF PREPARATION MIXED WITH DICED MANGO (*MAGNIFERA INDICA LINN.*)

Ronald M. Ramire, Annalie G. Gasta, Jessel O. Dalagon,
Cebu Technological University
San Francisco Campus, San Francisco, Cebu, Philippines

ABSTRACT

The study was conducted in order to find out whether gozo (*Kappaphycus alvarezii*) could be a good ingredient for salad preparation with diced mango. Experimental method was used in the study. There were two processes used in the preparation, soaking and boiling and there were six treatments for each method used. For soaking preparation, T0S was fruit salad using nata de coco, nestle cream and condensed milk, T1S was gozo soaked with boiled water for five (5) minutes in a pan. T2S was gozo soaked with boiling water for ten (10) minutes, T3S was gozo soaked with boiling water for fifteen (15) minutes. T4S was gozo soaked with boiling water for twenty (20) minutes, T5S was gozo soaked with boiling water for twenty five (25) minutes.

For boiling preparation, TOB was fruit salad) using nata de coco, nestle cream and condensed milk.T1B gozo was boiled with a continuous supply of fire for five (5) minutes in a kettle, T2B gozo was boiled with continuous supply of fire for ten (10) minutes, T3B gozo was boiled for fifteen (15) minutes, T4B gozo was boiled for twenty (20) minutes, T5B gozo was boiled for twenty five (25) minutes in a kettle. All the treatments were mixed with ingredients similar to the fruit salad ingredients except that gozo was made to substitute nata de coco and diced mango.

Results based on the color show that T2S for was like moderately and T5B was like moderately in boiling preparation. For odor, T4S was like moderately in soaking preparation and T5B was rated like moderately in boiling. For flavor it was found out that T4S was like moderately (soaked) and T2B (boiled) was like moderately. For texture T1S (soaked) was like moderately and T5B (boiled) was like moderately.

Results further revealed that there was no significant mean difference in all attributes between soaking and boiling as a method and time of preparation at 1% level of significance

Cocos nucifera CULTIVAR AND MATURITY EFFECTS ON THE QUALITY AND PRODUCTION YIELD OF VIRGIN OIL

Christeodoflor A. Ramos*, Corazon P. Macachor** and Cecilio S. Baga**
*Cebu Technological University, Danao Campus Danao City/ **Cebu Technological University, Main Campus
R. Palma St., Cebu City

ABSTRACT

Virgin coconut oil is usually extracted from the matured green coconut varieties by using cold process. The demand of the product increased, thus this study is investigated. This is an experimental study using the randomized complete block design using four variables, these are green nuts: 75 days maturity; green nuts: 90 days maturity; golden nuts: 75 days maturity: and golden nuts; 90 days maturity. The study determined the most appropriate varieties and maturity of coconut for virgin oil to the standards of virgin coconut oil particularly sensory qualities, crude fat content and peroxide value. Out of the four varying variety and maturity of coconut, treatment using 90-day old golden nuts obtained the second highest production yield with highest sensory rating scores based on the weighted mean in appearance, flavor and texture and had significant mean difference except texture. The oil had a colorless appearance, very much felt coconut milk flavor, moderately pleasant odor and moderately fine texture with an acceptability ratings of “like very much in appearance and like

moderately as to its flavor, odor and texture. The oil had 78% crude fat content and 2.58 milli-equivalent per gram peroxide value.

Keywords: Green coconut, Golden coconut, Maturity, Virgin Coconut Oil

FABRICATION AND CHARACTERAZATION OF TITANIUM DIOXIDE BASED SENSITIZED SOLAR CELL USING VENEGAR

Alex N. Remegio,Julie E. Albano, Ph. D., Victorino M. Laviste
Sultan Kudarat State University, Kalamansig, Sultan Kudarat

ABSTRACT

A project designed primarily aimed to Fabricate Solar Cell Using Titanium Dioxide and Vinegar as an alternative energy source to save consumption of electrical energy and protect the harmful effect of carbon oxidation in the atmosphere. This technology is aimed to design a device that can collect electrons from solar energy and convert it into electrical energy.

A Titanium Dioxide based sensitized solar cell (SSC) using vinegar was fabricated on a regular glass of plate and characterized with aluminum coating electron collector. The cell ha d Ti02 as photo electrode, Onion Skin as a dye sensitizer, copper as an electrolyte and aluminum foil as a counter electrode. The photos electrochemical characteristics of TiO based SSC were tested under simulated sunlight. Two cells were fabricated. Each cell constructed on one square foot and has twelve blocks of cell 2x3 in each. Based on the result obtained in the day 1 shadowed area from 5pm to 6pm the first cell obtained 6.24 volts with 154 microamperes. Under moderate light source from 7am – 8am, the first panel obtained 6.42 volts with 191 microamperes; the second panel had 7.90 volts with 210 microamperes. Under strong light from 11am -12nn, the first panel obtained 6.50 volts with 190microamperes, and the second panel obtained 8.7volts with 252 microampere.

Result of the study showed that strong exposure to sunlight exhibit the highest voltage mean generated by the solar panel compared to moderate shadowed exposure. This implies that in terms of current generation, the stronger light available, the higher the current produced by the solar and the voltage produced does not affect the three conditions exhibited.

LEMON EXTRACT AND MILK AS ACTIVE REAGENTS FOR TRANSPARENT SHAMPOO

Rebecca A. Rivas, Corazon P. Macachor and Cecilia Elena P. de los Reyes
Cebu Technological University-Main Campus, R. Palma St., Cebu City

ABSTRACT

This is an experimental study using the randomized complete block design using ten treatments, that is ITDI's Shampoo formula as control sample (T1); Treatments 2, 3 and 4 were using the Shampoo formula of ITDI with 5%, 10% and 15% lemon extracts, respectively; Treatments 5,6 and 7, were using Shampoo formula of ITDI added with the combination of lemon extracts and milk having with 5%, 10% and 15%, respectively and Treatments 8,9 and 10 were using Shampoo formula of ITDI with 5%, 10% and 15% milk concentrations, respectively to determine the effects of the varying concentration of lemon extracts and milk as active reagents into the transparent shampoo based on the descriptive and acceptability sensory results before and during application. Out of the ten (10) varying concentrations of transparent shampoo, treatment with "5% lemon" obtained the highest sensory rating scores based on its weighted mean in overall mean acceptability, with significant results in color and scent before application and smoothness and softness during application. Before application, the product had the following properties of very light yellow color, slightly pleasant scent and slightly thick in viscosity, when evaluated during application, the product manifests very foamy, moderately smooth, and very soft hair.

Keywords: transparent shampoo, lemon extract, milk

EGG-AT-FIRST-LAY IN PATEROS DUCKS FED WITH CADMIUM AND ORGANOCHLORINE PESTICIDE RESIDUES IN COMMERCIAL FEEDS

Henry I. Rivero†, Renato S.A.Vega**‡, Severino C. Capitan**§, and Angel L. Lambio**+*
*MSU-Iligan Institute of Technology, A. Bonifacio Ave., Tibanga Iligan City 9200 Philippines/**University of the Philippines Los Banos, College, Laguna 4031 Philippines*

ABSTRACT

Three-month old (pre-lay) Pateros ducks *Anas platyrhynchos* in complete confinement for three months under modified feed regimes were monitored for egg-at-first-lay (EAFL) in response to contaminated commercial feeds. Different concentrations of □-Benzene Hexachlorocyclohexane (□-BHC, 100□g/kg), lindane □□□BHC, 7.14□g/kg), chlordane (2□g/kg), and cadmium (50□g/kg and 100□g/kg) into two modes of administration as Individual (IND) and Combinatorial (COMB) were used to look into their possible influence on early gonadal response of pre-lay ducks to estrogen and estrogen-mimics. The developing liver, gonad, and oviduct were also included in the analysis of organosomatic indices for statistical basis of organ development and growth.

As expected, the positive control (BT9-2) administered with commercial feed incremented with 17□-estradiol (estrogen) had responded to increased systemic levels of the hormone by having the earliest EAFL, which was at three-and-a-half months of age. The EAFL normally occur between four-and-a-half to six months. This was followed by the group that received a combination of all the OCP residues (b-BHC, lindane, and chlordane) and 100ppb Cd (BT8-2). This group responded by having EAFL on the fourth month. The quality of eggs in these two groups have shown soft shell (eggs at this age are smallest or peewee). Egg records also showed that more than mean egg weight (g) could not reach the standard size for setting to incubator for balut. The number of eggs laid in both treatments increased from the second week of treatment onwards but in a very slow frequency with no significant difference (p>0.05) but significantly differ by age (p=0.002, □=0.05). One month egg production record was obtained with a total of only 137 (45%) was gathered from IND group while 168 (55%) from the COMB group. The predicted egg weight increases from the EAFL to last day of recording have shown

to follow the normal trend in IND treatment (R=0.025, □=0.05) but not in COMB treatment groups (R=0.07, □=0.05). It was not surprising that precocious sexual maturation in response to the natural estrogen and to the xenoestrogens and metalloestrogen would occur on pre-lay ducks three-and-half-month old or just roughly two weeks after placing them into experimental feed regime. Physical appearances of early eggs were also noted.

PALM FRONDS LUMBER

Bimbo L. Salazar, Mary Lynn G. Magbanua, PhD
Sultan Kudarat State University - Isulan Campus, Isulan Sultan Kudarat.

ABSTRACT

The increase in the area planted with palm leads to the abundance of plantation wastes which are thrown into the field. These wastes post problem to the environment.
These materials can be recycled and turned into lumber and other construction materials. Palm fronds can be fabricated into architectural lumber to be used as trophy and double walling.
These lumbers underwent mechanical processing for eight (8) days and were subjected to different tests such as density, moisture content and Shrinkage.
It was found out that moisture content and density of the palm fronds lumber decreased after being processed. There is a direct relationship between density of lumber and shrinkage value. Lumber with higher density shrink more than those with lower density.

Keywords: palm fronds, lumber, density, moisture content, shrinkage

ECOTOURISM: RECREATION VEHICLE FOR ENVIRONMENTAL EDUCATION, NATURALCONSERVATION AND COMMUNITY EMPOWERMENTIN YOGYAKARTA SPECIAL REGION PROVINCE, INDONESIA

Dr.Siti Syamsiar
University of Pembangunan Nasional “Veteran” Yogyakarta, Indonesia.

ABSTRACT

Ecotourism is a leisure trip for recreation which is a pleasant experience and help to remove boredom of everyday life, perform on the natural atmosphere for education, natural conservation and community empowerment.
This research was aimed to analyze strategic developing the ecotourism as a recreation vehicle for education, natural conservation and community empowerment. This was a qualitative research, as an understanding method of uniqueness, and holistic nature of human presence and its interaction with the environment. Considering it, this research used descriptive method. The location was selected purposively, that is Yogyakarta Special Region Province, a second tourism destination in Indonesia after Bali. Primary and secondary data were collected. SWOT analysis was used to get description of ecotourism strengths, weaknesses, opportunities, and threats in Yogyakarta Special Region Province. The results showed that the strengths and opportunities for education, environmental conservation and community empowerment were great, but it should be paid attention for internal weaknesses and external threats of Ecotourism existing in Yogyakarta Province.

Keyword: Ecotourism, environmental education, natural conservation, community empowerment.

GLEANING AND EXTRACTION RATE OF HOLOTHURIANS IN CAMOTES ISLANDS, CENTRAL PHILIPPINES

Serapion N. Tanduyan, Panfilo E. Ciriaco, Ricardo B. Gonzaga, Wilfredo G. Anoos, Lourdes M. Garciano and Berenice T. Andriano
Cebu Technological University, San Francisco, Cebu Campus

ABSTRACT

Camotes Sea as one of the fishing grounds in the Philippines. Extraction of the marine resources including holothurians in this fishing ground has been felt by the fishermen; hence, this study was conducted in order to find out its gleaning methods used, species gleaned, extraction rate and perception on the distribution of holothurians in the four municipalities of Camotes Islands which are San Francisco, Poro, Tudela and Pilar. Interview guide and actual field visits in the areas were used to gather the data.
Results show that gleaning methods of gathering holothurians in Camotes Islands were handpicking, using bolo, water goggles, pointed wood, iron bars and by spears both in day and night operations. Frequently gleaned sea cucumber species are *Stichopus hermanni*, *Bohadschia paradoxa*, *Bohadschia marmorata*, *Stichopus horrens, Holothuria nobilis, Stichopus variegatus* and *Holothuria pulla* which are also the species that were caught throughout the year.
Holothurians gathered measures from 5-10 cm and the perceived distribution distance of gleaned holothuria is 1-5m. The amount of catch is ½ kilo per 1-2 hours gleaning time followed by "no catch" and the third is 0.51 to 1.0 kg and the gleaning frequency of holothurians in the entire Camotes Islands is 2-4 times a week.

ACCEPTABILITY OF TILAPIA (*OREOCHROMIS NILOTICUS*) TWIST FROM OFFALS ENRICHED WITH HORSE RADISH (*MORINGA OLEIFERA LAM.)*LEAVES

Jonita V. Literatus, Arcelita M. Gorgonio, Serapion N. Tanduyan, Julieta T. Surbano
Cebu Technological University,6050 San Francisco, Cebu Campus

ABSTRACT

People now a days are fond of eating junk foods during leisure time, and as a snack item especially among the children who love to eat this kind of food, where in fact nutritional awareness is not anymore a great concern among us, thus malnutrition could be a great problem. There are many industries proliferating and their waste products are just discarded.
That is why the main concern of the study was to utilize and develop a product out of the tilapia offals in which only the meat were used in the preparation of tilapia nuggets, pickled, fillet, etc. Making use of tilapia offals in preparing the Tilapia Twist is a way of maximizing the utilization of food, likewise enhancing its nutrient content.
There were five treatments in the study. T0 (control) was using pure shrimp meat mixed with rice flour for the twist. T1 was using 25% tilapia offals and 75% shrimp meat. T2 using 50% tilapia offals and 50% shrimp meat. T3 is using 25% shrimp meat 75% Tilapia offals. T4 is using 100% Tilapia offals.All the treatments were using rice flour.
Results show that T0 (control) and the experimental group were rated like very much by the organolyptic panelists, in terms of odor, taste, texture and general acceptability, For odor T3 got the highest rating, Tor the taste T2 was the highest anf for textureT1 was the highest and for general acceptability was T4,
ANOVA results show that there was no significant difference among the treatments in terms of taste odor, texture and general acceptability.

ACCEPTABILITY OF CASSAVA (*MANIHOT ESCULENTA*) SIOPAO

Ostria, Michael Sam , Serapion N. Tanduyan, Ermelinda M. Kiamco
Cebu Technological University , San Francisco, Cebu

ABSTRACT

Cassava are abundant in the Philippines and value added products out of this crop was made Being also abundant in Camotes Island this was used and wanted to find out its acceptability as a dough ingredient of siopao named as steamed buns.
There were 5 treatments of the study. T0 (control) was using all purpose flour as dough filled with ground pork and other ingredients. T1 was using 25% cassava flour mixed with 75% all purpose flour. T2 was using 50% cassava flour mixed with 50% all purpose flour. T3 was using 75% cassava flour mixed with 25% all purpose flour and t4 was using 100% cassava flour. All the treatments were subjected to organolyptic tests in terms of texture, odor, flavor,palatability and general acceptability.
Results show based on the taste, T4 was rated like very much. As to texture and odor T0 was rated like very much followed by T2. For palatability it was found out that T2 was rated liked very much followed by T4. For flavor T4 was rated like very much followed by T2. For general acceptability T4 was rated liked very much followed by T0. ANOVA results show that there were no significant differences on the acceptability of cassava as a dough ingredient of siopao filled with ground pork and other ingredients in terms of flavor, odor , texture, palatability and general acceptability.

ISOLATION AND CHARACTERIZATION OF STRESS RELATED GENE FROM A LESION MIMIC AND SENESCENCE MUTANT IN RICE (*ORYZA SATIVA* L.)

Jerwin R. Undan[1], Muluneh Tamiru[2], Akira Abe[3], Shunichi Kosugi[2], Hiroki Takagi[2], Kakoto Yoshida[2], Jesusa Undan[2] and Ryohei Terauchi[2]
[1]Central Luzon State University, Science City of Muñoz, Nueva Ecija, 3120, Philippines
[2]Iwate Biotechnology Research Center, 22-174-4 Narita, Kitakami City, Iwate, 024-0003, Japan
[3]Iwate Agricultural Research Center, 20-1 Narita, Kitakami City, Iwate, 024-0003, Japan

ABSTRACT

Recent progress in the isolation of genes controlling agronomic traits and the elucidation of its genetic basis has a big impact to fundamental research on rice plant development. Rapid advances in molecular genetic approach have been utilized as an alternative and promising tools to improve plants adaptability to a radical global temperature change and to identify genes in plant that may provide key molecular mechanism on plant adaptation to abiotic stress.The mutant characterized as lesion mimic and senescence phenotype that was found related to stress response has been isolated from *Hitomebore* mutant that are mutagenized using EMS. The mutant was crossed to *Kasalath* to generate F_2 as a mapping population and were used for classical linkage analysis using SSR markers that are polymorphic between the parent, in parallel a whole genome sequencing have been performed to identify the gene. A SNP found corresponds to exon-intron splicing junction of the gene that encodes a carboxyl-terminal domain (CTD) phosphatase domain and two double stranded RNA binding motifs (RBM) containing protein. The biological function of the gene was confirmed using RNAi analysis using the wild-type *Hitomebore*. The gene had moderate amino-acid similarity to the *Arabidopsis FIERY2/AtCPL1* gene; AtCPL1 is known to control expression of the DRE/CRT (drought-responsive/C-repeat) class of genes that regulate stress (cold and salt) and auxin response. Consistent with this similarity, the mutant shows sensitivity to cold stress at the early growth stage, suggesting that the causal gene is a negative regulator of stress response in rice.

Key words: abiotic stress, molecular mechanism, plant adaptation, double stranded RNA

POTENTIAL OF TITHONIA (*Tithonia diversifolia*) COMPOST TO SUPPORT ORGANIC FARMING ON TOMATO PLANT

Widiwurjani
UPN "Veteran" East Java
Jl. Raya Rungkut Madya Surabaya 60294, Indonesia

ABSTRACT

Organic farming has many advantages to soil fertility and increasing of plant yield. To build longterm soil fertility can be done by feeding the soil with a variety of natural amendments such as addition of compost. This study was carried out to clarify whether the compost from tithonia could replace the role of NPK-fertilizer and support the tomato organic farming. The experiment was arranged in simple randomized block design consisted of 7 treatments: zero fertilizer, 10 g/plant NPK- fertilizer and tithonia compost with 5 compositions ((tithonia : husk charcoal : manure, K1- 1:1:1, K2-2:1:1, K3-3:2:1, K4-3:1:2, K5-3:2:2). The tithonia compost significantly increased the plant height compare to zero fertilizer. The composition effect of tithonia, husk charcoal and manure at d K3 (3:2:1), K4 (3:1:2) and K5 (3:2:2) was not different. All treatments did not affect the tomato leaf area. For the yield, the same compotion of tithonia, hust charcoal and manure (1:1:1) did not significanly affect the size and fruit number .While the composition K3, K4, and K5 (3:2:1, 3:1:2, 3:2:2) had fruit number and fruit size greater than zero fertilizer or other treatments. The smallest fruit weight occurred at the tomat plant without fertilizer. Fruit weight between compost compositions of K3, K4 and K5 was not significantly different. It appears that tithonia compost can replace the unorganic fertilizer.

Keywords: organic fertilizer, compost composition, tomato

REORIENTATION OF CYCLE OF CUTTING TEAK TREE FOR INCREASING OF WATER DEPOSITS AND DECREASING OF LAND DEGRADATION

[1]Kemal Wijaya, B. Wisnu Widjajani and [2]Irfan B. Pramono
University of Pembangunan Nasional "Veteran" East Java Surabaya, Indonesia 2. Forestry Research Center, Solo, Indonesia

ABSTRACT

The increased productivity and the preservation and protection of forests actually have a long-term goals. Therefore it is necessary to find appropriate solutions to maintain the productivity of forest tree ecosystems. This study aimed to examine the cycle of cutting teak tree to decrease land degradation and increase water deposits in the soil. The study was done in the teak production forests in the region of KPH Cepu Perhutani Office Unit I Central Java. Plot of experiment was set up on age group (AG) : I, II, III, IV and V. At each age group was made 2 (two) plots with the size of each 20 x 8 m. In the first plot was built a *rorak* (*rorak/*dead-end channel is in the form of a building sewer or channel clogged with a certain size are made in the field of the terraces and parallel to the contour lines that serve to trap / catch runoff and eroded soil), while the second plot without the *rorak.* The results showed that in the land without a *rorak,* the average annual erosion was 29.45 tons/ha/yr, while in the land with a *rorak* was 15.94 tons/ha/yr. Water deposit in the soil increased from 55.72 mm to 68.57 mm. For plot with a *rorak* , determination the feasibility of harvesting teak tree was 50-year cycle, while those without *rorak,* up to 60-year cycle has not been feasible for cutting teak because of the erosion rate was still above of the allowed erosion that cause the land degradation.

Key word: teak forest, erosion

CONTROL THE DEVELOPMENT OF WILT DISEASE (Ralstonia solanacearum) ON TOMATO PLANT TROUGH SEED TREATMENT WITH PSEUDOMONAD FLUORESCENT ISOLATES PF-122

Yenny Wuryandari, Triwidodo Arwiyanto
UPN "Veteran" East Java, Indonesia, Jl. Raya Rungkut Madya, Surabaya 60294

ABSTRACT

Ralstonia solanacearum causes bacterial wilt disease on Solanaceae plants. Based on the previous selection, direct application by root submersion of seedling before planting showed that the Pseudomonads fluorescent bacterial isolates Pf-122 could inhibit wilt disease up to 60% in the screen house. However, this application is less cumbersome and inefficient because cost a lot and many labor when applied on a large scale. This study tried to overcome the inefficiency of the previous application by using of tomato seed treatment in various concentration of Pseudomonads fluorescent isolates Pf-122. Research used Completely Randomized Design consisted of two factors: solvent (water and methyl cellulose) and concentration of Pseudomonads fluorescent isolates Pf-122 (10^7,10^8, 10^9 and 10^{10} CFU/ml). The results showed that all combination treatments could inhibit wilt disease progression but not able to delay the emergence of symptoms when compared to control treatment. The water solvent at concentration of 10^9 CFU/ml was most effective in inhibiting the development of wilt disease *R. solanacearum* in the screen house.

Keyword: seed, bacteria, Pseudomonad fluorescent, wilt disease

BACK TO NATURE BACK TO PARBOILED RICE

Sri Wuryani*,D.A Puspitaningrum
Universitas Pembangunan Nasional "Veteran" Yogyakarta
Yogyakarta, Indonesia

ABSTRACT

To improve nutritious organics rice, parboiled rice is one of theoption. The objective of this research was to determine the appropriate steaming time of parboiled rice made from free chemical fertilizer and pesticides paddy for improving the physical and nutritional quality. Completely randomized design single factor was used in this experiment,the factor was steaming time that comprises 4 levels (0, 10', 20' and 30'). Quality parameters measured were whiteness Index, percentage of husk, brand and rice, dietary fiber, amylose, amylopectin, digestibility, fat, protein, vitamin B, ash and moisture content. Analysis of Variance and Duncan Multiple Range Test at α 5% were done on data. The result of this research showed that steaming parboiled rice during 10' resulted the best physical quality, meanwhile the best nutritional quality resulted by steaming paddy during 20'. Moreover, physical as well as nutritional quality showed significantly different between parboiled and white rice (non parboiled rice), thus, economically parboiled rice has many advantages.

Key words: parboiled rice, steaming time, physical and nutritional quality

SOLID WASTE MATERIAL FOR BRICKS PRODUCTION

Marchie Q. Yadao, Rodolfo B. Solomon, Ce
Sultan Kudarat State University, Isulan Campus, Isulan, Sultan Kudarat

ABSTRACT

The utilization of solid wastes as alternative aggregates in construction materials is one of the innovative efforts in saving energy and conserving our natural resources.. The cost of construction materials is increasing day by day because of high demand, scarcity of raw materials, and high price of energy.
This study aims to find out if the Solid Waste Material for Bricks Production (SWMBP) is comparable to the commercial bricks. Laboratory tests were conducted to the samples which include the mechanical testing of the said bricks.
The greatest compressive strength of cured SWMBP was achieved by mixture 1 which is 1.578MPa cured in 28 days with the mixture of 1 part clay and 1 part solid waste. There is significant difference between pure clay bricks and SWMBP. The study showed that the more solid wastes are mixed with clay, the higher value of compressive strength was achieved.

Keywords: solid wastes, bricks, aggregates

ORGANIC FARMING PRACTICES ON UPLAND DINORADO RICE

Ms. Lilet P. Yamelo, Dr. Pendatun E. Dalam, Dr. Onofre S. Corpuz
Arakan, Cotabato

ABSTRACT

The study was conducted to evaluate the performance of upland dinorado in terms of germination percent, number of tillers, plant height, length of panicles and yield as influence by different organic farming practices such as: biodynamic, Korean Natural Farming Practices, Organic farming Practices and traditional farming practices arrange in a randomized complete block design with three replications.

The result of the study shows that traditional farming practices gives lower germination percent (78%) of dinorado as compared to the other three farming practices (88-89%). In terms of number of tillers, it was found out that Korean Farming gives most number of tillers of upland dinorado.

Biodynamic and organic farming significantly produced the tallest plant height of 113 cm compare to the shortest (98cm) Korean Farming. In terms of length of panicle, it turns out that organic farming significantly produces the longest mean panicle of 31cm making it highest in yield production (3,443 kg/ha) of upland dinorado as compared to the other three farming practices with yield range of 1,172 kg to 2,229 kg/ha.

TERATOGENICITY OF CASSAVA (*MANIHOT ESCULENTA* CRANTZ) ROOT EXTRACT USING DUCK EMBRYO ASSAY

Francis I. B. Roces
Bicol University, Legazpi City, 4506 Philippines

ABSTRACT

The cassava root tuber, locally known as *kamoteng kahoy* or *balinghoy,* is a major dietary staple in tropical countries which contains a sufficient amount of cyanogen glycosides that require special processing to reduce the danger of toxicity. With this, concern focused on knowing if the plant species can act as a teratogen. The study was conducted generally to characterize the teratogenicity of *M. esculenta* C. extract using duck embryo assay. Two hundred native or *pateros* duck eggs were used in preliminary and actual experiments. The data on eggs hatchability, ducks motility, body coordination, alertness and activeness were subjected to ANOVA and DMRT. Significant findings were: decrease in percent hatchability of eggs (at all doses), LC50 of 12.456%, significant difference between the control and treatments in terms of the ducks motility body coordination, alertness and activeness (at all doses), abnormal unit in treatment concentration at 30%, and major changes in histologic structures in liver, kidneys and spleen (at all doses).

DIVERSITY OF MEDICINAL FLORA IN THE PROVINCE OF ALBAY, LUZON ISLAND, PHILIPPINES

Phil V. Morano
Bicol University, Legazpi City

ABSTRACT

Bicol region is considered as one of the poorest regions in the Philippines. However, in terms of biodiversity, the region is considered as one of the richest areas in the entire country because of its mountain ranges which are home to various species of flora and fauna. Also, the region is rich in traditional practices when it comes to alternative medicines. This research aimed to conduct diversity assessment of medicinal plants in the province of Albay. The study was conducted in the three congressional districts. Each has two sampling areas, one rural and one urban, with three barangays each representing the three ecological zones namely, upland, lowland and coastal.

Modified Line Plot Method was employed to determine the diversity of medicinal flora and ecological indices were calculated to compare the different sampling sites. The three most important species include *Musa paradisiaca* (batag)*, Colocasia esculenta* (natong/apay)and *Mangifera indica* (mangga). In terms of biodiversity, ANOVA showed highly significant difference among the three districts. Pairwise comparison revealed that the First District emerged as the most diverse having recorded a total of 190 species of medicinal flora compared to the 170 and 119 species identified in the second and third districts, respectively.

ASSESSMENT OF ECOLOGICAL HABITAT OF DEAGAN ISLAND, MAGCARAGUIT, DIMASALANG, MASBATE, PHILIPPINES

Prof. Ronnel R. Dioneda Sr.,/ Anne Retuerma-Dioneda, /Aurea Borromeo, Skorzeny De Jesus
Bicol University, Legazpi City

ABSTRACT

The three ecological habitats namely coral reef, mangroves, seagrass/seaweeds are present in Deagan Island. The benthic lifeform of the island revealed a range from poor to fair coral cover condition. Soft corals abound in the area rather than the reef building corals. Fishes in coral reefs were also seen but not in enormous quantity.

Dense community of mangrove was also noted in the southeastern part of the island. The species present belong to genera Rhizophora and Avicennia genera. Rhizophora species dominated the mangroves observed both in terms of basal area, density and frequency. Sapling and seedlings were also dominated by the two Rhizophora species in all stations.

Thirteen (13) species of seaweeds were identified, six belong to Family Chlorophyta, four under Family Phaeophyta and another three from Family Rodophyta. The biomass estimates of seaweeds as indicator of health of marine grazing areas as revealed that *Sargassum, Halicoryne* and *Turbinaria* had the highest biomass both in wet and dry respectively.

Six (6) species of seagrass belonging to two (2) families were also found and identified. The biomass estimates of seagrass showed that *Haludole pinifolia* had the highest wet and dry biomass followed by *Cymodocea rotundata*. The rest of the species showed very minimal contribution to the estimated wet and dry biomass.

The coastal ecosystem of Deagan Island and the whole area of Barangay Magcaraguit are diverse and comparably better than its counterpart in many assessed parts of Bicol, however, with the poor social and economic conditions, there is however serious threats to these rich ecosystem. Destructive form of fishing is becoming community-based in practice, promoting strong tolerance to these destructive forms of fishing.

ESTABLISHMENT OF MARINE FISHERY RESERVE AND SANCTUARY OFF MAGCARAGUIT GROUP OF ISLANDS, DIMASALANG, MASBATE (MFRS-MGI): DESIGN OPTIONS AND OTHER PROPOSED INITIATIVES

Ronnel R. Dioneda Sr., Carlos V. Cortez Jr. And Angelo P. Candelaria, Yolanda Julieta Brugada,
Aurea borromeo, Corazon V. Caputan
Bicol University Research and Development Center, 4500 Legazpi City

Ida FH Revale , Laarni Pancho , Pedro Jacob Jr., Jocelyn Serrano, Amelia Dorosan,
Erwin Rayel, Charmaine Malonzo, Jason Punay
Bicol University College of Science

Ramil Chavenia (BUCAL), Skorzeny C. de Jesus (BUTC)

Deagan Kaunlaran Multi-Purpose Cooperative
DAR-PARO-Masbate, DENR-PENRO-Masbate
Dimasalang LGU and The Barangay Council of Magcaraguit, Dimasalang

ABSTRACT

Management that is anchored on sound technical bases and one that is community-based is paramount. Along this line, participatory technical inquiries produced by the Deagan Island Coastal Resources Management for Sustainable Development and Management Program(DICOREMAP), as to the status and potentials of the coastal life support systems (habitats) capture fisheries, fish stock status, as well as the understanding of the socio-economic and administrative systems composed the vital information for integration to planning and management in order to make coastal resource management of Deagan Island and the Magcaraguit Group of Islands more proactive and responsive. This paper presents the results of integrated technical inquiries and the recommended sites for the establishment of marine fishery reserve and sanctuary (MFRS) and ecotourism sites, and, the recommendations for the eventual formation of a multi-sectoral management council.

There were three design options for the establishment of MFRS, each have its advantages and disadvantages and the choice was left to the community and the LGU. . Options 1 and 2 have one reserve and sanctuary area at different sites and option 3 have the combined reserves and sanctuaries of options 1 and 2. For the guidance on MPA management objectives, the management category IV of the International Union for the Conservation of Nature or IUCN (Kelleher and Kenchington, 1992 and Salm and Rodney, 1984) can be considered appropriate for the MGI MFR-S, which should allow regulated fishing in the reserve and a fishing ban in the sanctuary.

The recommended administrative mechanisms for the implementation and monitoring of the MGI-MFRS will be: Passage of an Ordinance Declaring Marine Fishery Reserve and Sanctuary at Magcaraguit Group of Islands (MGI-MFR-S); Creation of a special body tasked to oversee and implement projects by the Marine Fishery Reserve and a Sanctuary (MFR-S); Putting-up of Livelihood Projects; Education Campaign; Fishery Law Enforcement Training and Deputization of Bantay Dagat; and Provision of Patrol Boat and fuel.

A POST-NORMAL SCIENCE APPROACH TO SUSTAINABLE DEVELOPMENT: THE CASE OF ROMBLON PROVINCE

Eddie G. Fetalvero
Romblon State University
Odiongan, Romblon, Philippines

ABSTRACT

Post-Normal Science (PNS) is an emerging problem-solving framework focusing on aspects of uncertainty, value loading and plurality of legitimate perspectives. It is employed in conditions when risks cannot be quantified or when possible damage is irreversible.

This paper presents an experience of how the complex issue of mining in the province of Romblon which counters the University's R&D programs and projects geared towards sustainable development was addressed. Post-Normal Science (PNS) approach was used in confronting the issue and was proven effective. PNS tools which operate around diverse extended peer communities served as democratizing techniques in drawing and evaluating the legitimacy of various perspectives resulting in a consensus that leads to the withdrawal of the mining company's applications. This is a proof that PNS can also find its niche in the field of R&D management thereby fostering social responsibility among research managers.

Keywords: Post-normal science, R&D management, sustainable development, mining, social participation, social responsibility

TOURISM INDUSTRY IN THE MUNICIPALITY OF MOALBOAL, CEBU: ITS IMPACT TO THE SOCIO-ECONOMIC AND CULTURAL LIFE OF THE COMMUNITY

Dr. Grace B. Gimena, Dr. Nerissa V. Gador, Dr. Severina P. Velos
Cebu Technological University- Moalboal Campus, Moalboal, Cebu

ABSTRACT

The study assessed the impact of tourism industry in the Municipality of Moalboal, Cebu to the socio-economic and cultural life of the community. The purpose was to ascertain the profile of respondents in terms of: age, gender, civil status, educational attainment, occupation, combined monthly income, types of dwelling, household size, availability of educational materials and favorite hobbies/ past time.

The locale of this study was the Municipality of Moalboal, Cebu which is composed of 15 barangays. There were three hundred seventy five (375) respondents.
A descriptive method was utilized using questionnaire supplemented by personal interview to ascertain the profile of respondents and their socio-economic and cultural life.

It was found out that 82 respondents or 22 percent had an age bracket 40-49 with more female than male ones who were mostly married. Most of them finished secondary level only. They were mostly unskilled whose income level ranged from 2,999-below. Their types of dwelling were semi-permanent. They had 4 to 8 members in the family. The most available educational material at home was television set. Engaging in sports was their favorite hobbies/ past time.

Tourism industry in the Municipality of Moalboal, Cebu has less impact on the lives of the residents as shown in their low level of income, semi-permanent type of dwelling and their educational attainment which is secondary level only.

It is recommended that local government officials should have linkage with tourism industry personnel in order to provide more job opportunities to the residents to uplift their standard of living.

CONTROL THE DEVELOPMENT OF WILT DISEASE (*Ralstonia solanacearum) ON TOMATO PLANT TROUGH SEED TREATMENT WITH* PSEUDOMONAD FLUORESCENT ISOLATES PF-122

Yenny Wuryandari, Triwidodo Arwiyanto
UPN "Veteran" East Java, Indonesia,
Jl. Raya Rungkut Madya, Surabaya 60294

ABSTRACT
Ralstonia solanacearum causes bacterial wilt disease on Solanaceae plants. Based on the previous selection, direct application by root submersion of seedling before planting showed that the Pseudomonads fluorescent bacterial isolates Pf-122 could inhibit wilt disease up to 60% in the screen house. However, this application is less cumbersome and inefficient because cost a lot and many labor when applied on a large scale. This study tried to overcome the inefficiency of the previous application by using of tomato seed treatment in various concentration of Pseudomonads fluorescent isolates Pf-122. Research used Completely Randomized Design consisted of two factors: solvent (water and methyl cellulose) and concentration of Pseudomonads fluorescent isolates Pf-122 (10^7,10^8, 10^9 and 10^{10} CFU/ml). The results showed that all combination treatments could inhibit wilt disease progression but not able to delay the emergence of symptoms when compared to control treatment. The water solvent at concentration of 10^9 CFU/ml was most effective in inhibiting the development of wilt disease *R. solanacearum* in the screen house.
Keyword : seed, bacteria, Pseudomonad fluorescent, wilt disease

FEEDSTOCKS OF FUEL FOR LARGE-SCALE BIODIESEL PRODUCTION: A REVIEW AND PROSPECTS FOR THE FUTURE

Lea C. Garcia
University of the Philippines Rural High School
UPLB, College, Laguna

ABSTRACT

This paper reviews the Philippines' initiatives on the alternative sources of fuel for biodiesel production. The review starts with the discussion about biodiesel to shed light on its importance as alternative fuel. The initial studies on *Cocos nucifera*, *Jathropa curcas L.* and *Chlorella vulgaris* were presented for comparison of findings/results on their importance as feedstocks. As demonstrated here, the comparison provides a deeper understanding on *Chlorella vulgaris* as the best alternative for biodiesel which is capable of meeting the global demand for transport fuels. Many studies were presented to show the usefulness of *C. vulgaris* as biodiesel. Like plants, *C. vulgaris* produces oils via photosynthesis but this does so more efficiently than crop plants. Oil productivity of *C. vulgaris* and many microalgae greatly exceed the oil productivity of the best producing oil crops. Different methods of mass propagation/cultivation of *C. vulgaris* were discussed as already experimented and proven and as possible alternatives. The review culminates with the prospects for the future on the use of *Chlorella vulgaris* as the best alternative source for large-scale biodiesel production in the Philippines.

Keywords: Biodiesel, Cocos nucifera, Jathropa curcas L., Chlorella vulgaris, Feedstock

EFFECTS OF DIETARY PHYTASE FROM DIFFERENT BACTERIAL SOURCES ON GROWTH AND PHOSPHORUS UTILIZATION OF TILAPIA *Oreochromis mossambicus*

Rande B. Dechavez[1], Augusto E. Serrano[2], Gaudiosa A. Gonzales[2], Liberato A. Laureta[2], Mary Jane A. Amar[2]
[1] Sultan Kudarat State University, Kalamansig, Sultan Kudarat 9808, Philippines;
[2] University of the Philippines Visayas, Miag-ao 5023, Iloilo, Philippines

ABSTRACT
This study was conducted at the Institute of Aquaculture Hatchery and Biology Laboratory, University of the Philippines Visayas, Miag-ao, Iloilo. This aims to determine the effects of different bacterial phytases from *Bacillus* spp. supplemented to tilapia diet on growth, feed utilization and nutrient deposition of tilapia mossambica fingerlings under laboratory conditions for 60 days. Diets were supplemented with 500 FTU kg^{-1} of *B. pumilus*, *B. megaterium* and *B. licheniformis* phytases while diet without supplementation and the commercial diet served as negative and positive controls, respectively. Results of the study showed that growth of fish fed diets containing bacterial phytases was superior to those of the negative and commercial diets, although no significant differences were observed. Fish fed diets supplemented with *B. megaterium* phytase displayed the highest FCE, PER and protein retention than did fish fed the other diets. Fish fed diets containing different bacterial phytases exhibited higher ash, P, Ca and Mg concentrations in scales, bone and vertebrae than those fish fed diets without supplementation and the commercial diet. Fecal P concentrations were lower in fish fed the supplemented diets which could consequently reduce the estimated excretion of P effluent by 36% and 29% compared to fish fed diets without supplementation. Phytase from *B. megaterium* was the most effective in improving bioavailability of phytate P in sex reversed tilapia and may possibly reduce or eliminate the use of P_i supplementation in their diets.

Key Words: phytic acid, phytase, phosphorus, enzyme, Bacillus spp

ABSTRACT FOR POSTER PRESENTATION

NOSTOC AS EXOTIC FOOD IN EASTERN PANGASINAN

Sotero M. Aban, Ph.D.
Pangasinan State University
Binmaley Campus, Binmaley, Pangasinan, Philippines

ABSTRACT

Nostoc is a genus of blue-green algae (cyanobacteria) found on soil that forms colonies composed of filaments of moniliform cells in a gelatinous sheath. They are consumed as food by the residents in Eastern Pangasinan. A total of 100 respondents in Umingan, Pangasinan were then surveyed to determine the acceptability of *Nostoc* sp. as an endemic food.

Hundred percent of the respondents had eaten the blue-green algae *Nostoc* since their childhood but they were not familiar with the scientific name of the algae as *Nostoc*. They are familiar with the local name as "barbaradiok." The *Nostoc* was usually collected after rice harvesting, when the Nostoc balls are already exposed to the sun and there is enough soil's moisture. The collected Nostoc balls were prepared by removing debris of rice hay and washing with tap water. After cleaning, the Nostoc balls are blunched with boiling water for 5 to 10 minutes, and then allowed to drip for 5 minutes. Fish sauce or fish paste with thinly sliced ginger and tomatoes are usually added to season the Nostoc balls before serving to the dining table.

The respondents mentioned that the Nostoc balls collected from the rice field are safe for consumption since Nostoc balls only grow in ricefields that had not been sprayed with insecticide.

Biochemical analysis showed that Nostoc has a crude protein content of 29.75% and a lipid content of 8.27%. Hence, a good source of protein in the diet.

Key words: blue-green algae, cyanobacteria, Nostoc balls

THE SUSTAINABILITY OF PRIVATE HIGHER EDUCATION INSTITUTIONS IN REGION XII

Zoraida M. Adil,Dr. Onofre S. Corpuz, Dr. Zainudin M. Adam, Dr. Lumina L. Cabilo
CFCST-Arakan, Cotabato

ABSTRACT

Generally, the study aimed to determine the sustainability of private higher education institutions in Region XII. Specifically, it described the socio-economic factors of the respondents; and determined the adequacy of resource capabilities, management styles of administrators, job performance of the Notre Dame faculty and staff; the influence of independent variables on the sustainability of Notre Dame Schools; and ascertain the relationship between the independent variables and sustainability.

Purposive systematic sampling was used to identify the respondents. Fifty percent (50%) sampling intensity for the administrators and twenty percent (20%) for the faculty and staff was done. Weighted means were used to quantify the degree of adequacy and sufficiency of the resources and the extent of performance. Hypotheses were tested using the Pearson's Multiple Regression Correlation Analysis.

Respondents were 159, most were faculty, 41 years old and above, has less than 10 years of service, were BS degree holders and had monthly income of 10 thousand, majority were female.

Findings indicated that resource capabilities best indicators are physical and instructional facilities that significantly influenced the sustainability of Notre Dame Schools in terms of social justice, economic viability, cultural acceptability, ecological friendliness and technological soundness. The sustainability of Notre Dame schools were significantly influenced by the management styles particularly participative management.

The relationship between resource capabilities and job performance of administrators, faculty and staffs with sustainability levels of Notre Dame educational systems were all found positively related with each other. This means that when resources become more adequate and job performance of employees become higher then sustainability levels of the school will also become higher.

The management style of Notre Dame school were significantly related to the sustainability of the Notre Dame Educational System considering that most of the administrators used the participative leadership, thereby highly motivating subordinates to be actively involved in the conceptualization, implementation and most especially beneficiaries of development dividend.

Keywords: Sustainability, Notre Dame School, Region XII, Social Justice, Economic Viability, Cultural Acceptability, Ecological Friendliness, Technological Soundness

BIOFUNGICIDES AS PROTECTIVE CONTROL OF STEM ROT OF COFFEE SEEDLINGS CAUSED BY *Sclerotium rolfsii* Sacc.

Charise F. Aranas, Raquel B. Evangelista
University of Southern Mindanao, Kabacan,Cotabato

ABSTRACT

Recognizing the enormous important role of microorganisms in plant disease control of soil borne pathogens, biofungicides which are liquid based beneficial microorganisms were tested both *in vitro* and *in vivo* against *Sclerotium rolfsii*, an omnivorous fungus that causes disease on a wide range of agricultural and horticultural crops. Six treatments of indigenous and commercial preparations of biofungicides were assayed, diameter zone of growth (DZG) was measured and applied as soil drench to control stem rot of coffee seedlings.
In vitro test showed that treatments IMO+OHN+FAA and LABS at 20ml/LH_20 significantly reduced growth of *S. rolfsii* with DZG mean of 8.91 and 12.41 mm, respectively and rated very effective (VE) after 72 hrs incubation comparable to the effect of organic check (AZ 41), biofungicide check (*Trichoderma*), and chemical check (benomyl).
Application of biofungicides like IMO+OHN+FAA, LABS, Biosolution 8.0 and FPJ+FFJ+EM as protectant, significantly delayed appearance of symptoms of stem rot of coffee seedlings from 8 to 19 days after inoculation, reduced percentage disease severity from 14.50 to 40.16%, afforded higher percentage degree of control from 56.40 to 82.06%, and rated moderately effective (ME) to very effective (VE) against the pathogen after four cycles of soil drench treatment at seven days interval.

BIOTOXICITY OF WILD TYPE *Bacillus thuringiensis* PARASPORAL CRYSTALLINE PROTEIN BASED ON STRUCTURE AGAINST *Aedes aegypti* LARVAE

Jing R. Bautista, Jessil Ann R. Pajar, & Franco G. Teves
MSU-Iligan Institute of Technology, Iligan City, Philippines

ABSTRACT

Dengue has claimed thousands of Filipino lives in the past few years with incidence that defy the traditional seasonality of this mosquito-borne viral infection. Preventive measures include destruction of known mosquito habitats, use of mosquito nets and house screens, fogging and use of chemical insecticides. While adults may be killed or prevented from spreading the virus through bites, the eggs and larvae can survive and continue to spread the virus to the human population.

To date, there are only very few identified strains of the bacterial species *Bacillus thuringiensis* that produce the parasporal crystalline proteins effective against Dipteran insects such as mosquitoes. Moreover, there seems to be a relationship between protein crystal shape and its efficiency as a larvicidal protein. The gold standard for bacterial identification is considered to be 16S rRNA sequencing. However, in this study, SEM was employed to determine the parasporal crystalline protein structure and deduce its larvicidal strength through actual *Aedes aegypti* larval toxicity assay. The method is fast, straightforward, and comparably cheaper than the alternative molecular technique in identifying candidate bacterial strains as sources of bioinsecticides against the dengue-carrying mosquito *A. aegypti.*

It was also demonstrated in this study that a single bacterial strain could produce different crystal shapes corresponding to characteristic LC50 (lethal concentration that kills 50% of the mosquito larvae). This is the first SEM study on *B. thuringiensis* parasporal crystalline protein in the Philippines as far as literature is concerned.

Key words: Biotoxicity, parasporal crystals, larvicidal protein, bioinsecticides

PRELIMINARY SURVEY OF ROAD-KILLED FRESHWATER TURTLES ALONG ABORLAN-PUERTO PRINCESA CITY NATIONAL HIGHWAY, PALAWAN, PHILIPPINES

Alejandro A. Bernardo Jr.
Western Philippines University
Aborlan, Palawan, Philippines

ABSTRACT

This study aimed to provide baseline information on the species composition, relative abundance and spatial distribution of road-killed freshwater turtles along the highway connecting the municipality of Aborlan and Puerto Princesa City. Road surveys were made four times a month from January 2010 to June 2011. All road-killed specimens were identified and photographed, roadside habitat characteristics were noted and exact locations were recorded.

A total of 26 road-killed turtles belonging to two species of the family Geoemydidae were recorded during the survey. Among the documented species, 21 (80.8 %) were Southeast Asian Box Turtle (*Cuora amboinensis*) and 5 (19.2%) were identified as Asian Leaf Turtle (*Cyclemys dentata*). All specimens of *Cyclemys dentata* were recorded along road sections adjacent to forested streams. Meanwhile, all carcasses of *Cuora amboinensis* were found near large bodies of water like rice fields and ponds.

The *Cuora amboinensis* and *Cyclemys dentata* were listed in the IUCN Red List (2011) as "vulnerable" and "near-threatened", respectively. The alarming decline in turtle population and the future prospects of road development highlight the need for an effective information campaign that will educate the road users regarding the impact of vehicle related mortalities to turtle and other wildlife population as well.

Keywords: freshwater turtle, road-kill,

THREE FLORA AT NORTH-WESTERN SLOPE OF MOUNT KATULUNGAN,DOS, MAGUINDANAO

Camiguing, Rosie R.; Laurie, Mercedita A.; Remollo, Leopoldo L.
Taviran, Datu Odin Sinsuat, Maguindanao

ABSTRACT

The objective of the study was to determine the Tree Species found naturally thriving at Mt. Katulungan lower mountain range of Taviran, Datu Odin Sinsuat Maguindanao. The study was conducted last September, 2011. The methods used in the study was modified strip line and transect line method, there is one (1) transect strip line established on the area with 10 with, the strip line consist of 25 stations with 10m interval.
Findings showed twenty three (23) species of trees belongings to 16 families and 23 genera

STUDENTS' BEHAVIOR PROBLEMS AND TEACHERS' COMPETENCIES IN PHYSICAL EDUCATION

Israeli Salinas Caminos
Cebu Technological University

ABSTRACT

The study on Students' Behavior Problems and Teachers' Competencies in Physical Education covered the two colleges in Camotes Islands, Cebu, Philippines. This is conducted to find out the significant relationship between the degree of seriousness of the students' behavioral problems and the level of teachers' competency.
The respondents were the P. E. 4 students. This used a survey instrument to gather relevant data reflective of the degree of seriousness of the behavior problems of students as to disrupting of classes; truancy; dishonesty; inattentiveness; and non-wearing of prescribed uniform and the level of competency of teachers as perceived by the students in terms of instruction; evidence of student learning; management; learning climate; and professionalism.

Finding shows that there was no significant relationship between the students' behavior problems and the teachers' competency in Physical Education. It further shows that the degree of seriousness of the behavioral problems of students is found to be Not Serious which means that problems were not at all observed in the students. The level of competency of teachers is Above Average to the four areas and only Instruction is found to be Satisfactory.

Keywords: Physical Education, Behavior, Competency, Camotes Islands

PERCEEPTION AND READINESS OF HIGH RISK HOUSEHOLDS TOWARDS CLIMATE CHANGE

Ian Phil M. Canlas
Leyte Normal University, Philippines

ABSTRACT

The call for climate change mitigation and adaptation is urgent as the different parts of the world are already experiencing its effects. However, mitigating and adapting with climate change requires collective effort that is not limited to scientific community or government leaders, but also the people across ages regardless of race and culture. The effective and maximum participation of the community can only be achieved if they do completely understand the context of climate change, its causes and effects.
The foregoing study attempted to examine the perception and readiness of high risk households towards climate change. Using a researcher-made interview guide questionnaire, ninety (90) home-based fulltime household heads were interviewed. These households were located in a municipality in Leyte along Bangon and San Joaquin rivers which was affected by series of flooding in 2011. Living mostly in houses made up of light materials, results show that majority of the respondents possesses variety of conceptions along climate change, its causes, effects, prevention and proper emergency response. This study implies that while other countries are already on its battle against climate change mitigation and adaptation, the Philippines, known as the disaster capital of the world, is left with unprepared and knowledge-insufficient households.

Key words: climate change, perception, readiness, high risk households

POTENTIALS OF SELECTED INDIGENOUS HARDWOOD TREE SPECIES IN MITIGATING CLIMATE CHANGE THROUGH CARBON TRAPPING

Dr. Onofre S. Corpuz, Myrnalyn Moquera
CFCST Arakan, Cotabato

ABSTRACT

The study on the Potentials of selected indigenous hardwood tree species in mitigating climate change through carbon trapping aimed to Estimate the below and above ground biomass of the selected indigenous tree species in CEDAR, Bukidnon and Arakan Cotabato; Calculate the amount of carbon trapped by the plantation through field measurement and modeling; Relate carbon pools such as below and above ground biomass with total carbon stored by each tree plantation species and if there is any significant difference on amount of carbon trapped by different plantation. The study was laid out in 10m x 20m plot with 1m x 1m subplot. The study was conducted at CEDAR, Bukidnon and Arakan, Cotabato on April 14 to May 20, 2011.

The computed root biomass of white Lauan is 203.35 Mt/ha, almaciga (145.29Mt/ha, Dao (149.26Mt/ha) and Benguet pine (276.54Mt/ha.
In terms of above ground biomass, White lauan has 1,098.02Mt/ha, Almaciga (750.50Mt/ha), Dao (773.73Mt/ha), Benguet Pine (1554.92Mt/ha).
The above ground biomass of Almaciga is (750.50Mt/ha), White Lauan (1098.01Mt/ha), Dao (773.73Mt/ha), Benguet Pine 91554.92Mt/ha).The ground biomas of White Lauan is 90.93 Mt/ha), Almaciga (0.005 Mt/ha), Dao (0.01 Mt/ha), Benguet Pine (0.01Mt/ha).
In terms of soil organic carbon, White Lauan is (624.28 Mt/ha), Almaciga (600.05 Mt/ha), Dao (594.26Mt/ha), Benguet Pine (558.19Mt/ha).The tree carbon storage of White Lauan is (585.62Mt/ha), Almaciga(403.11Mt/ha), Dao(415.34Mt/ha), Benguet Pine(824.16Mt/ha).
The root biomass of the white Lauan is 15.62% of the total biomass. Its above ground biomass is 84.38%. The root carbon is 7.56%, above ground carbon is 40.855 and its soil carbon is 51.59%.

The root biomass of Almaciga is 16.22%, the above ground biomass is 83.78%, its root biomass carbon is 7.56%. The above ground carbon is 33.67% and the soil carbon is 59.81%.
The root biomass of Dao is 16.17%, Above ground biomass is 83.83%.The root biomass carbon is 6.65%. Its above ground carbon is 34.49% and the soil carbon is 58.86%.
The root biomass of Benguet Pine is 15.09%, the above ground biomass is 84.90%. Its root biomass carbon is 9%. The above ground biomass carbon is 50.62% and its soil carbon is 40.385.
Pearsons' correlation analysis reveals that carbon density of each plantation is positively and significantly related with carbon pools. This implies that carbon density is highly dependent on carbon pool particularly above ground biomas

Keyword: Carbon density, climate change, biomass, while lauan, dao, almaciga, benguet pine

CARBON BUDGET OF RUBBER PLANTATIONS IN SELECTED MUNICIPALITIES OF COTABATO PROVINCE

Dr. Onofre S. Corpuz
Cotabato Foundation College of Science and Technology
Doroluman Arakan 9417 Cotabato
PHILIPPINES

ABSTRACT

The study was conducted at the three Municipalities of Cotabato province Southern Philippines last January 2011 to May 2011. The study aimed at determining the Carbon budget of the different age rubber plantation through field sampling and modeling. Actual field measurement of dbh, were done for the estimation of above-below ground biomass. The major carbon pools, such as above-ground biomass, below-ground biomass, litter and understory vegetation were added and multiplied with 45% default value by IPCC to obtained the carbon density in Mt/ha. The total estimated biomass of the rubber plantation in Antipas were 103.91Mt/ha (10 years) and 573.21Mt/ha (20 years) with carbon density of 46.79Mt/ha and 257.95mt/ha respectively. For the Arakan plantation, the following were revealed in the estimation:

1. The 40 year plantation has total biomass of 1041.54Mt/ha biomass (468.69Mt/ha C)
2. The 11 year plantation has 158.79Mt/ha biomass (71.46Mt/ha C)
3. The 35 year plantation has total biomass of 246.23Mt/ha (110.8Mt/ha Carbon density)
4. The 12 year plantation has 355.60Mt/ha biomass (160.02Mt/ha C)

In Matalam Cotabato, the two different age rubber plantations has and estimated biomass density of 149.47Mt/ha in 8 years with 67.26 Mt/ha C and 70.82Mt/ha biomass density for the 6 year old plantation with 31.87 Mt/ha C.
The soil organic carbon found in each plantation were: Antipas; 100.25t/ha (10 years) and 203.54t/ha (20 years), Arakan; 202.55t/ha (40 years), 142.67t/ha (11 years), 86.1t/ha (35 years) and 129.53t/ha (12 years), Matalam; 53.32t/ha (8 years) and 62.04t/ha in the 6 year plantation.

T-test reveals significant differences of the biomass and carbon density of the rubber plantation with respect to age range (6-12 years and 20-40 years). This implies that biomass production and carbon storage potentials of rubber plantation is very much dependent on plantation age. Pearson regression-correlation analysis of the carbon density of each plantation with carbon pools found to be highly significant. Salibio 2011 stated that carbon density is highly related to above and below ground biomass of rubber species.

Keywords: Rubber plantation, carbon budget, biomass density

ROOT GROWTH POTENTIAL, VARIABILITY AND HERITABILITY OF YEMANE (*Gmelina arborea* ROXB)

Onofre S. Corpuz
Cotabato Foundation College of Science and Technology,Doroluman Arakan 9417 Cotabato

ABSTRACT

The experiment was undertaken to characterize root growth potential (RGP) and determine growth variability and heritability of yemane *(Gmelina arborea* Roxb*)* based on provenance. Significant variations of morphological characteristics of seedlings of yemane by seed sources were found in the study. Seed sources from Quezon and Cotabato Provinces were significantly different in all morphological traits compared with the seed source from Davao del Sur. The root growth potential in terms of the number of first order lateral roots (FOLR) is found to be positively correlated with all seedlings morphological characters such as root collar diameter, primary root length, stem height, and root:shoot ratio. The frequency distribution of the FOLR, revealed to be normally distributed. The seedlings FOLR was from 3 to 35 with an average of 18. There are three natural FOLR groupings made such as R1 (0 – 10); R2 (11 – 20); and R3 (21 – 30+). These groupings revealed significant variation. The entire trait measured is all genetically influenced by the seed sources as evident of high heritability estimates.

Keywords: FOLR, RGP, variability, heritability

INCIDENCE OF BANANA BUNCHY TOP (BBT) AND DISEASE MANAGEMENT PRACTICES FOR BBT OF BANANA GROWERS IN 11 MUNICIPALITIES OF SOUTH COTABATO.

Jaime C.Silvestre, PhD, Daquil, Jonathan J.
University of Southern Mindanao, Kabacan, Cotabato

ABSTRACT

The study aimed to determine the percentage incidence and geographical distribution of BBT; to know the disease management practices for BBT control of banana growers and to assess the sociological and specify economical implication of BBT in eleven (11) municipalities of South Cotabato from June to August 2011.

Survey on the 137 ha banana farms in the 11 municipalities of South Cotabato planted to 5 banana cultivars (Lakatan, Latundan, Cardaba, Cavendish and Bungolan) revealed that based on the PI of BBT, Lake Sebu had the highest mean of 10.47% while the lowest was in Sto.Niño with 0.62%. Except for barangays Cinco and Talahik in the municipality of Banga and Surallah, respectively, nil incidence of BBT was observed.

Disease management practices of the respondents included: killing the aphid vectors (39.42%), by insecticides (8.76%), applied vermitea (8.76%), Round-up (22.63%), formalin (13.87%), used oil (8.03%), kerosene (8.03%), and 2-4-D (4.38%), burning diseased plants with rice hull (77.37%), chopping of infected plants (66.42%) and planting tissue-cultured seedlings (13.87%) .

ANTIMICROBIAL AND ENZYMATIC ACTIVITY OF ENDOPHYTIC FUNGI FROM THE ROOTS OF *Avicennia* spp.

De Guzman, P.A., Casim, L., R.N., M.S., Sepelagio, E.G., R.M.T., MAppSci.
University of Southern Mindanao, Kabacan, Cotabato

ABSTRACT

Findings on endophytic fungi antimicrobial metabolites and their enzymatic activities are important alternative to overcome increasing levels of drug resistance by plant and human pathogens, the insufficient number of effective antibiotics against diverse bacterial species, and few new antimicrobial agents in development. This study was conducted to investigate the antimicrobial and enzymatic activity of endophytic fungi isolated from the roots of *Avicennia lanata* and *Avicennia alba.* Out 14 isolates, 7 endophytic fungi showed antibacterial activity only against *B. subtilis* . Eight of them produced cellulase while 5 produced amylase and 8 produced lipase. None of the isolates produced protease and only 2 produced laccase. Results revealed that isolated fungal endophytes could inhibit the growth of Gram-positive bacteria to a greater degree than Gram-negative bacteria, thus can be of good source of antibiotic compounds which may have medical application. Further, these endophytic fungi can be potential sources for bioactive metabolites due to its high lipolytic, amylolytic, and cellulytic activities.

Keywords: endophytic fungi, antimicrobial assay, enzymatic activity, Avicennia lanata Avicennia alba, Sta. Cruz, Davao del Sur

HARPAPHE HAYDENIANA AND ITS ENTOMOTOXIC EVALUATION AGAINST *AEDES* AND *CULEX* LARVAE

Ian Niel B. dela Cruz, Jing R. Bautista, M.S., Franco G. Teves, Ph.D.
MSU-Iligan Institute of Technology, Andres Bonifacio Avenue, Tibanga, Iligan City, 9200

ABSTRACT

This study was designed to isolate and identify *Bacillus thuringiensis* from dead Diplopods *(Harpaphe haydeniana)* and evaluate its entomotoxicity to Culicidae larvae, both *Aedes* and *Culex.*Twenty-three viable colonies were selected and characterized through morphological and physiological observations. Colony morphology was done through observation of growth on plates, slants and broths. Cellular, biochemical and antibiotic response of each isolates were also determined. However, only six isolates were classified and identified as *B. thuringiensis.* Also, the six isolates were indicated to have endospores which designate the toxicity of the strains against various kinds of insects. Entomotoxic activity of the isolates was evaluated by selective bioassay through dose mortality response of different bacterial densities. *Culex* and *Aedes* larvae were used in the assay set up. The six isolates were subjected using the McFarland Turbidity Standard as the basis for cell concentration. Average mortality rate of both larvae was determined through 50% mortality.

Among the six isolates, only two strains were entomotoxic. Determination of toxicity was measured by the assessment of lethal median concentration (LC_{50}) to both larvae in a minimum hour of observation. Results showed that both isolates exhibited higher mortality rate to *Culex* than on *Aedes* larvae. Similarly, lethality rate is more evident to *Culex* than *Aedes* larvae based on $LC_{50.}$ Final evaluation was done through ANOVA.Significant differences between the interactions of cell densities and time as well as between the different bacterial densities and control was indicated and showed that both isolates show entomotoxicity only to *Culex* larvae.
Keywords: Bacillus thuringiensis, entomotoxicity, lethal median concentration (LC_{50})

PROFILE OF THE HOSPITALITY INDUSTRY AT PANAGSAMA AND WHITE BEACH IN MOALBOAL, CEBU: LEARNING CASE

Dr. Proserpina T. Dionaldo, Romeo G. Pableo,/ Hermina S. Gabales /Rosalea A. Fenina A. Margallo
CTU-MOALBOAL CAMPUS

ABSTRACT

The study assessed the hospitality industry at Panagsama and White Beach in Moalboal, Cebu. It sought to look into the owners/managers profile, establishments profile, availability of service facilities and amenities, organizational structure, managerial practices and problems and remedial measures implemented. Descriptive method research was used in this study. A questionnaire which was designed in the form of checklist was used to collect the needed data coupled with some interviews. Data gathered were analyzed using frequency count, percentage and weighted arithmetic mean. Twenty four (24) hotel/resorts constituted the study group of 24 owners/managers as respondents. Findings revealed that most respondents are in their 50s, female, college graduates and Filipinos. Majority of the establishments have not submitted for star rating, owned by single proprietor, employing 10-12 employees and has existed for 11- 14 years. All establishments offered sleeping accommodation, food and beverages, spa and message services, recreational activities, room attendant services and laundry services. Most of the establishments used a line organizational set-up with common hospitality work designations.The level of implementation of the management practices as perceived by the owners/managers in terms of planning, organizing and directing practices is very high. Retaining workforce, competition, theft, bored guests, food complaints, few guests, rude staff, destroyed facilities and equipment and difficulty in reaching the establishment are the most common problems encountered.

TERATOGENIC ACTIVITY OF *LENTINUS TIGRINUS* EXTRACT ON THE EMBRYONIC DEVELOPMENT OF ZEBRAFISH (*DANIO RERIO*)

Rich Milton R. Dulay[1*], Sofronio P. Kalaw[1], Renato G. Reyes[1], Esperanza C. Cabrera[2],
Noel F. Alfonso[2] and Cassielyn M. De Leon[3]
[1]Central Luzon State University, Science City of Munoz, Nueva Ecija
[2] De La Salle University, Taft Avenue, Manila
[3]Aliaga National High School, Aliaga, Nueva Ecija

ABSTRACT

Lentinus tigrinus is a newly recorded and successfully domesticated wild nutritious mushroom in the Philippines. As a natural source of nutraceutical, it is indeed necessary to evaluate its functionalities. The teratogenicity assay of zebra fish embryos is a useful means to anticipate pharmaceutical and/or chemical entities, which are also equivalent to anticancer compounds. In this study, the developmental toxicity of *L. tigrinus* hot water extract was investigated in zebrafish embryos. Hatchability, heartbeat rate, dysmorphology and lethality of zebrafish embryos were assessed to provide valuable information for the potential teratogen of *L. tigrinus*. Hatching was completed after 48 hours post treatment application (hpta) at lower concentrations of 0.05% and 0.1% of extract and embryo water (control) while after 72 hpta at 0.5% and 1%, and 96 hpta at higher concentrations.The percent hatchability and heartbeat rates were significantly lower when embryos exposed with 1% or higher and with 5% or higher, respectively. Growth retardation was evident in embryos incubated at 5%, 10% and 20%. Underdeveloped head, unformed head and tail, perverted tail, serious pericardial edema and hook-like tail were observed as different dysmorphologies. Percentage mortality of embryos treated with 1% or higher was significantly increased at prolonged exposure. The present work found out that *L. tigrinus* extract has acute lethal and sub-lethal effects on zebrafish embryos- and is therefore not recommended for pregnant women.
Keywords: Lentinus tigrinus, teratogenecity assay, sub-lethal effect, pericardial edema,

GERMPLASM COLLECTION, ISOLATION AND IDENTIFICATION OF WILD EDIBLE MUSHROOMS OF MT. BANGCAY, CUYAPO, NUEVA ECIJA

Rich Milton R. Dulay[1], Sofronio P. Kalaw[1], Renato G. Reyes[1], Mark Anthony S. Gatcho[2] and Reyna C. Tiniola[2],
[1]Center for Tropical Mushroom Research and Development, Central Luzon State University, Science City of Munoz, Nueva Ecija/
[2]Dr. Ramon de Santos National High School, San Antonio, Cuyapo, Nueva Ecija

ABSTRACT

The country has rich wild genetic mushroom resources; however, most of these mushrooms with nutraceutical benefits remain to be in the wild. If these species are properly harnessed, they can be used as direct sources of protein and bioactive compounds for the people, while generating livelihood, ensuring food security and promoting environmental protection in the countryside. It is therefore imperative to continuously search for wild resources as sources of cell lines for more sustained efforts toward their wise utilization and conservation. This study aimed to document the natural habitat and to rescue the secondary mycelia of wild edible mushrooms inhabiting Mt. Bangcay, Cuyapo, Nueva Ecija. The collected basidiocarps were identified and tissue cultured in the laboratory using coconut water *gulaman* (CWG) as a basal medium to obtain their cell lines. Twelve species of wild edible mushrooms were gathered and identified. These includes *Ganoderma lucidum, Lentinus tigrinus, Volvariela volvacea, Schizophyllum commune, Auricularia auricula, Auricularia fuscosuccinea, Coprinus comatus, Pleurotus florida, Pleurotus cystidiosus, Dictyophora indusiata, Coriolus* sp., *Ganoderma* sp. The 10 wood-rotting mushrooms were found growing on the decaying logs of ipil-ipil, bamboo, mango tree, neem tree, guava tree, kakawate, melina tree and soil while the 2 leaf-litter mushrooms were on the decomposing pile of rice straw and mungbean hull. Among the 12 collected species, 8 were successfully rescued and propagated under the tropical laboratory conditions.

Keywords: wood-rotters, leaf-litters, tissue culture, nutraceuticals, germplasm.

SOIL PHYSICO- CHEMICAL PROPERTIES IN THE UPLAND RICE PRODUCTION AREAS IN SELECTED INDIGENOUS COMMUNITIES OF ARAKAN, COTABATO, PHILIPPINES *

Soriel Evangelista, Pamosogan, MSc and Juliet C. Bangi, Ph.D.
Arakan, Cotabato

ABSTRACT

The study was conducted to determine the current soil physico-chemical properties in upland rice production areas in selected indigenous communities of Arakan municipality and to recommend proper soil fertility management in the indigenous communities planted with upland rice. There were five farmer respondents from each selected barangays in Arakan municipality engaged in planting upland rice namely: Katindo, Ganatan, Tumanding, Mantangkil and Kabalantian. Descriptive and inferential statistics were used to analyze and describe the data gathered in this study.
The soil physical properties in the different barangays planted with upland rice varies as to the soil texture from silty clay, silty clay loam and clay; for the soil structure, all the barangays have granular form of soil structure; for soil porosity all barangay have more or less the same with 50% porosity; for the particle density it varies from 2.07 g/cm^3 to 2.5 g/cm^3; for the bulk density, it varies from 1.03 g/cm^3 to 1.25 g/cm^3; for water holding capacity it varies from 7.5% to 13.50%; for the soil color , it varies from gray, dark brown and light brown.

In the production of upland rice crops, proper soil management and cultural practices were employed. Evaluation and assessment of the soil physico-chemical properties are very important and are interrelated to each other that favour the growth and development of the plants. Soil texture and structure are important

properties that influence the porosity, particle density, bulk density, water-holding capacity and soil moisture content.

The soil pH of the different barangays vary from 5.4 to 6.0 which is slightly acidic. For soil Nitrogen status, there were two barangays that have low nitrogen in the soil and three barangays have moderate nitrogen status. For soil phosphorous content, there were two barangays that have low phosphorous and three barangays with medium phosphorous content; and all barangays have sufficient amount of soil potassium.

- *Research presented during the 12th National Scientific Conference of the PSSN at May 22-27, 2012 at the East Asia Royal Hotel, General Santos City, Philippines.*
- *Asst. Prof. III, CFCST, Doroluman, Arakan, Cotabato*

BIODIVERSITY ASSESSMENT OF MT. BANAHAW DE DOLORES

Cecilia N. Gascon, Ronald C. Garcia, Francisco N. Beltran, Wilfredo C. Faller, and Mary Ann R. Agudilla
Southern Luzon State University, Lucban, Quezon

ABSTRACT

A study was conducted to assess the diversity of biological communities in Mt. Banahaw de Dolores, Sitio Kinabuhayan, Sta Lucia, Dolores, Quezon, Philippines from 700masl to its peak at 2155masl. The area was characterized by identifying the forest trees and wildlife, their species richness and diversity, and dominance. This study is the first biodiversity assessment conducted in the site after a 5-year moratorium on visitation. The forest tree and wildlife inventory including insect collection were conducted and analyzed using Shannon-Weiner, Evenness and Dominance Indices. Result revealed a total of 455 trees representing 92 species and 37 families. For wildlife, a total of 30 species of birds representing 16 families, 5 species of bats, 3 species of amphibians and 2 reptiles were recorded. There were a total of 285 insects identified representing more than 104 families and 17 orders. High values for Shannon-Weiner index (H), and Evenness index (e) and low values of dominance (C) index indicated even distributionof individuals among the species and high species variation and diversity.

Keywords: Mt. Banahaw de Dolores, biodiversity, Mt. Banahaw, species richness, Shannon-Weiner index.

FACTORS INFLUENCING LOW PERFORMANCE IN SOLVING PROBLEMS INVOLVING CONCENTRATION OF SUBSTANCES IN SOLUTIONS OF BSIT FRESHMEN STUDENTS ENROLLED AT CEBUTECHNOLOGICAL UNIVERSITY, SAN FRANCISCO, CEBU

Martha Joyce G. Garciano
Cebu Technological University
San Francisco, Cebu, Philippines

ABSTRACT

This study aimed to look into the relationships between the students' performance in solving problems involving concentration of substances in solutions and the scientific attitude. This also wanted to determine the General Science Class Behavior, Study Habits and Methods used by the High School Chemistry Teachers including the High School Classroom Environment. This also looked into the relationship between the students' present level

of performance in solving problems involving concentration of substances in Solutions compared with the previous High School Chemistry grades.

This study employed descriptive-survey research in which each student-respondent was required to answer set of questions in the Questionnaires modified from various sources to fit the needs of the students and to answer the specific problems of the study. Pre- and Post- tests were administered to determine the students' performance involving problem solving. Statistically, results were determined using: Pearson Product-Moment Correlation of Coefficient and Coefficient of Contingency from the Chi-square to determine the degree of relationships between variables. T-test was also used to determine the significance of the relationships; and Mean and Standard Deviation was also employed to determine the variability of the scores in the Pretest and Post test.

Results showed that the only factor that significantly influenced the low performance of the students was their behavior toward science classes, most particularly those that involved solving problems. The rest do not affect significantly the performances of the students.

Results further revealed that the employment of learning-by-doing activities had a slight effect in improving the performance of the students in solving problems involving the concentration of substances in solutions.

Keywords: BSIT students performance chemistry

BIOMASS POTENTIAL OF MICROALGAE IN LIGUASAN MARSH, COTABATO AND ESTUARY OF STA. CRUZ, DAVAO DEL SUR

Alexter F. Generale, Lothy Fernandez-Casim, R.N., M.S.,
Bryann Lloyd P. Bretaňa
University of Southern Mindanao, Kabacan, Cotabato

ABSTRACT

A study was conducted to determine the biomass potential of microalgae in Liguasan Marsh, Cotabato and estuary of Sta. Cruz, Davao del Sur. A total of 83 microalgal taxa were identified, 58 of which are from Liguasan Marsh and 25 from Sta. Cruz estuary. Based on Most Probable Number Estimate, 13 FOM were observed, eight in Liguasan Marsh and five in Sta. Cruz estuary. Among the FOM taxa, only 9 were successfully isolated which include *Chlorella minutissima, Gongrosira, Neochloris aquatica, Nostoc, Oscillatoria brevis, Phormidium,* and *Scenedesmus communis* from Liguasan Marsh and *Klebsormidium* and *Oscillatoria* from Sta. Cruz estuary. The biomass (gL^{-1}) of microalgae was measured on a 6-day interval. After 42 days, the highest biomass was observed in *Neochloris aquatica* (18.2 gL^{-1}) while the lowest was observed in *Klebsormidium* (2.56 gL^{-1}). It is concluded that *N. aquatica* is a potential microalgal species for biomass production. The economic value of another related species (*Neochloris oleoabundans*), could also be true to *N. aquatica*.

Keywords: biomass, biomass potential, microalgae, frequently-occurring microalgae, Neochloris aquatica

IDENTIFICATION WITH NOTES ON SOME RISK FACTORS TO SCLERACTINIANS (HARD CORALS) IN ISLA JARDIN DEL MAR, GUMASA, GLAN, SARANGANI, PHILIPPINES

Alexter F. Generale
University of Southern Mindanao, Kabacan, Cotabato

ABSTRACT

The province of Sarangani has a rich coral fauna but much was subjected to destruction as divers claimed that more than half of the coral reefs in its 230km coastline where in bad shape and almost wiped out. With this phenomenon, there is a need to assess the coral fauna of the area.
A study was conducted to identify the Scleractinians, commonly known as Hard Corals, present in Isla Jardin del Mar, Gumasa, Glan, and Sarangani, Philippines. The risk factors to the corals in the area were also investigated. An opportunistic method of sampling was employed along the beach perimeter during daylight at low tides. Scleractinians were photographed using a digital underwater camera.
The Scleractinians identified comprised of 3 suborders: *Faviida, Astrocoeniida,* and *Fungiida;* 8 families: *Acroporidae, Agariciidae, Faviidae, Merulinidae, Mussidae, Oculinidae, Pocilloporidae, and Poritidae;* and 20 genera: *Acropora, Astreopora, Cyphastrea, Favia, Favites, Galaxea, Goniastrea, Hydnophora, Leptoria, Lobophyllia, Montastrea, Montipora, Oulophyllia, Pachyseris, Platygyra, Pocillopora, Porites, Seriatopora, Stylophora,* and *Symphyllia.* Human intervention, heavy and increasing siltation along with the proliferation of an invasive sea star species (*Acanthaster plancii*) which feeds on corals are some of the risk factors to the Scleractinians in the area.

Key words: Scleractinians, Hard Corals, Suborders, Families, Genera

FLORAL ASSESSMENT OF MT. DATA NATIONAL

Romeo A. Gomez, Jr.
Benguet State University

ABSTRACT

The research intended to conduct an ecological study on the mossy-forest ecosystem of the Mt. Data National Park focusing on the assessment on the soil characteristics and the floral species, particularly on the tree species present in the study area, in the context of a changing and threatened landscape due to encroachments from agricultural activities. Specifically, it attempted to (1) conduct an assessment of the tree species present in the mossy forest ecosystem; (2) determine soil physical and chemical characteristics of the ecosystem; (3) establish the species-area curve of the mossy forest ecosystem, focusing on the various tree species; (4) characterize the ecosystem using ecological indices such as relative density, dominance and importance values, among others; and, (5) identify selected associated species with the tree vegetation.
Indeed, the Mt. Data National Park is still a diverse forest ecosystem (H' = 2.63). However, there has been a significant decline through the years as evidenced by the further encroachments into the protected area, by the expansion of farming areas being cultivated. There were still tree species which were identified some decades ago (about 50 years), but some probably have declined in terms of their abundance in that forest. The physical and chemical properties of the forest soil seem to be advantageous to farming due to the fertility offered by the forest soil, but also provides an insight why farmers may have opened new areas for agriculture, apart from economic reasons. However, this runs counter to the basic concept of environmental protection and conservation.

FROM INDIGENOUS PRACTICES TO CLINICAL APPLICATIONS OF CRUDE AND AQUEOUS EXTRACTS OF *CAESALPINIA* SP. ("SOLO-SOLO") STEMS AGAINST PATHOGENIC BACTERIA

Paul Evan G. Granados, Eharra Christa B. Lasala, Paul R. Olvis
University of the Philippines Cebu, Gorordo Avenue, Lahug, Cebu City

ABSTRACT

Tropical herbs and plants used in folkloric traditional practices produce a large selection of phytochemicals or secondary metabolites, which are important for synthesizing pharmaceuticals and botanical medicines. The Philippines as an exceptionally acclaimed biodiversity hotspot has a number of these plants that has been used for centuries as traditional medicine. One of which is the *Caesalpinia* sp. locally known as "solo-solo" by the Tagakaulo tribe in Santa Maria, Davao del Sur.
It is the aim of this study to promptly assess the phytochemical, chromatographic, and antibacterial screening of the extracts. Fresh stems were soaked in one liter of 95% ethanol for 48 hours and concentrated under vacuum using rotary evaporator. The ethanol crude extract was partitioned into aqueous fraction and subjected for thin-layer chromatography and bioassay.
The phytochemical screening showed that *Caesalpinia* sp. is a potential source of flavonoids, tannins, steroids, saponins and anthraquinone. Chromatographic analysis only revealed the presence of flavonoids and steroids due to the limited spray reagents. The aqueous extract showed the highest inhibition against *Staphylococcus aureus* while the crude extract displayed the highest inhibitory effect among other pathogens.
The findings confirmed scientific support to the ethno medicinal use of the plant through decoction by traditional healers.

Keywords: Caesalpinia sp., phytochemical screening, thin-layer chromatography

DIVERSITY ASSESSMENT OF SOIL MICROFUNGI IN RICE PADDIES OF SELECTED SITES IN THE PROVINCE OF ALBAY, PHILIPPINES

Jonathan Jaime G. Guerrero, Daryl B. Alfante
Legazpi City, Philippines, 4500

ABSTRACT

Soil microfungi are vital components of edaphic ecosystems. They affect soil characteristics and in turn, their diversity and overall functionality are affected by it, as exemplified in agriculture. However, there is few diversity studies focused on them. To bridge this gap, the present study examined the diversity of soil microfungi in selected rice paddies across the three districts of the province of Albay, Philippines and correlated it to the edaphic profile of sampling sites. Characterization of soil employed standard methods and taxonomic classification of isolates employed keys to the identification of soil microfungi. ANOVA values indicate that pH and silt component of soil from district 1 and 2 are not significantly different but differ significantly from district 3. Nitrogen, phosphorus and potassium content as well as organic matter, moisture content and carbon-nitrogen ratio do not vary considerably among sampling sites. Colony – forming units was highest at barangay Ubaliw of the third district with a value of 1.35×10^7 CFU/g of soil. A total of 120 isolates were obtained. Furthermore, *Aspergillus fumigatus, Aspergillus niger* and *Penicillum funicolosum* were the most dominant species and seen in all sampling sites. Pearson's correlation provides that pH of soil has moderately positive linear relationship with CFU ($r=0.530$, $p=0.024$). As the first comprehensive research on microfungi in the province, species richness gives promising estimates of microfungal species and establishes potentials for applications on composting and mycoremediation. The study recommends continuation of the research to include other ecosystems and correlate to abiotic factors and anthropogenic disturbances.

EVALUATION OF DIFFERENT SUBSTRATE COMBINATIONS FOR SPAWN PRODUCTION OF *VOLVARIELLA VOLVACEA.*

Jaime C. Silvestre, Ph.D.
University of Southern Mindanao, Kabacan, Cotabato

ABSTRACT

The study was conducted to evaluate the yield and profitability of *V. volvacea* in different spawn substrate combinations, grown in standard bedding materials, dried banana leaves. It was conducted at the Department of Plant Pathology, College of Agriculture, USM and at Rio Grande Street, Kabacan,Cotabato from December 2011 to February 2012. A Completely Randomized Design (CRD) was used with eleven treatments, replicated three times.
Among test treatments, 3 parts of Newspaper, 1 part of Cogon leaves, 1 part of Calopogonium and 1 part of Rice bran (3:1:1:1) resulted higher growth, yield and profitability of *V. volvacea.* This treatment gave the earliest number of days to harvest, produced most buttons and the heaviest weight compared to the Standard Check (3 parts of Banana leaves, 1 part of Ipil-ipil leaves, 1 part of Kakawate leaves and 1part of Rice bran) on a four-layered 20”X32”X7’’ mushroom bed.

SOCIAL NETWORKS AND ENVIRONMENTAL AWARENESS

Li Jia
University of the Philipines, Diliman

ABSTRACT

It is increasingly becoming important that the significance of preserving the environment is impressed on everyone in this generation to sustain vital resources needed for humankind’s existence on earth. These resources need to be properly manage which involves conservation efforts for sustaining the environment for future generations. There is a need therefore to promote and educate the global community on prevailing environmental issues in the world today. Education is a key process in development. In terms of increasing environmental awareness which in turn will arouse our concern regarding the state of the environment which translates itself into commitment and should provide the motivation do something for the environment. The use of social media is for the dissemination of information is postulated to be able to help in creating environment awareness on a global scale. It is a technological platform to communicate and receive feedback which can be used to exemplify current situations including that of issues pertaining to the global threat to the environment.
The paper aims to evaluate the existing practices of social networks in addressing the need to spread awareness about environmental issues that will deter the progressive deterioration of the environment in the world today. The research intends to help understand the current means, methods, and effectiveness of current practices and learn about the innovations and new approaches being employed successfully in social media technology for spreading information.
The paper analysis showed that the social media platform is an effective communication tool that reaches out to broad targets to disseminate information. It presents scalability of the platform as well as its ability to monitor subjective opinions on environmental issues from the general public which can provide strategies to set in place the appropriate mechanisms for institutional agencies address the issues of the environment.

Keywords: Social Network, Environment Awareness. , Educatio

MEDICINAL PLANTS AT NORTH-WESTERN SLOPE OF MOUNT KATULUNGAN, DOS, MAGUINDANAO

Josol, Elaine Gay; Laurie, Mercedita A.; Remollo, Leopoldo I.

ABSTRACT

The objective of the study was to determine the medicinal plant species found naturally thriving at Mt. Katulungan lower mountain range, Datu Odin Sinsuat Maguindanao. The study was conducted last September, 2011. The methods used in the study was modified strip line and ransect line method, there is one (1) transect strip line established on the area with 10 m width, the strip line consists of 25 stations with 10 m interval. Findings showed twenty four (24) medicinal plant species belonging to 18 families and 24 genera.

EFFICACY OF *HYDROPHYTUNE ORBICULATUM* (TABON-TABON) SEED EXTRACT INPREVENTINGANTHRACNOSE AND STEM-END ROT IN POST-HARVESTED CARABAO MANGOES

Efren L. Jucoy, Renante C. Oran, Judel Jay A. Tabsin, Mervin G. Salmon, Engr. Gerson D. Dumpasan
Panabo National High School, Panabo City, Davao del Norte, Philippines

ABSTRACT

The study was conducted to test the efficacy of *Hydrophytune orbiculatum* (Tabon-tabon) seed extract in preventing anthracnose and stem-end rot on post-harvested 'Carabao' mangoes and to determine which among the following treatments is the most effective and to compare the efficacy of *Hydrophytune orbiculatum* (Tabon-tabon) seed extract to the positive treatment, Vapor Heat Treatment.

The study was laid out in a Complete Randomized Design (CRD) with five treatments replicated seven times namely; T_o – 100% Distilled H_2O, T_1 – 25% Tabon-tabon seed extract solution, T_2 – 50% Tabon-tabon seed extract solution, T_3 – 75% Tabon-tabon seed extract solution and T_4 Vapor Heat Treatment. The 'Carabao' mangoes were stored at an average room temperature of 32^{O}C to 34^{O} C for 14 days. The results were assessed using Visual Quality Rating (VQR), percentage of Incidence of Anthracnose, percentage of Incidence of Stem-end Rot, One Way Analysis of Variance, Tukey's Test and Dunnett's Test.

Results showed that *Hydrophytune orbiculatum* seed extract is effective in preventing anthracnose and stem-end rot on post harvested 'Carabao' mangoes. T_3 with 75% *Hydrophytune orbiculatum* seed extract and T_4 provided the same, highest VQR and complete protection against anthracnose and stem-end rot.

Keywords: Hydrophytune orbiculatum, 'Carabao' mangoes, anthracnose, stem-end rot

OPTIMUM CULTURE CONDITIONS FOR MYCELIAL GROWTH OF Arocybe aegerita (V. Brig.) Singer

Sofronio Kalaw, Via Ann C. Marcelo, Rich Milton Dulay, Renato G. Reyes
Central Luzon State University, Science City of Muñoz, Nueva Ecija

ABSTRACT

Agrocybe aegerita is an agaric temperate mushroom which is popular in Southern Europe particularly in Italy. It usually grows on fallen logs, stumps of broad leaf trees and other agricultural and forest substrates. Although this mushroom is commercially cultivated in temperate countries, it is still unavailable in the country due to the absence of production technology. Our research team determined the optimum culture conditions for mycelia

growth which is a prelude in the development of production technology for commercial production of this mushroom.
The mycelial growth performance as influenced by different indigenous culture media, physical factors (pH, aeration and illumination) and mother spawning materials were evaluated in this study. Among the different media evaluated, coconut water gelatin produced thick and widest mycelial growth with a mean of 85.83 mm while sorghum seed decoction gelatin recorded very thin and smallest mycelial diameter with a mean of 79.17 mm. Moreover, potato sucrose gelatin recorded very thick mycelial growth with the shortest incubation period. Potato sucrose gelatin at pH 6.0 incubated in either sealed or unsealed condition under the dark, displayed an efficiently growing luxurious mycelia. Finally, sorghum seeds recorded very thick mycelia and shortest incubation period with a mean of 16.67 days while corn grit registered thick mycelia and longest incubation period of 31.67 days.

DISEASES OF OIL PALM (*ELAEIS GUINEENSIS*) IN SIX MUNICIPALITIES OF SULTAN KUDARAT PROVINCE, PHILIPPINES

Junito P. Marcelino, Rodelyn M. Dalayap,Efren C. Flores
Sultan Kudarat State University

ABSTRACT

This study aimed to identify and document prevailing diseases of the oil palm in six municipalities of Sultan Kudarat Province. Confirmed by pathogenicity tests were the following diseases and their corresponding pathogens: leaf spots caused by *Curvularia lunata* and *Pestalotia palmarum,* rachis blight caused by *Thielaviopsis paradoxa*, anthracnose caused by *Colletotrichum gloeosporioides*, leaf blight caused by *Fusarium moniliforme*, basal trunk rot caused by *Ganoderma lucidum,* seedling stem/bud rot caused by *Rhizoctonia solani*, bacterial bud rot of oil palm seedlings caused by *Pectobacterium* carotovora, and algal leaf spot caused by *Cephaleuros virescens*. Furthermore, five nematode genera were found associated with oil palms, namely: *Helicotylenchus, Pratytenchus, Tylenchus, Criconemoides,* and *Meloidogyne*. Some of these diseases are here reported for the first time in the Philippines.

Keywords: algal, bacterial, fungal, nematode, and virus diseases of oil palm, plantation crop

THE EFFECT OF STORAGE TEMPERATURE ON QUALITY AND SHELF LIFE OF FRESH-CUT CAULIFLOWERS

Musaddad, D., I.S. Setiasih, dan R.Kastaman
Padjadjaran University, Bandung,
Indonesia 40600

ABSTRACT

Minimally processing is one of promising technology inventions to anticipate social dynamic from consumers that in meeting the needs with quickly, simple, and safe. Futhermore, wound of minimally processed can speed up damage. The objective of this research is to find out storage temperature on quality and shelf life of fresh-cut cauliflowers.
The experiment has been studied in two stages : (1) determination of the critical quality of fresh cut cauliflowers; and (2) determination of the storage temperature. The first experiment has been made with studied of critical quality caracter changes with objective measurement that correlated with changes of panelist respons in scale value. The quantitative objective value at panelist acceptance list will be shelf life limit for further experiment.

The second experiment was conducted with Rendomized Complete Design (three replications and five storage temperature, i.e. 0, 5, 10, 15 Celcius degree and ambient temperature.
The results showed that: (1) the critical quality parameter of fresh-cut cauliflower is the brightness of the color (L value) with the critical value of 71.32, and (2) storage temperature 5^0C had the best effect on the quality and shelf life of fresh cut cauliflowers (24.57 days), whereas at ambient temperature is only 3.25 days.

Key words : Brassica oleracea L.var. botrytis; fresh-cut; storage temperature; quality; critical quality caracter; and shelf life.

SPECIES COMPOSITION, DIVERSITY, AND CONSERVATION STATUS OF BIRDS AND FROGS IN ZAMBOECOZONE, BARANGAY TALISAYAN, ZAMBOANGA CITY

Jaime A. Namocatcat,/Catherine M. Aguilar,/ Kristy Marie S. Nagsuban, /Florence L. Zapico
Mindanao State University, General Santos City

ABSTRACT

Species composition, diversity, and conservation status of birds and frogs in grassland and riparian habitats of ZAMBOECOZONE, Barangay Talisayan, Zamboanga City were investigated using Transect Survey and Opportunistic Sampling techniques in 5 bird transects and 4 frog sampling stations.

Bird transect surveys revealed a total of 1,489 individuals, resolved into 39 species and 24 Families dominated by Estrildidae. Chestnut munia (*Lonchura malacca*), a cosmopolitan grassland species scored the highest relative abundance at 15.51% followed by the yellow-vented bulbul (*Pycnonotus goiavier)*, olive-backed sunbird (*Nectarinia jugularis)*, white-bellied munia (*Lonchura leucogastra),* and white-collared kingfisher (*Halcyon chloris)* with relative abundance scores of 12.69, 11.22, 11.15 and 5.71%, respectively. Based on 2012 IUCN Red List of Threatened Species, all birds documented at the site were categorized as “Least Concern” but *Centropus viridis*, *Loriculus philippensis*, *Pycnonotus goiavier, Sarcops calvus*, *Phapitreron leucotis*, and *Orthotomus cinereiceps* are Philippine endemics, while the rest are categorized as either migrants or residents.

Frog surveys, on the other hand, collected a total of 85 individuals resolved into 9 species and 4 Families dominated by Ranidae, where *Rana cancrivora*, an edible species was the most abundant frog scoring a relative abundance of 56.47%, indicating relatively clean stream and wetland habitats. These results suggest that avifaunal and frog diversity may be high in some lowland areas that are highly accessible or close to human habitation but further studies must be carried out to identify temporal diversity and abundance patterns and anthropogenic pressures that threaten thriving local bird and frog population.

Keywords: Biodiversity, Birds, Frogs, Conservation Status, Species Diversity

ULTRAMAFIC AREAS OF TUBAJON, DINAGAT ISLANDS YIELD HIGH AVIFAUNAL DIVERSITY AND ENDEMISM

Jaime A. Namocatcat, Catherine M. Aguilar, and Florence L. Zapico
Mindanao State University, General Santos City

ABSTRACT

Avifaunal transect surveys in 8 locations representing coastal areas and wetlands, grassland habitats, and secondary forests in ultramafic areas of Tubajon, Dinagat Islands revealed a total of 883 individuals resolved

into 53 species and 25 Families. The most speciose Family was Columbidae with six species, followed by Ardeidae, Nectariniidae, Pycnonotidae, and Sylviidae with four species each, but the most abundant species across all sites were the glossy swiftlets (*Collocalia esculenta*) and wild ducks (*Anas querquedula*) with relative abundance of 10.08 and 8.38%, respectively. Wild ducks were particularly abundant in Tambongon, a picturesque and relatively enclosed lagoon, despite the denudation of its hilly areas.
About 30 species of birds documented in the area are categorized as Philippine endemics (56% endemism), where *Penelopides panini* is listed as Endangered and *Halcyon capensis, Buceros hydrocorax, Ducula poliocephala*, and *Phapitreron amethystina* are categorized as Near Threatened (NT) by the 2012 IUCN Red List of Threatened Species. Birds listed under Appendix II of CITES are *Tanygnathus sumatranus, Loriculus philippinensis, Falco tinnunculus, Buceros hydrocorax, Penlopides panini*, and *Haliastur indus*. The rest of the birds recorded from the area are categorized as Least Concern, that either are migrants or residents. Extant forest cover in Tubajon is generally a regenerating secondary forest dominated by trees with circumference-at-breast height (CBH) below 38 cm due to heavy logging in the past. While the current bird surveys yield rich taxonomic data, more field studies, however, are required to document more species before establishing the avifaunal profile of the area and developing site-specific conservation measures.

Keywords: Biodiversity, Birds, Conservation Status, Species Diversity, Ultramafic Areas

DENDROLOGICAL ASSESSMENT OF EXTANT SECONDARY FORESTS IN KIAMBA, SARANGANI PROVINCE

Jaime A. Namocatcat, Al Kareem Nawal, Catherine M. Aguilar, and Florence L. Zapico
Mindanao State University, General Santos City

ABSTRACT

Dendrological survey was conducted using Point Center Quarter Method (PCQM) to maximize sampling intensity and efficiency in remnant forest patches of Barangay Kapate, Tamadang, Gasi and Tambilil in Kiamba, Sarangani Province with transect lengths ranging from 0.5 to 1.2 Km, and sampling points set at 25-m interval. Transect lines were usually broken by open grasslands and kaingin farms.
A total of 8 transects across all sites revealed 157 species of trees, distributed in 39 families, dominated by Dipterocarpaceae and Moraceae. Tree density was generally dominated by miscellaneous species but notable forest trees such as loktob (*Duabanga moluccana*), latel (*Pometia pinnata*), and pangi (*Pangium edule*). Premium hardwood species such as white lawaan (*Shorea contorta*), red lawaan (*Shorea negrosensis*), and yakal (*Shorea astylosa*) were sporadic in distribution, occurring in low density usually as singular tree stands, when not 'poached' by timber poachers.
Four vegetation types were recognized in all areas– (i) remnant lowland forest, (2) *Piper adductum*-dominated open landscape, (3) Kaingin areas, and (4) mix agricultural areas, creating a patchwork of heavily fragmented habitats, strongly indicating eventual encroachment and fragmentation of remaining forest cover. In Tambilil, 'carabao logging' of remaining white lawaan and red lawaan appeared to be 'pervasive', while Gasi was the most deforested of the four barangays, with remnant forest patches occurring only along creek areas. Results further suggest that there were 7 critically endangered, 13 vulnerable, 4 endangered, and 1 rare species documented in all study sites.

Keywords: Biodiversity, Philippine Hardwood, Forest Trees, Lowland Forest, Dendrology, PCQM

FRESHWATER FISH AND MACROINVERTEBRATE ASSEMBLAGES OF ZAMBOECOZONE, BARANGAY TALISAYAN, ZAMBOANGA CITY

Jaime A. Namocatcat, Lorenzo L. Taping III, Catherine M. Aguilar, and Florence L. Zapico
Mindanao State University, General Santos City

ABSTRACT

Fish and macroinvertebrate assemblages in three catchment areas of ZAMBOECOZONE at Barangay Talisayan, Zamboanga City were assessed using Kick Net and Dip Net sampling using single and combined multihabitat approach to evaluate species richness, composition, diversity, and water quality. Sampling stations per catchment area were established every 50 m starting from the most downstream location towards the boundary, for a total of 41 sampling stations.

Results revealed a total of 799 individuals resolved into 6 species of freshwater fish and 26 macroinvertebrate species resolved further into 13 gastropods, six decapods, 4 damselflies and dragonflies, and 3 water beetles under Order Coleoptera, Hemiptera, and Trichoptera. Freshwater fishes were dominated by *Poecilia reticulata* (guppy), an introduced species with a relative abundance of 57.63%, while macroinvertebrates were dominated by *Caridina typus* (common stream shrimp) with a relative abundance of 28.1%. Simpson's Diversity Index in all areas averaged 0.88, indicating moderate species diversity.

Macroinvertebrate-based water quality assessment using the Family Biotic Index (FBI), Biological Monitoring Working Party (BMWP), and Average Score per Taxon (ASPT) suggests that among 3 catchments areas, San Ramon River scored "fair water quality" (FBI=6.35), while the stream catchment was categorized as either "clean but slightly impacted" (BMWP=80) or even "excellent" using the ASPT matrix (6.15). While biotic indices provide a rapid ecological assessment of surface waters, temporal and spatial monitoring of macroinvertebrate assemblages provides better appraisal when coupled with relevant *in situ* physical and chemical parameters.

Keywords: Biodiversity, Freshwater Fishes, Freshwater macroinvertebrates, biotic indices, water quality assessment

INCIDENCE OF BANANA BUNCHY TOP (BBT) AND DISEASE MANAGEMENT PRACTICES FOR BBT OF BANANA GROWERS IN THE 12 MUNICIPALITIES OF NORTH COTABATO.

Dr. Jaime C. Silvestre, Necesito, Jerry, Jr. A.
University of Southern Mindanao,Kabacan,Cotabato.

ABSTRACT

This study was conducted to: determine the percentage incidence and geographical distribution of BBT; assess the sociological and specify economical implication of BBT; and know the disease management practices for BBT of banana growers in the 12 municipalities of North Cotabato. Of the total 140 ha surveyed, 75, 43, 15 and 7 ha were planted to Lakatan, Cardava, Cavendish and Latundan, respectively. BBT showed different symptoms and slight variation among varieties regardless of age of the banana plant.

BBT incidence in the surveyed areas in the 12 municipalities in North Cotabato revealed highest incidence in Kidapawan with mean % infection of 22.37%, while the lowest was observed in Matalam with a mean of 1.77%.

In terms of the respondents' disease management practices for BBT, 100% killed the aphid vectors and rouged out the infected banana plants, 98.57% used Round-up, 94.29% used 2-4-D and 69.29% used tissue-cultured planting materials.

HOST SPECIFICITY OF SOME AVIFAUNAL ECTOPARASITES IN MT. GABUNAN, ILIGAN CITY

Paul R. Olvis[1], Olga M. Nuneza[2]
[1]University of the Philippines Cebu,Gorordo Avenue, Lahug, Cebu City/, [2] MSU-IIT, Iligan City

ABSTRACT

Life history of the parasite as well as that of the bird is an important factor to study host-specific relationship considering it is easy to detect and identify such parasite through its host. Thus this study aims to identify the ectoparasites of some species of birds that were not under threatened category.
Ectoparasites of birds captured in Mt. Gabunan were found on the skin and feathers of the hosts and identified to seven families namely: Proctophyllodidae, Philopteridae, Knemidicoptidae, Ricinidae, Hippoboscidae (adult and larva), Dermanyssidae, and Spinturnicidae. Ectoparasites of Family Philopteridae appeared to be host specific on *Phapitreron leucotis brevirostris* while Dermanyssidae and Knemidocoptidae were found to occur only on *Ficedula crypta* and *Parus elegans*, respectively. Ectoparasitic infestation of birds may be attributed to the ability of ectoparasites to live and breed in the feathers, nests, and roosts of birds.
A thorough understanding of the occurrence and host specificity of bird parasites might shed light on the transmission and spread of disease, important to both man and animals. Somehow this helps increase the rate of survival and productivity of birds and its presence may even have implications on the conservation status of the forest.

Keywords: Host-specific, ectoparasite, Mt. Gabunan

UTILIZATION OF INDIAN ALMOND *(Terminalia catappa linn.)* AND WASTE ANIMAL FATS AS BIODIESEL

Rizano, Franjette Marie L.; Brasales,Carmel Anne B.
Sultan Kudarat State University, EJC Montilla, City Tacurong

ABSTRACT

Today, the Philippines is suffering from economic crises. The government is having a hard time in upholding the quality level of our economy and some sectors. Typically, one of the economic problems we are facing at the present is the increasing price of oil which the eventually triggers the increase in prices of fares, foods and other household necessities.

This study aimed to determine if biodiesel could be produced from Talisay seed oil and Waste Animal Fats. It also aimed to determine the properties of the prepared biodiesel in terms of flammability, viscosity, density, amount of soot of flame and caloric value, and to compare it to the properties of the commercial petroleum diesel. An experimental formulation of the extracts and waste animal fats were tested for physical and chemical properties and were compared to commercial biodiesel using One- Way ANOVA.

Results showed that the Control and Treatment 2 was the most and least flammable respectively. The Control was found to be the least viscous and Treatment 1 was the most viscous of all the treatments. The test for density and for determination of caloric values revealed that there were no significant differences between the Control group and the prepared biodiesel. Test for amount of soot showed that the Control generated the most amount of soot and Treatment 2 produced the least.

Keywords: biodiesel, Indian Almond, waste animal fats

PRACTICAL WORK APPROACH USING SUPPLEMENTAL LEARNING MATERIALS FOR EFFECTIVE TEACHING IN TRIGONOMETRY

Abdullah, Samsudin N., Rommel m. lagumen, PhD
Poblacion, Esperanza, Sultan Kudarat.

ABSTRACT

This study aimed to develop effective instructional materials and approach in delivering important lessons in Trigonometry for senior students of Esperanza National High School. It also determined the effectiveness of Practical Work Approach using Supplemental Learning Materials to provide students an easy access to comprehension and computational skills in Mathematics IV.

Specifically, this study was able to answer the following questions: What are the levels of pre- test mean scores of experimental and control groups? What are the levels of post- test mean scores of experimental and control groups? Is there a significant difference between the mean scores of experimental and control groups at the beginning of the experiment? Is there a significant difference between the pre- test and post- test mean scores of experimental and control groups? Is there a significant difference between the mean scores of experimental and control groups at the end of the experiment? Is there a significant difference between the mean gain scores of experimental and control groups? Is there a significant difference between students' achievement in the experimental and control groups as influenced by the teaching approaches?

The research utilized the Pre-test – Post-test Control Group Design. It determined the effectiveness of Practical Work Approach using Supplemental Learning Materials in developing the academic achievement of senior students of Esperanza National High School in Trigonometry. The school is located at Mabolo Street, Poblacion, Esperanza, Sultan Kudarat. The respondents of the study randomly chosen were 50 IV- Ptolemy and 50 IV- Aristotle students with a total of 100 students for the school year 2011- 2012.

The major instrument used to gather data was the validated 50- item researcher- made test. To give meanings to the data generated from the experiment, the researcher utilized t- test to determine the significant differences in the pre-test and post- test mean scores, and the mean gain scores. Analysis of Covariance (ANCOVA) was used to determine the significant effect of the teaching approaches employed in both the experimental and control groups.

At the start of the experiment, standardized test and pre- test scores of the respondents showed that the experimental and control groups were of the same level of academic performance; however, when post- test was administered, the researcher found out that there was a significant difference in the learning achievement of the students in experimental group after their exposure to Practical Work Approach.
These findings led to the conclusion that Practical Work Approach using Supplemental Learning Materials enhanced the academic performance of the students. It is therefore recommended that school administrators, school heads and teachers should develop appropriate learning materials that introduce Practical Work Approach for effective teaching- learning interactions in Mathematics.

PREDICTORS OF THE WESTERN PHILIPPINES UNIVERSITY GRADE VI PUPILS' ENTRANCE EXAMINATION RESULT AND MATHEMATICS ACADEMIC PERFORMANCE

Sheila Grace Pama-Soriano
Western Philippines University
Aborlan, Palawan, Philippines

ABSTRACT

The study looked into the relationship of the independent variables to the dependent variables. The independent variables from Grade I to VI were: grades in Mathematics WX = 89.97or satisfactory, academic performance in English WX = 89.45 or satisfactory, academic performance in Science WX = 90.16 or very satisfactory, general average in Mathematics WX = 89.98 or satisfactory, general average in English WX = 91.05 or very satisfactory and general average in Science WX = 89.98 or very satisfactory. Other variables were language comprehension WX = 3.47 or evident, assistance from home WX = 3.93 or much evident, type of school attended WX = 2.51 or evident, interest WX = 3.23 or evident, and attitude 3.01 or agree. Entrance examination result WX = 106.02 or average and examination result in Mathematics WX = 20.34 below average. Performance in Elementary Algebra WX = 80.06, Intermediate Algebra WX = 80.79 or passed.
Based on the results of this study, it is recommended that Basic Arithmetic will be offered in the first semester of first year, Elementary Algebra in the second semester and Intermediate Algebra for the first semester of second year. This intervention should be considered by the WPU administration to provide a motivated-learning environment for the students.

SOME ECONOMICALLY IMPORTANT BIVALVES AND GASTROPODS FOUND IN THE ISLAND OF HADJI PANGLIMA TAHIL, IN THE PROVINCE OF SULU, PHILIPPINES

Sharon Rose M. Tabugo[1], Jocelyn O. Pattuinan[1],
Nathanie Joy J. Sespene[1] and Aldren J. Jamasali[2]
[1]MSU-Iligan Institute of Technology,Iligan City; [2]Mindanao State University- Jolo, Sulu

ABSTRACT

The Philippines is a haven of a rich diversity of marine organisms. Unraveling this diversity had posed a tremendous challenge. The existing security threat in some areas of the archipelago had led to a dearth of information with regard to the diversity of organisms especially the islands located in the province of Sulu. Marine mollusc studies are still among those that are overseen by many researchers. To date, there is still a lack of basic information such as diversity and species checklist that make it impossible to assess the rate of population lost among existing marine molluscs. There is no published information on the actual number of marine shelled molluscan species in the area. This work assessed, described and identified some economically important molluscs in the island of Hadji Panglima Tahil, in the province of Sulu, Philippines, inclusive of some taxonomic descriptions. There were a total of 24 Molluscs (marine bivalves & gastropods) found and identified in the island. The molluscs served as food, ornaments and as source of livelihood by residents in the area, which is separated by sea from Jolo, the capital municipality of the province.
The natives of the island depended mainly on fishing and hunting of molluscs found along the seashore. Geographically, the northwestern part of the area is strategically enclosed, making it undisturbed by strong waves while, the eastern portion facing Jolo, is more exposed to strong waves that created an advantage by pushing the organisms thriving in the deeper coral regions towards the seashore hence, affording opportunities for more consumption by the people. The molluscs meat were valuable and the shells itself are of equal importance to many shell dealers in the town of Jolo or in the nearby business hub, Zamboanga City. Habitats ranged from pristine waters in the northwestern portion of the island to disturbed waters in the eastern part attributed by anthropogenic activities in the area. It was noted that the most dominant species found was

Mercenaria mercinaria, which thrived in the northwestern part of the island. This seashell is often found in Jolo market daily and other nearby municipalities like Maimbung and Siasi. At present, the residents in the area are still capable of sustaining the survival of these organisms. However, they should be equipped with the proper scientific knowledge on the preservation and conservation of such organisms.

Keywords: bivalves, gastropods, molluscs, Sulu, Philippines

VISUALIZATION OF SPECIES DIVERSITY BASED ON PATTERNS OF DEVELOPMENTALM MODULES IN THE WINGS OF DAMSELFLIES

Sharon Rose M. Tabugo, Mark Anthony J. Torres and Cesar G. Demayo
MSU-IliganCity

ABSTRACT

The emergence of geometric morphometric tools, have shed light to new techniques in studying species diversity based on morphological data. In this study, Partial least square analysis (PLS) was used as an exploratory technique in visualizing intra- and inter-modular variations in the wings of four species of damselflies. This is in line with the long term hypothesis, where the wing may consist of separate modules, such that modules are said to be 'units of gene regulation.' Thus, it is possible to evaluate modularity in morphological data by subdividing the total set of traits into subsets and compare the strength of covariation between them. The pattern of covariation within modules as indicated by the magnitude of vectors may imply species diversity. Results show that the fore- and hind wings consist of 3 possible developmental modules bounded by wing veins except for *Vestalis melania*, where the wings are partitioned into two parts, the anterior and posterior portions. In the overall context, it was found out that the order of species diversity based on patterns of covariation are as follows: *Vestalis melania, Euphaea amphicyana, Rhinocypha colorata* and *Devadatta podolestoides basilanensis*. Patterns that have emerged may suggest a relationship between the strength of intra- and inter modular variation to melanin production in the damsel wing, relating to the intensity and degree of color hues and patterns as governed by genes and the role of environment in influencing the phenotype. Understanding the relationships between modules can be informative in underlying biological processes.

Keywords: Partial least square, covariation, modules, modularity, damselfly

THE FISH SPA BUSINESS IN CEBU CITY WITH IMPLICATIONS ON THE ICTHYOTHERAPEUTIC EFFECTS ON HUMAN SKIN

Astrud Mae Tambangan, Areen Kaye Agdon, Kevin Degamo, Mary Cliene Sacil, Paul R. Olvis
University of the Philippines Cebu, Gorordo Avenue, Lahug, Cebu City

ABSTRACT

This study was conducted to examine how effective the Fish Spa business is here in Cebu City. The researchers wanted to find out the positive effects of Thera fish as it sucks the outer layers of skin.
There were 30 customers used as respondents in this study to answer the survey questionnaires. The respondents were asked what was on their mind when they were about to avail of the service.
It was found out that 25 (83.3%) respondents thought that it would be a fun experience, 23 (76.7%) were quite sure that the feeling would be ticklish and 20 (66.7%) hoped it would be exciting. The respondents were also asked if the fish spa experience was their first time and 26 (86.7%) of them answered that it was their first time.

The question on how was the experience was raised and the respondents have the following answers: 20 answered that it was really fun, 17 believed it was ticklish and 16 answered they became excited upon availing the service. The researchers found out that the Fish Spa business in Cebu City is effective. It is budget-wise as well and satisfies every Cebuano who wishes to try such great experience.
Keywords: Fish spa, ichthyotherapy, Thera fish

SCLEROTIUM ROLFSII CAUSES VARIOUS DISEASES ON FOUR SPICES: ANNATTO, CHILLI, LEMON GRASS, AND TARRAGON

Naomi G. Tangonan, Melesa M. Prado, Rey A. Palmares, & Elaine Genevive B. Parcon
University of Southern Mindanao, Kabacan, Cotabato

ABSTRACT

S. rolfsii has an extensive host range; at least 500 species in 100 families are susceptible. It grows, survives, and attacks plants at or near the soil line. Before the pathogen penetrates host tissue it produces a considerable mass of mycelium on the plant surface, a process which can take 2 to 10 days. Penetration of host tissue occurs when the pathogen produces an enzyme which deteriorates the hosts' outer cell layer. This results in tissue decay, further production of mycelium and the formation of *sclerotia* The latter two rely upon favorable environmental conditions. *S. rolfsii* can overwinter as mycelium in infected tissues or plant debris. It usually persists as *sclerotia. Sclerotia* are disseminated by cultural practices (infested soil and contaminated tools), infested transplant seedlings, water (especially through irrigation), wind, and possibly on seeds.
The ubiquitous fungal pathogen *Sclerotium rolfsii* Sacc. causes various diseases on four spices as follows: fruit rot on annatto or achuete (*Bixa orellana* L.), wilt on chilli pepper (*Capsicum frutescens* L.), stem rot on lemon grass (*Cymbopogon citratus* Stapf.), and stem blight on tarragon (*Artemisia dracunculus* L.). Symptoms vary from rotting or decomposition of fruit in annatto, to yellowing that leads to wilting of the entire plant on chilli pepper, stem rotting of lemon grass to stem blighting of tarragon.
Control Measure:

Botanicals with pesticidal/fungicidal property were tested against S. rolfsii and results showed these significantly controlled the diseases: extracts of mangosteen and guyabano leaves including mahogany seed extract, comparable to the boytanical check kamantigue, organic check Antica, and inorganic check Captan (N-Trichloromethylhio-4-cyclohexene-1.2-dicarboximide).

COMPARING TWO BANANA FOLIAR DISEASES: CORDANA LEAFSPOT AND SIGATOKA

Naomi G. Tangonan, Elaine Genevive B. Parcon, Rey A. Palmares, & Melesa M. Prado
University of Southern Mindanao, Kabacan, Cotabato

ABSTRACT

Two fungal leaf diseases of banana are heretofore compared and differentiated based on descriptions of their symptoms and signs (pathogens). The more common sigatoka or black leafspot disease is caused by *Mycosphaerella fijiensis* Morelet (teleomorph)/*Paracercospora fijiensis* (Morelet) Deighton (anamorph) and the yellow sigatoka is caused by *M. musicola* R. Leach (teleomorph) (*Pseudocercospora musae*) (anamorph). Symptoms of black and yellow sigatoka are similar: 1-2mm long streaks or spots with greyish centre. Usually, yellow sigatoka starts as yellowing streaks, black sigatoka starts with black streaks. These are air borne fungal diseases, that spread very fast during wet and warm conditions. Many leaf spot diseases exist but black and yellow sgatoka are the most devastating. Black sigatoka is more widespread in lowlands, while yellow sigatoka is more widespread in highlands.

On the other hand, Cordana leafspot is caused by *Cordana musae* (Zimm.) Höhnel. The fungus produces individual brown lesions which are up to several cm in length with a dark margin and surrounded by a chlorotic halo. The lesions enlarge in size, coalesce, and produce necrotic areas. Ultimately, the leaves turn brown and dry out. Both these leafspot diseases (sigatoka and Cordana) kill banana leaves, reduce bunch weight and fruit quality, also cause premature ripening of fruits, and affected field-ripened bunches harbor fruit flies that further reduce marketability.
Control Measures:

Try to identify symptoms at an early stage – when the disease is present:
1. Remove diseased leaves (and preferably burn them). 2. Encourage low humidity banana plantations by reducing planting density for plentiful air flow, avoid water logged areas, and reduce weeds. 3. Regular fungicide applications (that are systemic and in oil emulsion) are justified for large plantations and may control foliar diseases.

ASSESSMENT OF ECHINODERM COMMUNITY IN THE INTERTIDAL ZONE OF POBLACION AND CALERO, LILOAN, CEBU WITH NOTES ON THE LOCALKNOWLEDGE AND PERCEPTION OF FISHER FOLKS ON THE UTILIZATION OF ECHINODERM RESOURCES

Christine Toledo, Annaliza Cainglet, Fritzie Zarah Englis, Angelito Ortiz, Paul R. Olvis
University of the Philippines Cebu, Gorordo Avenue, Lahug, Cebu City

ABSTRACT

The echinoderm community in Barangay Poblacion and Calero, Liloan, Cebu was assessed using the following considerations: abundance, dominance, frequency, importance value, Shannon index of diversity, evenness; its physico-chemical parameters, and the knowledge and perception of some fishermen.
A transect-quadrat method was established to attain data on community structure of echinoderms. A total number of three consecutive days were done to both sites.
Findings revealed that there were five echinoderm species belonging to four classes.
E. methaei was most abundant and dominant in Calero (sea grass or muddy substrate) while *O. erinaceus* was densest and most dominant in Poblacion (rocky substrate). *A. polycanthus* was always seen in all transects of both sites. Also, importance value, diversity index and evenness present no huge difference.
The physico-chemical parameters of Calero were observed to be more stable that tends the echinoderms to be more comfortable in reproducing in a normal condition. Fisher folks in Poblacion and Calero mainly go fishing and livelihood, respectively.
It can be concluded that the more number of echinoderms found, greater fish catch can be expected.

Keywords: Echinoderm community; intertidal zone; Poblacion; Calero; Liloan

UTILIZATION OF SEA CUCUMBER (*HOLOTHURIA ATRA*) BODY WALLS AND SEA URCHIN (*TRIPNEUSTES GRATILLA*) TESTS AS POTENT ANTIBACTERIAL AGENT

Martha Louise M. Tongco, Paul R. Olvis
University of the Philippines Cebu, Gorordo Avenue, Lahug, Cebu City

ABSTRACT

In the Philippines, sea urchins and sea cucumbers are widely found and famously used as food products. The sea urchin tests are thrown as wastes after consuming the gonads while the sea cucumber body walls are eaten.

In the study, the antibacterial activity of crude ethanolic extracts from the body walls of sea cucumber and tests of sea urchin were screened against *Staphylococcus aureus* ATCC 65388, *Bacillus subtilis* ATCC 6633, *Escherichia coli* ATCC 25922, and *Klebsiella pneumoniae* UPCC 1360. Kirby Bauer method was used and zones of inhibition were recorded in millimeters. Thin layer chromatography was also employed using the solvent system methanol: chloroform.
Statistical analysis using One-way ANOVA showed that there were no significant differences on the antibacterial activity between the two extracts against *S. aureus*, *B. subtilis* and *E. coli*. However, there was a significant difference between the two extracts in *K. pneumoniae* ($p<0.05$) in which the sea cucumber extract was more effective. Viewing the TLC plates under UV light (360 nm) revealed that flavonoids were present in the two extracts.
Results concluded that wastes from these two echinoderm species possess antibacterial properties and therefore can be used as alternative and effective antibacterial agents against infectious diseases.

Keywords: antibacterial activity, echinoderm

FISH CAPTURE TRIALS OF FISHPOTS MADE OF COLORED PLASTIC SCREEN

Ruben M. Ungui, Arnie C. Trangia, Delfin G. Timbal, Nicolas P. Antigua
CEBU TECHNOLOGICAL UNIVERSITY DAANBANTAYAN CAMPUS
Daanbantayan, Cebu

ABSTRACT

Fish pot is a stationary passive fishing gear provided with easy entrance but difficult exit. It has many shapes & sizes. This study utilizes the rectangular shape measuring 1 meter in length, 0.75 meter in width and 1 foot in height made of colored plastic screen specifically green, blue, red and black with a mesh size of one inch.
Retrieval is done weekly. For the seven retrievals, Green fish pots get the highest catch of 56.45 kg, and blue the lowest with 36.35 kg.

The following are the species of demersal fish caught by the fish pots made of colored plastic screen: Sweet lip, silver pomfret, threadfin bream, goat fish, coral trout, dungeness crab, trigger fish, cat fish, solid fish, octopus, grouper, goby, snapper, eel, cubao, and shark.

The results of the study suggest that the university community outreach department may use green fish pot as one of its projects to help marginal fishermen supplement their income.
Analysis of variance (ANOVA) was used in the computation of the significant difference on the weight of the species caught by the fish pots made of colored plastic screen.

The obtained F-value for color of fish pots is 2.91 which is insignificant at 1% and 5% level of probability and the computed F-value for retrieval is 8.77 which is significant at 1% of 5% level of probability. This means that the weight of the species of demersal fish caught by colored fish pot really differ with each other. Thus, the null hypothesis is rejected.

Keywords: Fish pots, demersal fish retrieval, community outreach

ISOLATION AND PARTIAL CHARACTERIZATION OF TETRODOTOXIN-PRODUCING BACTERIA FROM PUFFER FISH *(CHELONODON PATOCA)* FOUND IN LAMON BAY, GUMACA, QUEZON

Sara Jane O. Andal, Joanne A. Borras, Marychell A. Rodriguez, Fidesmarie A. Villenas
Southern Luzon State University, Lucban, Quezon

ABSTRACT

Puffer fish (*Chelonodon patoca)* is a common type of fish that can contain toxin known as Tetrodotoxin (TTX). Samples of species caught from the three sites in Lamon Bay, Gumaca Quezon were collected for isolation and partial characterization of bacteria and determination of their TTX level. The partial characterization of bacteria were based on morphological (colony and cell) and physiological tests. Microscopic examination revealed that most of the isolated bacteria were Gram negative, rod-shaped, motile, decapsulated,catalase positive and facultative anaerobes. These are some of the characteristics of most halophilic bacteria. The levels of TTX were determined using Mouse Bioassay technique. TTX levels in muscles and composite internal organs show that the TTX concentrations in body sources as well as in the different sites did not show any difference. Site 1, which is near the shore, had the highest amount of toxin, followed by site 3 and then site 2 with 57.19, 48.83 and 44.21MU/g of TTX, respectively. This study can provide awareness to the local citizens of Gumaca, Quezon regarding the possible effects of Puffer fish to human as well as in the habitat where this kind of species live. In addition, this study is important to get the attention of the people about the dangers of consuming such species and can also change their perception to Puffer fish consumption leading them to safety eating.

Keywords: puffer fish, tetrodotoxin, mouse bioassay

GERMINATION RATES OF SIX PROVENANCES OF *JATROPHA CURCAS L.* UNDER VARYING PRE-GERMINATION REGIMES

Florence L. Zapico, Catherine Hazel Aguilar, Lyla Grace Denura and Mayricon Linao
Mindanao State University- Fatima, General Santos City

ABSTRACT

This study was undertaken to ascertain the early growth responses of six *Jatropha curcas L* provenances subjected to various pre-germination treatments. Results of the study revealed significant differences for both provenance and pre-treatment methods. Though significant variation was observed for the different parameters evaluated, no clear trend was established from the generated data. It can also be deduced from results that the germination-associated processes studied had a strong genetic component.

Similar growth responses were also observed for *Jatropha* provenances from very diverse origins implying genetic uniformity for the species despite spatial dispersal. More studies on *Jatropha* germination are therefore warranted to definitely establish/refute these results.

SALINITY TOLERANCE OF SELECTED PHILIPPINE CORN VARIETIES DURING GERMINATIVE AND EARLY GROWTH STAGES

Florence Lasalita-Zapico, Donna Jan Aljas and Catherine Hazel Aguilar
Mindanao State University, General Santos City 9500 The Philippines

ABSTRACT

Morpho-physiological responses of selected corn varieties to salt stress were evaluated during the germinative and seedling stages using 0, 50, 75, 100, 175 and 150mM NaCl treatments. Results revealed that scored parameters such as days of emergence, germination percentage, water content, number of leaves, leaf rolling, leaf color, tip drying, root and shoot length were significantly affected by a stepwise increase in salt concentration. The responses of the cultivars to saline conditions also indicated genotype-dependent responses. Among the 11 corn varieties, traditional cultivar *Tinuigib* was most susceptible to salinity as reflected by its poor performance in most of the evaluated parameters. The yellow hybrid variety *ACM-88B85* was found to be the most promising cultivar to be grown in saline soils in the Philippines and is therefore recommended for the crop improvement of corn for salinity tolerance.

Key words: salinity tolerance, corn, NaCl

BIOACTIVITIES OF SAMBONG (BLUMEA BALSAMIFERA LINN.)

Yolwin Jed G. Perales/Jan Razil Alolod
Sultan Kudarat State University, Science Laboratory High School

ABSTRACT

The crude methanol extract of Sambong *(Blumea Balsamifera Linn.)* obtained from method of Peteros. Et. Al 2012 was experimented and examined for its antiangiogenic activity using the duck in ovo chorioallontoic membrane by counting the number of vessel branch points, antibacterial activity by measuring the zone of inhibition of 4 different bacteria and the cytotoxic activity using brine shrimps lethality assay (BSLA).
Result for Anti angiogenic activity, the mean blood vessel branch points of Avastin positive control, ethanol negative control, water untreated control and sambong are 10.33, 56.00, 101.67 and 14.67 respectively. Sambong was found to be effective against 4 bacteria; Bacillus subtilis, Staphylococcus aureus, Eschirichia coli, and Pseudomonas aeruginosa with a mean zone of inhibition (mm) of 7.25±.49, 7.50±.57, 7.75±.94 and 7.25±.46 respectively. LC_{50} values for BSLA of sambong is 89.5 µg/ml. Phytochemical screening revealed the presence of alkaloids, saponins, flavonoids, tannins and coumarins which could be responsible for the bioactivities of this plant.
Results show that this plant is an interesting source of antimicrobial agents, potential source of anti-angiogenic medicine against tumor proliferation, potential source of nutraceuticals, anti-cancer agents, anti-inflammatory, antiallergenic, anticarcinogenic, antithrombic, anti-fungal, hepatoprotective, antiviral, analgesic, antimycotic, virostatic and other pharmacological importance.

Keywords: Antingiogenic, Antibacterial, Phytochemical Screening, Cytotoxic, Sambong

THE PHYTOREMEDIATION POTENTIAL OF SPHAGNUM MOSS *(Sphagnum Flexuosum)* AGAINST LEAD, COPPER AND CADMIUM CONTAMINATED WATERS

Yolwin Jed G. Perales
Sultan Kudarat State University, Science Laboratory High School

ABSTRACT

The Phytoremediation potential of Sphagnum moss against lead, copper and cadmium has been experimented. 2000 ppm of lead was dissolved in 500 ml water in 6 containers with triplicates in 5 treatments, treatment 1 as the positive control with 15g commercial carbon, treatment 2 as the negative control with 500 ml water, treatment 3 with 15g moss, treatment 4 with 30g moss and treatment 5 with 45g moss. The same procedure was done on copper and cadmium. The experimentation lasted for 7 days.
After 7 days of experimentation, the concentration of metals on water was determined using Atomic Absorption Spectrophometer. The final concentration of lead (ppm) was 81, 2000, 1196, 754, 210 respectively, for copper was 65, 2000, 1009, 429 and 134 respectively and for cadmium was 121, 2000, 1301, 700 and 259 respectively. Statistical analysis showed that there is a significant decrease on the concentration of metals in water.
Sphagnum Moss showed relatively good response to lead contaminated waters. This study therefore has proved the possibility of Sphagnum Moss as a bioremediation agent. This technique lessens the cost of expensive treatments of contaminated water and may lead to a new formulation and discovery of a cheaper commercial phytoremediation agent.

Keywords: phytoremediation, sphagnum moss, lead, copper, cadmium

ENHANCING COCONUT FARM PRODUCTIVITY AND PROFITABILITY THROUGH INTERCROPPING WITH SUITABLE ABACA VARIETIES (*MUSA TEXTILES* NEE) IN A WET GROWING ZONE OF SOUTHERN MINDANAO, PHILIPPINES

M.I. Secretaria[1], M.N. Eroy[2] and O. B. Macarayan, PhD
PCA-Davao Research Center, Bago Oshiro, Davao City and [3]Director II, FIDA, Region XI.
Corresponding author: Marianita N. Eroy

ABSTRACT

Two abaca varieties: Tangongon and Maguindanao and two hybrids namely Magino and Bongtang were grown under mature Laguna Tall coconuts spaced 9x9 m triangular in Bago Oshiro, Davao City from 2006-2010. The growth, yield and economic performance of these varieties/hybrids were evaluated to identify varieties/hybrids suitable as coconut intercrop and to showcase coconut+abaca intercropping.

Magino, a cross between Maguindanao and Inosa, was the consistent highest yielder. It had good yield attributes like good suckering ability, taller and bigger plants contributing to high fiber yields and high economic returns i.e. NPV and BCR. Maguindanao variety and Bongtang hybrid had comparable performance with Magino hybrid. Tangongon variety is the consistent lowest yielder with yield and yield attributes inferior to the rest of the plants tested affecting its profitability.

Crop Fertilizer Use Efficiency (CFE) using fiber yield as an index revealed that top yielding entries are more efficient in converting fertilizer inputs into economic yield as reflected by high CFEs.

Abaca is a highly suitable intercrop for coconut and coconut areas could be used as expansion areas for growing the crop. Profitability of abaca farming under coconut is influenced by the variety used. Some drawbacks in abaca farming and good practices were discussed.

Keywords: Abaca varieties/hybrids, coconut+ abaca intercropping, yield performance, profitability

INDIGENOUS KNOWLEDGE IN FISHING: ITS EFFECT TO COASTAL RESOURCES AND ITS ADAPTATION TO CLIMATE CHANGE

*Lilibeth S. Galvez, **Jannette C. Estioca and, **Luzelyn C. Traya
Davao Oriental State College of Science and Technology
Mati City, Davao Oriental

ABSTRACT

This research is a qualitative study that documents the indigenous knowledge (IK) in fishing of the four coastal barangays in Cateel and Baganga in Davao Oriental. It presents the indigenous fishing methods, beliefs and practices as observed by the Mandaya in the area. It also shows the communication approach used in the transmission of this IK and discussed their adaptation on the climate change. Data Gathering employs the semi-ethnographic approach which are key informant interview (KII) and focus group discussion (FGD).

Profile of the fourteen (14) informants shows that most of them are only elementary level, aged between 35 to 75 years old; mostly males since they are whose who are indulged in fishing; most of them are married, and they all belong to the Mandaya tribe. Some of them are also indulged in alternative livelihood when fishing is not possible due to seasonal change.

Production of fish varies according to the fishing gear used. Most of them can catch 10 kilos up to 50 kilos a week depending also on the kind of fishing boat. Seasonal calendar shows that fishing is not possible all throughout the year, since there are months in a year where they cannot fish due to big waves and scarcity of fish catch, while there are times of the year when fishing is possible since seas are calm and these are the months where fish are also abundant.

Informants agreed that most of the indigenous fishing methods have low effect to coastal resources. However, illegal/fishing methods/gears such as dynamite, compressor, chlorine and decis (pesticides) are still used by some fishers who want to have voluminous catch but destroying the coral reefs, *lusay* (sea grasses) and *katunggan (*mangrove).

Some of the IK practices have adapted to climate change; such as during northeast monsoon, they still can catch fish as seas become calm nowadays. Fishers adapted to changes of climate by wearing jackets and sunglasses to protect themselves from extreme heat of the sun.

RED TIDE: THE CASE FOR SORSOGON BAY

Michael Montealegre,Charmaine Malonzo, Ida Revale, Ma. CrispinaBaltazar, Nera Galan, Noemi Madrid, Ma. Corazon Barrameda, Eden Ante, Anne Retuerma, RonnelDioneda, Phil Morano, Ma. Bernadette Bongais, Magdalena Bobier, SalvacionTabo, Carlos V. Cortes Jr., Joseph Dechavez, Emmer Beltran, Psyque Denso, Jeff Cañada
BICOL UNIVERSITY, LEGAZPI CITY

ABSTRACT

Since 1983 harmful algal blooms (HAB) or commonly known as red tide has recurred several times in Sorsogon Bay. The latest episode of poisoning started in September 2006 and overextended to the present inflicting hundreds of Bicolanos with poisoning cases with more than 20 fatalities of different ages. It is the longest and most crippling of all HABs that happened in the baycaused by the plankton *Pyrodiniumbahamense var. compressum (pbc).* It displaced many fishers and wasted the multi-million shellfish industry.

Bicol University attempted to understand the red tide phenomenon of Sorsogon Bay with an ultimate goal of finding holistic strategy to mitigate its harmful effects.This report covers the findings of the studies while integrating the information gathered to create a meaningful analysis of the status of red tide in Sorsogon Bay.
The plankton *pbc* has been the dominant species to cause red tide in the bay. From 2008 to 2009, the highest population density of the bloom has recurred starting September to December when temperature was noted to decrease while there is the abundance of nutrient sources and heavy clay-silt deposits observed along the coast. Toxin analysis of contaminated shellfish were observed to peak during those months. Poisoning cases were recorded high from Casiguran and Sorsogon City by consumption of known contaminated shellfish. Water and sediment analyses suggest population of *pbc* accumulates in the southeast of the bay in accordance with the velocity driven by monsoons and current fields.

ETHNOGRAPHIC ACCOUNTS ON THE USE OF MEDICINAL PLANTS OF ALBAY, PHILIPPINES

Ida F. H. Revale
Bicol University, Legazpi City

ABSTRACT

An ethnobotanical study was conducted from June, 2010 to June, 2011 in randomly selected barangays of the province of Albay. This study aimed to investigate the medicinal plants utilization and preparation practices by the herbolarios. Information was gathered from 20 informants coming from 3 districts of Albay province, and were randomly selected using snowball respondent identification.

The 34 medicinal plants identified were sambong (*Blumea balsamifera*), Buyo (Piperbetle), artamisa (*Artemisia vulgaris*), Abokado (*Persea americana* Mill), Tuba (*Jatropha curcas*), bayabas (*Psiduim guajava*), Sampalok (*Tamarindus indica),* Oregano(*Coleus amboinicus Lour),* Tanglad (*Cymbopogon citratus* (L) DC*),* Banaba (*Lagerstroemia speciosa* (L) Pers*),* Puli *(Justician gendarussa),* Anonang*(Cordia dichotoma)*, Malunggay *(Moringa oleifera),* Papaya *(Carica papaya),* Cacao (*Thebroma cacao),* Atis (*Annona squamosa), Talanisog (Tabernaemontema pandacaque), Makahiya (Mimosa pudica),* Alagaw *(Premna odorata blanco),* Sweldan/Pobreng kahoy *(Euphorbia tirucalli),* Tala-onod *(Ercyles amboinensis),*Yerba Buena *(Mentha arvensis*), Kamantigue *(Impatiens balsmina),* Kalabasa *(Curcubita maxima* Dushene*),* Mansanilya *(Chrysanthemum indicum), and* Abaca*(Musa textilis).*

From the survey on medicinal species used by the Healers to treat 20 ailments,14 are consider minor ailment (“surep”, pasma, bone fracture, loose bowel movement, fever, cough, gas pain ,Insomia, joint pain

,inflammation, *kulibra*, stomachic ,wounds and rheumatism and (6) are major ailment like Tuberculosis ,Urinary Tract Infection, Chest pain, High Blood, Appendix, kidney disorders.

The medicinal Plants used by herbolarios belongs to 21 families, 19 orders and 24 genera. Identifying growth forms are 10 tress, 6 herbs, 4 shrub , 2 vines and 1grass.The most frequently utilized plant part was the leaves (88%) followed by the stem bark (21%), fruits (8.33%), seeds (4.16%) whole plant (4.16%)and sap (4.16%).Poultice is the most frequently use preparation (63%), followed by Decoction (43%), Infusion (17%), Liniment (4.16%), and Raw-eaten plant part (4.16%).Most of the administration route are oral and external.

BIO-PHYSICAL CHARACTERIZATION OF THE COASTAL WATERS OF BACON DISTRICT, SORSOGON CITY, PHILIPPINES

Ida F. H. Revale/Arnelyn D. Doloiras
Bicol University, Legazpi City

ABSTRACT

The coastal waters of Bacon District, Sorsogon City characteristically supports more production of the marine organisms because of the diverse plankton community and good water physical characteristics. There were twenty-one different species of phytoplanktons and eight species of zooplanktons identified and taxonomically classified. The phytoplanktons identified belonged to six phyla – Bacillariophyta, Ochrophyta, Ciliophora, Dinophyseae, Prasinophyta and Cyanobacteria. *Amphisolenia bidentata* is the most abundant of the phytoplankton species and *Acanthocyclops robustus* is the most abundant zooplankton. San Juan has the most diverse plankton community, and the abundance of phytoplanktons in the area supports more production of marine organisms, since planktons are indicators of a healthy and productive bay.

The physical characteristics of the sea water surrounding Bacon District such as salinity, pH, temperature, turbidity and conductivity complied with the standards set by DENR-EMB in DAO-34. Normal growth of aquatic bios-systems are observed and is likewise favored by the water quality, however, this marine habitat is so fragile that any alterations to this aquatic environment including the observed optimum condition of such environment will render them unfavorable for both aquatic organism and to the inhabitants residing the island. There is a need to sustain the management of the marine sanctuary in the area so that the richness of the marine resources is maintained. While there is the presence of mariculture in the area, there should be constant counter monitoring of the water quality for sustainable development.

POPULATION ASSESSMENT OF BUTTERFLY HOST PLANTS IN SELECTED SITES NEAR MT. BANAHAW DE LUCBAN, LUCBAN, QUEZON, PHILIPPINES

Mary Ann R. Agudilla
Southern Luzon State University, Lucban, Quezon

ABSTRACT

This study investigates the population of butterfly host plants thriving in Mt. Banahaw de Lucban Botanical Garden and the College of Agriculture campus in Lucban Quezon, primarily as a prerequisite for the conservation of endemic butterfly fauna and its host plants through butterfly farming. Quadrat method of sampling techniques was utilized in the study. Ten quadrats of 20m x 20m were established in Mt. Banahaw Botanical Garden and ten

10m x 50m quadrats in the College of Agriculture. Results revealed 36 species of host plants belonging to 21 families thriving in the Botanical Garden and 39 species belonging to 21 families comprised the host plant population on campus. Majority of the host plants in the study sites were not randomly distributed and had low density and frequency values ranging from 0.00003 to 0.0008/m^2 mostly represented by 1-3 individuals. Percent abundance ranged from 0.0789 to 0.2368%. Most plant species were associated with 2 or more species of butterflies for nectar feeding and/or as hosts of butterfly larva while some butterflies depended on one species of plant as its larval host.

The results reflect the rarity of host plants in the study sites suggesting the inability to support the food requirements for a butterfly breeding project, perhaps even the wild population of butterflies. It is recommended that a nursery for host plants be established in both sites, an enhancement planting of endemic host plants be implemented and similar study of the same be conducted in the other areas of Mt. Banahaw.

Keywords: butterfly farming, population assessment, host plants

AQUATIC INSECTS' DIVERSITY AT TAYTAY FALLS IN BARANGAY TAYTAY, MAJAYJAY, LAGUNA: INDICATOR OF WATER QUALITY

Mary Ann R. Agudilla and Kristian Rodrigo A. Yara
Southern Luzon State University, Lucban, Quezon

ABSTRACT

The aquatic insects thriving at Taytay Falls were identified and classified accordingly to its Orders and Families. Assessment of the presence of indicator species was done to determine the water quality of the falls based on the tolerance value and scale of aquatic insects to pollution adopted from Bouchard, 2004. Descriptive method of research was used in the study. Two sampling sites were established using GPS. Three sampling methods of collection were utilized namely; D-net and surber sampler for naiads and light traps for the adults. Collected insects were brought to the Museum of Natural History for identification. Insect diversity was analyzed using Shannon-Weaver Diversity Index. Findings revealed 22 species of aquatic insects belonging to 19 families distributed in seven Orders were found thriving in the falls. Family Philopotamidae got the highest number of individuals for both sites. Upstreams has the higher number of intolerant species to pollution compared to the downstreams. The presence of major insect taxa of Plecoptera, Ephemeroptera, Trichoptera and high diversity index of 3.09 reflect that the water in Taytay Falls is still in good quality since these indicator species require high dissolved oxygen level in order to survive.

Keywords: Indicator species, D-net, surber sampler, tolerance value and scale

INFLUENCE OF ADMINISTRATORS' SUPERVISORY PRACTICES ON TEACHERS' COMMITMENT OF PUBLIC ELEMENTARY SCHOOLS

Genghiskhan S. Akmad
Cotabato Province
Dr. Onofre S. Corpuz
Asst. Prof., CFCST-Arakan, Cotabato
Dr. Zainudin M. Adam
Asso. Prof., CFCST-Arakan, Cotabato
Dr. Lumina L. Cabilo
Asst. Prof 3., CFCST College of Arts and Sciences

ABSTRACT

The objective of the study was to determine the influence of supervisory practices of the administrators on the commitment of teachers in Public elementary schools of President Roxas North District in the Province of Cotabato.

The study utilized descriptive survey method to find out the influence of the supervisory practices of administrators towards teachers' commitment to work. The teacher itself, 2 peers and corresponding heads/administrators were asked and given structured questionnaire to rate and comments on the performance of the teachers with emphasis on their commitment to work.

Result of the study shows that the commitment of teachers to work is highly dependent on their length of service and educational qualification. Longer service and higher educational attainment will results to higher commitment as revealed in the correlation analysis. Leadership behavior, motivational technique, communication skills, faculty advising and assessing, developing access for in-service programs, and supervising and evaluating instruction also significantly influence teachers' commitment towards work
Keywords: supervisory practices, teachers commitment, leadership behavior, motivational technique

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Thank you very much and MABUHAY!

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CONTACT DETAILS:

OFFICE OF THE PRESIDENT
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Magalang, Pampanga
Tel No: (045)3434-950
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Email: hmsjr56@yahoo.com
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