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

TIN 005-866-117-000 SEC Reg. No. B200000647
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Philippine Society for the Study of Nature, Inc.
BPI checking account no. 000911-0146-45
Los Baños Branch

PSSN stands for the Philippine 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 on the country. Thus, the society was established in order to provide a venue for the development pf strategies for the unscrupulous utilization of nature and its amenities. On September 16, 2000, the society was registered with the Securities and Exchange Commission (SEC) as a non-profit, non-stock, non-partisan organization of Professionals, researchers, administration 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 thinking and sentiment regarding issues about nature. It also seeks to established 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 professionals expertise, networking, and strengthening of camaraderie and cooperation among members and partner's institutions.

Objectives

PSSN was established to:

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

The Conference

PSSN's annual conference in nature studies has been successfully conducted for the last 16 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 then 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 Mariano Marcos State University; Iligan City (2009) with Mindanao State University-Iligan Institute of Technology; Baguio City (2010) with UP Baguio; Los Baños (2011) with University of the Philippines Open University and University of the Philippines Los Baños; General Santos City (2012) with Sultan Kudarat State University; Cebu City (2013) with Cebu Technological University; Benguet Province (2014) with Benguet State University; Clark (2015) with Pangasinan State University and Pampanga State Agricultural University; and Dumaguete City (2016) with Silliman University. These conferences provided an important venue that attracts researchers, engineers, scientists, students, environmental advocates, and other professionals from many parts in the country.

Scientific studies in nature are creating knowledge that could enhance resilience and sustainability. In an era where global environment and climatic conditions are continuously changing, scientific knowledge is an important input in the process of making ecological, societal, and politico-economic systems resilient and sustainable. Such knowledge should be shared, exchanged, or disseminated across the globe and disciplinal boundaries.

ICoNSIE 2017 serves as an opportunity for multicultural, multidisciplinary and engendered conversations in nature studies. The conference also serves as a venue for the assembly of the society's members, election of new set of officers, and oath taking of officers and new members. The theme "Nature Studies: Plurality of Voices for a Sustainable Future" recognizes the diversity of thematic interests and the roles of various stakeholders in nature studies towards achieving a sustainable future. Specifically, the conference aims to:

1. create an environment where scientists, researchers, academians, and other individuals across cultures, spaces, ages, and genders can do nature studies for sustainability.
2. provide capability building to participants in writing a research proposal.
3. enhance PSSN members' camaraderie, networking, and collaborations.

This year's theme focuses on the role of nature studies in building knowledge base for resilience and sustainability. It was developed around the following sub- themes:

1. Inclusive sustainable development, technological innovations, valus chains, and resources developmnet.
2. Sustainable education and knowledge, discovery, and utilization
3. Environmental management and biodiversity conservation, ecological resilience, and climate change adaptation and mitigation.
4. Inter- local cooperation, disaster preparedness, and food global and nutritional security.
5. Information and communication technologies sustainability.

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MESSAGE

My warmest congratulations to all the participants of the 17th Annual International Conference dubbed as IConSIE 2017 to be held at the Spanish Mountain Resort, Lalakay, Los Baños, Laguna on April 19-21, 2017, with the theme " Nature Studies: Plurality of Voices for a Sustainable Future." I am sincerely honored and grateful for choosing Laguna to be a part of the significant event of your organization.

Our beloved Province of Laguna is a perfect place to pursue your mission as it upholds and recognizes the balance between development and environmental protection and management. Enriched with cultural and historical diversity, the Province serves as a good venue for intellectual and inter-cultural scientific exchanges among researchers, scientists and practitioners of nature and development study.

To the Board of Trustees and Officers of the Philippine Society for the Study of Nature, Inc. (PSSN, Inc.), our deepest gratitude for sharing the same advocacy with us…pursuing valuable undertakings for the general welfare of our community. Thank you for the tireless noble works of your organization that continue to inspire other groups to engage in developmental initiatives that is in complete adherence with the preservation and protection of our environment and its natural resources thru relevant scientific research, studies and programs. May you continue to serve as good Samaritans of our society and continue to serve righteously for the benefit of the larger society where we belong.

Rest assured that the Provincial Government of Laguna shall continue to support your worthy initiatives and act as your solid partner in pursuit of protecting and safeguarding the lives of our people thru sound plans that call for a greener environment, a safer habitat to live in, and a prosperous life for the entire humankind.

Let us then remain united, widen and strengthen our solidarity and work in synergy to raise our beloved country to higher and greater heights. Together, let us fulfill our one common dream – a clean, peaceful, safe, progressive and happy Mother Earth!

Ito ang Serbisyong Tama

Rise High Philippine Society for the Study of Nature, Inc.!

Rise High Philippines! Rise High Mother Earth!

Gov. Ramil L. Hernandez
Province of Laguna

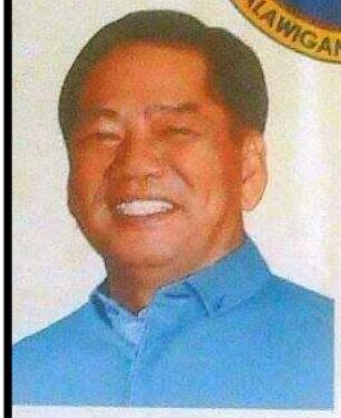
Gov RAMIL HERNANDEZ

Serbisyong Tama

RiseHigh Laguna

GovRamil

REPUBLIC OF THE PHILIPPINES
PROVINCE OF LAGUNA
MUNICIPALITY OF LOS BAÑOS
Special Science and Nature City



I am pleased to welcome the participants to the International Conference on Nature Studies, ICoNSIE 2017 and Philippine Society for the Study of Nature's (PSSN) 17th Annual Scientific Conference to be held on April 19 to 21, 2017 at the Splash Mountain Resort, Los Baños, Laguna.

This year's theme "Nature Studies: Plurality of Voices for a Sustainable Future," encourages, as I do, the need for collaboration and unity of efforts to achieve common goals in environmental protection. I commend your initiative to share your best practices in nature studies and your pursuance of sustainability for the future.

May your organization continue to grow and provide opportunities to its members. Congratulations to your achievements this past year and may you continue to serve and contribute to the betterment of our society.

Thank you for choosing Los Baños for your venue and Mabuhay kayong lahat!

CAESAR P. PEREZ
Mayor

Message of the Palawan State University Officer-in-Charge

It is with great pleasure and honor to cosponsor the International Conference on Nature Studies and Innovations (ICONSIE) 2017, which serves as a platform for sharing knowledge, experiences, challenges and successes in the sustainable use of nature.

This year's theme "Nature Studies: Plurality of Voices for a Sustainable Future" is indeed timely as we live in an environment that is constantly undergoing changes. Sustainability will prove to be a great challenge for all scientists, academicians and researchers.

I congratulate the Philippine Society for the Study of Nature, Inc. (PSSN) officers, secretariat and members for organizing this very commendable event.

May God richly bless us!

MARISSA S. PONTILLAS OIC,
Office of the University President
Palawan State University

Message of the PSSN President

At the onset, as this year's president of Philippine Society for the Study of Nature, Inc. (PSSN), I would like to sincerely thank my fellow PSSN officers and members who have been with me during my term. Thank you for your support and for sharing your knowledge and expertise. Our country today hovers perilously close to many disasters and calamities looming in environmental spoliation, geopolitics, global economics, and in a host of ethnic and nationalistic hostilities and conflicts. To avert these catastrophes, we need to collaborate and cultivate reliable partnerships with like- minded professionals, academicians, scientists and researchers. Nonetheless, we cannot neglect the responsibility of acting with the best of our knowledge to ensure that our actions do not hinder the opportunities and lives of future generations.

Let ICONSIE 2017, be the platform for the desired collaboration and partnership among international and national research scientists, faculty researchers and other stakeholders in a common endeavor towards the wise and sustainable use of nature.
With these words, I would like to convey my warmest greetings to all the participants of International Conference on Nature Studies and Innovations (ICONSIE) 2017 as well as my best wishes for the success of this worthwhile endeavor.
Cheers to a fruitful and rewarding ICONSIE 2017!

Thank you very much and may God bless us all!

DR. RAMON M. DOCTO
PSSN President 20016-2017

Conference Program at a Glance

Date (2017)	**Time**	**Activity**
Tues, 18 April		Arrival and Ingress of Posters BOT Meeting (6:00 PM)
Wed, 19 April	AM	General Registration Pre- conference Activity
	PM	Opening of the Conference Proper Keynote Speech by Dr. Osamu Saito- UNU,Tokyo, Japan First Plenary Speech, Dr. Ruey-Ann Doong, Taiwan Second Plenary Speech by Dr. Dicky Simorangkir, ASEAN Biodiversity, Philippines Third Plenary Speech by Dr. Maria Celeste A. Cadiz, SEARCA UP Los Baños, Philipines
Thurs, 20 April	AM	Best Paper Competition Election of Officers
	PM	Fourth Plenary Speech by Atty. Assis G. Perez, Tanggol Kalikasan Parallel Session General Assembly
	Evening	Sponsors' and Fellowship Night Induction of New Officer and members
Fri, 21 April	AM	Fifth Plenary Speeches, Dr. Kendah Sukendah, UPN, Java, Indonesia Continuation of Parallel Sessions
	PM	Awarding of Certificates and Closing Ceremony
Sat, 22 April		Departure of the participants: Optional tour

Invited Keynote Speaker

Dr. Osamu Saito
(Academic Director, UNU-IAS, Japan)

Dr. Osamu Saito is an Academic Programme Officer in the Global Change and Sustainability section at the UNU Institute for Sustainability and Peace, and Managing Editor of: Sustainability Science. He has organized several research projects relating to building a resource circulating society in Asia, sustainability assessment and indicator systems, environmental risk management, and ontology-based knowledge conceptualization for sustainability science. Recognizing the growing importance of Asia's environmental impacts on the global environment, economics, and human society, his recent work focuses on developing sustainability assessment methods (multicriteria analysis) and developing future scenarios with policy measures to create and maintain sound interlinkage between ecosystem services, biomass use, and human well-being in Asia.

Abstract: Evolution and Landscape of Sustainability Science; Building a Sustainable and Resilient Society in Harmony with Nature

This presentation consists of two parts. First, I will explain the evolution and landscape of sustainability science through the extensive literature survey, citation analysis, and my experiences as the managing editor of *Sustainability Science* journal published by Springer Nature since 2006. Sustainability science needs to strengthen the science-policy-society interface. New relationship between science and society that leads scientists to go beyond ensuring a scientific foundation for policy and decision making based on specialized disciplinary knowledge to participating in the co-production of knowledge for action through transdisciplinary research. In addition, operationalization and local implementation of the Sustainable Development Goals (SDGs) with inclusive and diverse approaches to achieve the targets by mobilizing various actors in both developed and developing countries. The second part of my presentation will highlight integrated ecosystem assessments from global to local scale in particular focus on ecosystem services approach. In order to build a resilient and sustainable society in harmony with nature, we should mainstream biodiversity and ecosystem services into various strategies and plans from national to local scales. Future challenges include co-designing future scenarios of biodiversity and ecosystem services, assessments of trade-offs and synergies of ecosystem services, and integration of different knowledge systems including indigenous and local (traditional) knowledge.

Invited Plenary Speakers

Dr. Dicky Simorangkir

(Project Director, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, ASEAN Centre for Biodiversity, Philippines)

Dr. Dicky Simorangkir is currently working as the Director for 2 Regional (ASEAN-wide) Projects of the GIZ (the German International Cooperation): the Institutional Strengthening of Biodiversity Sector in ASEAN (ISB) and the Biodiversity-based Products as an Economic Source for the Improvement of Livelihoods and Biodiversity Protection (BBP). From 2011 until the beginning of 2016 he was the International Senior Advisor for Biodiversity and Climate Change program for the same organization. Before joining the GIZ Dicky hold the position as the Director for Terrestrial Program of The Nature Conservancy Indonesia for almost 3 years. Previously he worked for a US-based conservation NGO RARE International as the Director for Indonesia, Malaysia, Brunei and Timor Leste, for The Netherlands' Tropenbos International as the Director for its Indonesia chapter, for a joint IUCN-WWF International global program as the Deputy Director of Project Fire Fight South East Asia, for GFA Germany as the Deputy Project Leader of Social Forestry Development Project (SFDP) in West Kalimantan, for GTZ Germany as Senior Forest Management Advisor at Sustainable Forest Management Project (SFMP) in East Kalimantan as well as Senior Forest Advisor and Research Coordinator at Indonesian-German Forestry Project (IGFP) also in East Kalimantan. Between 1989 and 1994, Dicky was a scientist and lecturer at the University of Goettingen, Germany.

Dr. Simorangkir holds a BSc in Forestry at Bogor Institute of Agriculture in 1985, MSc in Forestry at University of Goettingen, Germany in 1989 and PhD in 1994 in the same subject and at the same university. He writes over 15 books, 60 conference papers and 25 technical manuals.

Dr. Simorangkir field of expertise ranges from forest management and conservation, biodiversity and protected area management, land use/spatial planning, technical cooperation and development assistance, project planning and design, project analysis and evaluation, forest fire, forest harvesting/logging, watershed management, research and development, training and capacity building.

DR. MARIA CELESTE H. CADIZ

(Program Head, Knowledge Management, SEARCA, Philippines)

Dr. Maria Celeste H. Cadiz is the Program Head for Knowledge Management (KM) at the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA). She oversees development and implementation of learning events/systems; development, production and distribution of knowledge resources; and provision of avenues for knowledge creation in agricultural and rural development in Southeast Asia. She is also Adjunct Associate Professor and was first Dean of the College of Development Communication (CDC) of the University of the Philippines Los Baños (UPLB) (1999–2006) upon its elevation to a college from an institute that was earlier an academic department. Here, she taught as well as engaged in research and development and practice in development communication. She holds a PhD from Macquarie University in New South Wales, Australia, and an MS and Bachelor of Science in Development Communication (*cum laude*) from UPLB. Prior to joining SEARCA in 2006, she had served as project leader/coordinator in a number of nationally and internationally funded action-research programs in development communication; authored two books, a monograph, a discussion paper, and articles published in professional publications, as book chapters, or presented in international and national conferences; and is a seasoned technical editor, writer, and audiovisual communication specialist. She also served in key positions in local and international professional and community organizations and committees.

Abstract: Knowledge Management for Inclusive and Sustainable Agricultural and Rural Development

The Southeast Asian Regional Center for Graduate Study and Research in Agriculture's (SEARCA) current five-year plan, its tenth, focuses on Inclusive and Sustainable Agricultural and Rural Development (ISARD), described as a scheme and approach of engaging multiple stakeholders toward improving the well-being of the rural poor through their improved natural resource-based livelihoods along with supportive systems and institutions that contribute to food and nutrition security of the wider population beyond present generations. Along its emphases on Environmental Sustainability, Social Inclusion, and Institutions and Governance, SEARCA as a knowledge managing institution with a capacity building mandate promotes adaptive and social learning, knowledge sharing and use, and knowledge creation with a deliberate effort to capture, store, and make explicit the tangible knowledges generated its scholars, researchers, and partners. As a network of scholars with common interest areas, the Philippine Society for

the Study of Nature may also reflect on advancing its quest for wise and sustainable use of nature via a deliberate approach to Knowledge Management and Communication (KM/C).

DR. RUEY- AN DOONG

(Professor, National Chiao Tung University, Taiwan)

Dr. Ruey- An Doong is a Distunguished Professor at the Institute of Environmental Engineering, National Chiao Tung University, Taiwan. His research interests are in environmental nanotechnology, environmental analytical chemistry, and materials chemistry with goals to develop cutting-edge technology for understanding the fundamentals of environmental processes of chemicals at the solid-liquid interfaces as well as to fabricate the novel (nano)materials with unique physicochemical and catalytic properties for pollution control/remediation, environmental biosensing, and energy conversion and storage applications. Some of this current research works are as follows: (1) development of remedial strategies to effectively reduce trace organic compounds as well as metal ions in water and porous media using safe and recyclable nanomaterials, (2) novel inter-particle electron transfer (IPET) nanocomposites for photo-degradation of priority pollutants, and (3) molecular-level techniques to understand the reaction, kinetics, and mechanisms of pollutant at solid-liquid interfaces. He is also currently doing a research on the fabrication of novel array-based biosensors and nanosensing devices for the detection of environmental pollutants in the environment as well as cancer markers in biological samples.

Abstract: Metal/metal oxide-carbon nanohybrids for sustainably environmental applications: Water purification and recovery

The environmental contamination and energy demand has been becoming a critical issue for environment-related scientists and engineers. Substantial efforts have been made to develop tailored nanomaterials with highly catalytic efficiency and recovery ability for sustainable treatment of environmental pollutants. Multi-functional nanocomposites, which contain two or more functional materials in a single component, have attracted increasing attention due to their combined physicochemical properties and wide applications in the fields of biosensing, catalysis, energy conversion and storage, and pollutants detoxification. Several multi-functional nanocomposites such as Fe^0/TiO_2, Au-Fe_4O_3, and various dimensions of ordered porous carbons (OMCs) have been widely used to decontaminate a variety of pollutants in aqueous solutions. For

example, the combination of nanoscale zerovalent iron with TiO_2-based nanomaterials (Fe/TiO_2 nanocomposites) in the presence of nickel ions is a powerful material for treatment of a wide variety of pollutants in aqueous solutions. In addition, the hetero-oligomer configuration of $Au\text{-}Fe_3O_4$ offers multi-functionality for nitrophenol reduction as well as for Fenton reaction because of the coexistence of the properties from individual materials. More recently, hybrid materials including metal/metal oxide with ordered mesoporous carbon (OMC) are promising materials widely used for environmental catalysis of recalcitrant compounds and capacitive deionization. These unique catalytic properties make nanocomposites an ideal platform to study various heterogeneous catalytic processes which can be potentially applied in a wide variety of fields in pollutant decontamination, photocatalysis and water recovery.

Dr. Kendah Sukendah

(Head, Research Center and Community Service, University of Pembangunan Nasional "Veteran" East Java, Indonesia)

Dr. Kendah Sukendah is currently working as the Head of Research Center and Community Sevice in University of Pembangunan Nasional "Veteran" East Java. Her research experiences include the following:

1. In vitro propagation technique of kopyor coconut through zygotic and vegetative embryo culture. 2006-2008. Competitive Research Grants - Indonesian Higher Education (Research Coordinator).
2. Development of clonal kopyor dwarf palm for a new germplasm by apical meristem splitting and somatic embryogenesis. 2009. Competitive Research Grants - Indonesian Higher Education (Research Coordinator).
3. Method of meristem cleavage of zygotic embryo explants for the multiplication of kopyor dwarf coconut seedlings. 2010. Programme of Intellectual Property Rights - Indonesian Higher Education (Chair).
4. Development of sustainable agroforestry system of sengon in East Java by providing selected in vitro seedling. 2010-2011. Research for Foreign Cooperation and International Publication - Indonesian Higher Education (Research Coordinator).
5. Development of kopyor coconut into nursery and processing industry based on environmentally friendly technologies in Sumenep. 2010. Hi-link Programme - Indonesian Higher Education (Research Coordinator).

6. Implementation of zero waste technologies based on kopyor coconut and diversification of its derivatives product for the nursery and organic fertilizers industry. 2012. Indonesian Higher Education (Research Coordinator).
7. Development of Embryo Culture Protocol of Kopyor Coconut by Immersion Dehidration System Using Plumula Explant. 2014-2015. Indonesian Higher Education (Research Coordinator).
8. Development of Clean Technology for Production of Kopyor Coconut In Vitro Seedling. 2016-2017. Indonesian Higher Education (Research Coordinator).

Abstract: Tissue Culture For Sustainability: Case Study in Kopyor Coconut

Recently tissue culture not only a tool for micropropagation but also for biodiversity conservation, plant improvement, and economic development. In the case of kopyor coconut, a rare variety, tissue culture is an essential method to rescue the embryos. Conventional technique could not be used for embryo germination of kopyor coconut due to lack of nutrition source. A complete protocol for kopyor coconut embryo culture and seedling was succesfully establised subsequently transferred to the field. In view of the economic importance and endangered status, kopyor coconut deserve to get special attention. Exploration germplasm has been done and we found four (4) centers in Indonesia: Pati Central Java, Jember-East Java, Sumenep-East Java, Kalianda-Lampung. For sustainable utilization and conservation of populations we established one hectare in-vitro kopyor coconut plantation in Sumenep and heterozygote replanting seedlings in farmer plantation in Pati Central Java. Thus, tissue culture of kopyor coconut is fundamental for the conservation of natural populations by providing seedlings for cultivation and for germplasm collections. For industrial purposes, we have developed a kopyor coconut sustainable agricultural systems, collaboration between university, research institution, local goverment and farmer. This collaboration covering five activities: Germplasm Exploration, Developing Technology, Technology Transfer, Mentoring-Collaborative, and Community Patnership. In the future, collaborated tissue culture work on kopyor coconut need to be developed for many purposes, including mass propagation through somatic embryogenesis.

CONFERENCE PROGRAM AND PAPER PRESENTATION SCHEDULE

19 April 2017 (Wednesday)

TIME	MAKILING GRAND BALLROOM
	ARRIVAL OF PARTICIPANTS
8.00-12.00	REGISTRATION
9.00-11.30AM	PRE-CONFERENCE Dr. Custer Deocaris *Research Management Division Chief Office of Planning, Research, and Knowledge Management Commission on Higher Education*
11.30-1.00	Lunch Break
1.00-2.00PM	OPENING CEREMONY
	Processional - PSSN Officers and BOT Members - Plenary and Keynote Speakers
	National Anthem
	Welcome Remarks Hon. Caesar Perez *Municipal Mayor, Los Baños, Laguna*
	Opening Remarks Dr. Ramon Docto *PSSN President*
	Presentation of Participants Dr. Arlen Ancheta *PSSN Treasurer*
	Conference Overview Dr. Ricardo Bagarinao *PSSN PIO*
2.00-2.45	Introduction of the Keynote Speaker Dr. Ricardo Bagarinao
	KEYNOTE SPEECH Evolution and Landscape of Sustainability Science; Building a Sustainable and Resilient Society in Harmony with Nature Dr. Osamu Saito *Academic Director, United Nations University-Institute for the Advanced Study of Sustainability, Tokyo, Japan*
	Awarding of Plaque of Appreciation and Token
	Photo Session with the Keynote Speaker and Invited Speakers
	Working Snacks
3.00-3.30	Introduction of the First Plenary Speaker Dr. Ramon Docto
	1st Plenary Speech Metal/Metal Oxide-Carbon Nanohybrids for Sustainably Environmental

	Applications: Water Purification and Recovery Dr. Ruey- an Doong *Distinguished Professor* *Institute of Environmental Engineering, National Chiao Tung University, Taiwan*
	Open Forum
	Awarding of Plaque of Appreciation and Token
3.30-4.00	Introduction of the Second Plenary Speaker Dr. Zenaida Baoanan *PSSN Secretary*
	2nd Plenary Speech Dr. Dicky Simorangkir *Director, Institutional Strengthening of Biodiversity Sector in ASEAN (ISB) and the Biodiversity-based Products as an Economic Source for the Improvement of Livelihoods and Biodiversity Protection (BBP)*
	Open Forum
	Awarding of Plaque of Appreciation and Token
4.15-4.45	Introduction of the Third Plenary Speaker Dr. Ma. Ana Quimbo *PSSN BOT Member*
	3rd Plenary Speech Knowledge Management for Inclusive and Sustainable Agricultural and Rural Development Dr. Maria Celeste H. Cadiz *Program Head for Knowledge Management (KM), Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA)*
	Open Forum
	Awarding of Plaque of Appreciation and Token
4.45-5.00	Preparation for the Parallel Session

19 April 2017 (Wednesday)

FIRST PARALLEL SESSION

TIME	MARIA MAKILING GRAND BALLROOM	ILANG-ILANG	HIMALAYA	NEW CONVENTION
5.00-5.15	Organizational discourse as an approach for sustainability studies ***Primo G. Garcia***	Phytotoxicity of Some Parts of *Excoecaria agallocha* Leachate Concentrations Against Golden	Assessment of selected CBFM areas in Negros Occidental ***Dominic L. Billen***	High Throughput Screening of Lipoxygenase (LOX) Inhibitors from Fungi* ***Jay-Ann A.***

		Apple Snail (*Pomacea cannaliculata*) ***Winfild E. Buscato, Rhesa Y. Gutierrez, Joel J. Tutor, and Merlyn G. Buscato***		***Tallad, Roland M. Hipol, Regina B. Hipol, Christine C. Hernandez, Jasmin Tutor, Mavis Fabian and Joseph Sasotona***
5.15-5.30	Waray-speaking residents' local beliefs on natural hazards and preparedness in selected Municipalities of Northern Leyte, Philippines ***dela Peña, Ma. Evette Q ., Gabionza, Esther Virra Mae M., Labajoy, Julie Ann A, Moraleta, Jolina V ., Udtohan, Marisol T ., Aruta, Ronron S.***	In vitro study of anticholinesterase and antioxidant activities of endophytic fungi isolated from *Sechium edule* (Jacq.) Sw. ***Aziel S. Almasco, Micah D. Dispo, Mearl Joy G. Tabuelog***	Level of awareness and practices of students in WPU-Quezon campus in solid waste management: its implications to formulating applicable educational strategies ***Metchecana D. Peralta, and Celestino N. Bernadas Jr.***	Nematode diversity of phytotelmata of Nepenthes spp. in Mount Hamiguitan Range Wildlife Sanctuary, Philippines ***Joeseph Sellado Quisado***
5.30-5.45	Belief and attitude among university students towards solid waste management (SWM): its implications to revisiting the curriculum ***Celestino N. Bernadas, Jr. and Metchecana***	Molluscicidal potential of mahogany (*Swietenia mahagoni* Jacq.) leachates against golden apple snail (*Pomacea canaliculata* Lamarck) ***Mary Ronville C. Montejo and***	Failure mode and effect analysis (FMEA) and reflection among medical technology students in improving the health-care waste management in Southwestern University, Cebu City	Angiotensin-converting enzyme inhibitory activity of fungal metabolites* ***Hilda S. Wayas, Roland M. Hipol, Regina B. Hipol, Christine C. Hernandez, Jasmin Tutor, Mavis Fabian,***

	D. Peralta	***Merlyn Guzman-Buscato***	***Dr. Julius P. Mario***	***and Joseph Sasotona***
5.45-6.00	Open Forum			
6.00-7.00	Opening of Poster Session and Competition			
7.00-10.00	Welcome Dinner and Collaboration Night			

20 April 2017 (Thursday)

TIME	MAKILING GRAND BALLROOM
8.30-8.45AM	Best Paper Finalist 1 Biological Category
8.45-9.00	Best Paper Finalist 2 Biological Category
9.00-9.15	Best Paper Finalist 3 Biological Category
9.15-9.30	Open Forum/Snacks
9.30-9.45	Best Paper Finalist 1 Social Category
9.45-10.00	Best Paper Finalist 2 Social Category
10.00-10.15	Best Paper Finalist 3 Social Category
10.15-10.30	Open Forum/Snacks
10.30-10.45	Best Paper Finalist 1 Integrative Study Category
10.45-11.00	Best Paper Finalist 2 Integrative Study Category
11.00-11.15	Best Paper Finalist 3 Integrative Study Category
11.15-11.30	Open Forum
11.30-1.00 PM	Lunch break/Election of Officers and BOT Members
1.00- 1.30	Introduction of the Fourth Plenary Speaker Dr. Ramon Docto
	4th Plenary Speech Atty. Asis Perez Tanggol Kalikasan
1.30-1.45	Open forum Awarding of Plaque of Appreciation and Token

20 April 2017 (Thursday)

SECOND PARALLEL SESSION

TIME	MARIA MAKILING GRAND BALLROOM	ILANG-ILANG	HIMALAYA	NEW CONVENTION
2.00-2.15	The Aytas of Floridablanca and their capacity to adopt to failure climate hazards	Chemical characterization and quantification of soil fungal siderophores	Growth and yield of two varieties of grafted tomatoes (*Solanum lycopersicum* L.) as influenced by	Growth and yield of tomato (*Solanum lycopersicum* L.) As influenced by different soil organic

	Samantha Geraldine G. De los Santos, Maria Ana T. Quimbo, Dulce D. Elazegui, Margaret M. Calderon, Cristino L. Tiburan Jr., and Flordeliza A. Sanchez	***Mae Ann F. Amamlan and Roland M. Hipol***	single and combined application of organic and inorganic fertilizers ***Zenaida C. Gonzaga, Aiza Ayo, Ariel Paguntalan, Jenny Rose Robido and Rosario A. Salas***	amendment and types of cultivation ***Zenaida C. Gonzaga, Ana Linda G. Gorme, Jessie C. Rom, Othello B. Capuno, and Gordon Rogers***
2.15-2.30	The disaster preparedness programs and responses of Bislig City on typhoon "Pablo" ***Jessril A. Oval***	Broccoli (*Brassica oleraceae* L. var. *italic Plenck*) Production as Influenced with the Application of Different Organic and Inorganic Nutrient Solution Using Aggregate Hydroponic System ***Darlyn B. Posas and Rosario A. Salas***	Efficacy of wild basil extract (*Ocimum sanctum* L.) as an organic attractant of male fruit flies (*Bactrocera philippinensis* L.)Infesting bitter gourd (*Momordica charantia* L.) ***Elline T. Macay and Merlyn G. Buscato***	Isolation and identification of bacterial endophytes inhibitory to coffee rust ***Liwayway P. Taglinao and Yolanda A. Ilagan, Ph.D***
2.30-2.45	Challenges in mainstreaming Disaster Risk Reduction in the Philippine K-12 curriculum ***Geraldine M. Ladiao***	Combined effect of vermicompost and earthworm pontoscolex corethrurus inoculation on the yield and quality of broccoli (*Brassica Rapa* L.) using organic growing media ***Nurhidayati,***	HMG-CoA reductase inhibitors from leaf associated fungi ***Roland M. Hipol, Regina B. Hipol, Christine C. Hernandez, Jasmin Tutor, Mavis Fabian, and Josph Sasotona***	Safe and Economical Alternative stain from three common garden plants for staining plant tissues ***Ma. Lesa Santiañez***

		Masyhuri Machfudz, Indiyah Murwani		
2.45-3.00	Disaster vulnerability, resiliency level and coping mechanisms of coastal dwellers in selected Barangays of Virac" ***Jocelyn Ll. Jordan***	Amphibians in secondary succession forests in Samar Island, Philippines ***Facundo Rey M. Ladiao, Eulito V. Casas, Jr., Ted Juan Peliño, Ronron Aruta, Margarita T. Dela Cruz***	Growth and quality of aquaponically grown kale (*Brassica oleracea var. sabellica*) supplemented with different nutrient solutions ***Wilson U. Llegunas, Jr. and Rosario A. Salas***	Gravity Wall made of Woven Plastic Blocks for Slope Protection ***Nena G. Zara***
3.00-3.15	Risk perceptions, attitudes, and risk coping strategies of mango farmers in Negros Oriental, Philippines ***Jose Edwin C. Cubelo***	Open Forum/Snacks		
3.15-3.30	**Open Forum**	Biodiversity of earthworms on selected sites in Mt. Tabayoc, Kabayan, Benguet ***Robert Abenoja, Kimberly Jhan Briones, Melissa Idio, Roland Hipol, And Zenaida G. Baoanan***	Yield and Postharvest Qualities of Two Sweet Pepper (*Capsicum annuum* L.) Genotypes Applied with Different Levels of Nitrogen ***Rosario A. Salas, Reyda Mae R. Godoy, Felix M. Salas, Neal Menzies,***	"Cyprinidae 'paet' as toxin eliminator of water quality within the abandoned mining siltation pond of trident: a water analysis" ***Boni, Gerlie J., Sangalang, Benjamin Z.,***

			Stephen Harper, and Victor Asio	
3.30-3.45	Effectiveness of the National Greening Program in Laguna and Quezon, Philippines ***Lynlei L. Pintor***	Importance of Sanchez Mira, Cagayan as a stopover site for the migratory Grey-faced Buzzard (*Butastur indicus*) ***Jelaine L. Gan, Carmela P. Española***	Job competence and functional capability of elderly living in a disaster risk region ***Dolores L. Arteche***	A'wot quadrilateral analysis of community-based ecotourism in Taytay, Majayjay, Laguna ***Paulene Marie P. Acupan, Cryszelle M. Asoy, Janine A. Apacionado, and Lynlei L. Pintor***
3.45-4.00	Community-Based Ecotourism in Taytay, Majayjay, Laguna ***Cryszelle M. Asoy, Paulene Marie P. Acupan, Janine A. Apacionado, and Lynlei L. Pintor***	Comparison of Bird Diversity and Composition in the Agricultural Land and Forested Area of Mt. Kabuyao, Luzon, Philippines ***Yvonne Riza S. Picpican***	Non-government organization (ngo) and local government unit (lgu) collaboration on the road to zero waste: Barangay Potrero and mother earth foundation as context ***Kiana Katherine M. Porras, Socrates Jerome A. De Guzman, Dr. Arlen A. Ancheta, Ph.D***	Efficacy of stain from turmeric curcuma longa products used to enhance monocot and dicot stem sections ***Mary Rose M. Briones***
4.00-4.15	Agricultural knowledge management in the local extension services of selected Masbate Municipalities, Philippines	Floral Diversity and Phytosociology of the Beach Forest Patches in Pan-ay, Capiz Western Philippines ***Harold O.***	Extension program of the university for sustainable community development: a case study of the faculty of arts and letters, university of	Host penetration and location of Meloidogyne chitwoodi and Pratylenchus penetrans as affected by woodchip extract.

	Jose Edwin C. Cubelo	***Buenvenida***	Santo Tomas ***Analiza Yanga***	***Catherine C. Quisado and Joeseph S. Quisado***
4.15-4.30	Open Forum			
4.30-4.45	Assessment of the 3R (reduce, reuse, recycle) Policy implementation in the Philippines ***Vella Atienza***	Towards creating a sustainable society: an ODEL-sustainability framework ***Alvie Simonette Q. Alip***	Assessing the level of awareness of electronic waste among the business economics major of the university of Sto Tomas college of commerce and business administration ***Al Faithrich Navarrete, Marie Antoinette Rosete, and Karen Grace Valdez***	Role of shallot bulbs on distribution of *fusarium oxysporun* f.sp. Cepae cause twisting disease ***Sri Wiyatiningsih, Nora Augustien, Endang Triwahyu P.***
4.45-5.00	Level of awareness and participation of coastal women on various fisheries management programs ***Alfredo F. Reyes, Dante M. Mendoza, Geena B. Hipolito1, And Mary Anne Valerio***	Open and Distance e-Learning: An Approach towards Sustainable Education for All ***Ricardo T. Bagarinao***	The effect of the integration of reading in teaching college algebra on the attitude and achievement of students ***Jenny G. Pedernal-Sangalang***	Interspecific agonistic behavior of macrotermes gilvus (isoptera: termitidae): implication on termite baiting in the Philippines ***Mark Jun A. Rojo and Menandro N. Acda***
5.00-5.15	Community awareness on the changing	Teachers' awareness and attitudes	Unos, mangingisda, kooperatiba:	Indicator microorganisms on the surface

	administration in the local government of Puerto Princesa City: Its effect on solid waste management ***Carlos Alfonso Salvador***	towards gender roles as well as classroom discipline ***Husna T. Lumapenet***	disaster as a social construction in an urban coastal Barangay ***Ellen Khay P. Boñon, Edson A. Yuzon, Julie Ann C. Zamudio, Arlen A. Ancheta***	sediment at selected stations in Lake Lanao ***Shellajean Maghanoy Omar and Jhonamie Mabuhay-Omar***
5.15-5.30	Participatory assessment of the Aytas' livelihood vulnerability to climate related hazards ***D. D. Elazegui, M. A. T. Quimbo, M.M. Calderon, C. L. Tiburan, Jr.F. A. Sanchez, and S. G. G. De los Santos***	Awareness of administrators, faculty and staff on quality assurance and institute sustainability in higher education institution at PSU ESC CCRD Brooke's Point, Palawan ***Marilyn C. Baaco***	Vegetation analysis of Mangrove Forest of Dulapo, Oroquieta City, Misamis Occidental, Philippines ***Naneth E. Escabal, Evelyn V. Bigcas, Jenefer P. Calipusan And Rogaciano N. Miole***	Overloading activity of passenger tricycles in selected public schools in narra, Palawan: Basis for the municipal transportation policy and implementation review ***Celia R. Ignacio and Mia May G. Dadule***
5.30-5.45	Sustainability of indigenous upland rice production: a basis for policy recommendation and formulation ***Dr. Onofre S. Corpuz1, Dr. Samson L. Molao, Dr. Zainudin M. Adam, Dr. Pendatun E. Dalam,***	Participatory Approaches in Capacity Building among Agrarian Reform Beneficiaries in an Agrarian Reform Community in the Province of Rizal, Philippines ***Josefina T. Dizon***	Community Status and Fishery of Commercially Important Sea Cucumbers in Dasol Bay, Pangasinan ***Dante M. Mendoza***	Local and global distribution of the invasive blow fly *Chrysomya megacephala* ***Ronniel D. Pedales, and Ian Kendrich C. Fontanilla***
5.45-6.00	Open Forum			

6.00-10.00	Dinner Sponsor and Cultural Night			

21 April 2017 (Friday)

TIME	MAKILING GRAND BALLROOM
8.30- 9.00 AM	Introduction of the Fifth Plenary Speaker Dr. Jesusa Ortuoste *PSSN Auditor*
	5th Plenary Speech Tissue Culture for Sustainability: Case Study in Kopyar Coconut Dr. Ir. Sukendah *Head of Research Center and Community Service, UPN "Veteran" East Java 2*
9.00-9.15	Open Forum Awarding of Plaque of Appreciation and Token
9.15-9.30	Snacks and Preparation for the Parallel Session

THIRD PARALLEL SESSION

TIME	MARIA MAKILING GRAND BALLROOM	ILANG-ILANG	HIMALAYA	NEW CONVENTION
9.30-9.45	Canonical Correspondence Analysis of Larval Mosquito Diversity and Habitat Characteristics Association in Selected Areas of Cavite, Philippines ***Ezekiel L. Daya, Salvador B. Litan III, and Jonathan R. Digma***	Abundance and Size Distribution of Coquina Clams (*Donax* spp.) in the Coastal Areas of Cavite. ***Roberto J. Lacson, Yolanda A. Ilagan and Leah C. Lacson***	Species diversity of and local knowledge on bats in eastern Leyte, Philippines ***Archie Tulin and Berna Lou L. Aba***	Assessment on quarry operations in Talakaigan and Cabigaan rivers Aborlan, Palawan, Philippines ***Mylene T. Ledesma and Lita B. Sopsop***
9.45-10.00	Adversity quotient and coping mechanisms of farmers and fishermen	Households' attitudinal response to disaster preparedness strategies:	Integrating the Pala'wans indigenous knowledge with science concepts for natural	Flora and carbon stock of timber in a forest patch in Sitio Apis, Brgy. Apoc-Apoc, Aborlan,

	towards natural disasters in Dinahican, Infanta, Quezon ***Abegail A. Manaig, Alyssa Mae T. Royeras, Earl Genereo L. Alcira, and Lynlei L. Pintor***	implications for preparing a community for a disaster ***Ricardo T. Bagarinao***	disaster risk reduction in Southern Palawan ***Shellemai A. Roa and Ramon M. Docto***	Palawan, Philippines ***Reina Rose C. Abordo1 and Lita B. Sopsop***
10.00-10.15	Field Evaluation of BIOJADI Organic Plant Supplement for Pechay (Brassica Chinensis L.) Production Towards Sustainable Agriculture ***Dr. Hanlie A. Taha***	Employees' productivity and accountability towards the sustainable economic development in the municipality of brooke's point, palawan ***Dante Arinez***	Economic Valuation of the Mangrove Forest in Sitio Marikit, Brgy. San Juan, Aborlon, Palawan, Philippines ***Lita B. Sopsop***	Impact Assessment of the National Greening Program in Liyang, Pilar, Bataan ***Nolie Molina, Lynlei Pintor and Ricky Florindo***
10.15-10.30	Radiation effect of gamma 60co on the quality of truee shallot seed of bauji ***Ida Retno M, and Nurhiza P***	Screening and identification of soil actinomycetes producing chitinolytic as biological agents for fruit flies ***Penta Suryaminarsih, Wiwik Sri Harijani***	Bamboo species inventory in the riparian habitat of K'laja karsts area, General Santos City Philippines with notes on its local utilization ***Maria Luisa N. Cabrera, Queenlee Marie Magan***	Isolation and Culture of Benthic Diatoms Potentially Useful for Top Shell (*Trochus niloticus) Mariculture)* ***Emmanuel C. Capinpin Jr.***
10.30-10.45	Palawan's prime tourist destinations' tourism landscapes and discourse ***Janet B. Oab,***	Supplementation of different types of fat on rumen microbial population dynamics and in vivo digestibility of napier grass	Rice-fish farming in Pangasinan, Philippines: A farmland use optimization experience ***Irene A. De Vera***	Soil erosion: a mapping of southern Palawan cross connecting road risk areas ***Ramil Abuan***

	Ph.D.	(*Pennisitum purpureum Schumach*) in goats (*Capra hircus* Linn.) ***Ronel O. Reproto***		***Eliazar***
10.45-11.00	Open Forum			
11.00-11.15	Agro-ecological and economic benefits of vermicomposting ***Marzo, Ma. Lourdes O, Judith B. Madarcos, and Nolly V. Jaranilla***	Street food preferences of consumers in the sixth district of Cavite ***Yolanda A. Ilagan and Shiela L. Vidallon***	Optimization of the levels of kappa-lambda type carrageenan & citric acid in mango- flavored gummy cubes ***Ann Myril C. Tiu***	Assessment of selected community-based sustainable tourism projects towards developing green tourism practices handbook in Puerto Princesa City ***Prof. Henrietta M. Roque***
11.15-11.30	Assessment and economic valuation of seagrass meadows in Del Carmen, Siargao Island, Philippines ***Dr. Carlos H. Donoso***	Carbon sequestration in *Eucalyptus urophylla* and its associated *mycorrhizal* fungi in Siloo, Manolo Fortich, Bukidnon ***Nelson M. Pampolina and Bernard Dell***	Response of irrigated lowland rice (*NSIC Rc212)* to water management system and method of nitrogen fertilizer application ***Jon Verny D. Biaco***	Green practices of tourism destinations in Palawan, Philippines towards sustainable tourism ***Judy Ann Valino-Sarail, Ph.D. (IHM)***
11.30-11.45	Catbalogan City dumpsite leachate waste transport ***Jasper Bardelas, Krizza Mae C. Celajes, James Albert A. Fungo, Mark Christian P.***	Vegetative growth responses to boron toxicity of vigna radiata l. *(Mungbean)* 'NSIC Mg 17' ***Balinado, Lloyd O., Manzano,***	Optimization of water supply allocation using fuzzy goal programming ***Mary Grace A. Lunar , Nikka Joy M. Oruga , Allen L. Nazareno***	Honda bay island hopping in Puerto Princesa city, Palawan: Its ecological and socioeconomic contribution ***Hermenegildo P. Dela Peña, Ma.***

	Paclian, Christian F. Tugado, Ronald L. Orale	***Rizza Mae E., Ate, Cyrell N., Chan, Merab A***		***Rosario Aynon A. Gonzalez, and Michael P. Pido***
11.45-12.00	Open forum			
12.00-1.00	Lunch break			
1.00-1.15	Diversity of limnetic freshwater zooplankton in Lake Danao, Ormoc City, and Lake Bito, MacArthur, Leyte ***Cindy Mae V. Macamay, Robert John A. Novio, Marie Grace F. Mendiola, & Facundo Rey Ladiao***	Population density of black shama (*copsychus cebuensis steere*) in the forest patches of Southern Cebu ***Malaki, A.B.B., R.U. Nuevo, S.M. Alcazar, R.C. Cutillar and E.P. Lillo***	Ethnobotanical practices of Tagabawa tribe at Barangay Jose Rizal, Sta. Cruz, Davao Del Sur, Philippines ***Grendelli E. Cortuna, Swift Honesty M. Evangelista, Rico Raphael D. Gatal, Christian Indigo Khan S. Licuanan, Farah Jane C. Tapia, Melodie Claire W. Juico***	Vegetation as predictor of litter and soil arthropod community assemblages across environmentally critical areas network of Palawan, Philippines ***Glenn O. Sopsop, and Ireneo L. Lit, Jr***
1.15-1.30	Coastal marine water quality of Palawan tourism areas and its implications to biodiversity ***Jenevieve P. Hara, M. F. G. Martinico-Perez, M.P. Cabrestante, A. D. Mortillero***	Morphometric characterization of the Southern Cauayan municipal forest and watershed reserve (Scmfwr) Using GIS ***Marc Alexei Caesar B. Badajos***	Phytochemical screening of mid-polar nematicidal fraction of *Dioscorea hispida* against *Meloidogyne graminicola* ***Mary Annilyn L. Villar, Felix M. Salas1 and Erlinda A. Vasquez***	Biological 1
1.30-1.45	Biological 2	Biological 2	Integrative 1	Integrative 2
1.45-2.00	Social 1	Open Forum		
2.00-2.15	Open Forum			
3.00-5.00	Awarding and Closing Ceremony			

Best Paper Competition
Abstract of Entries

Fuel Pellets from Mixture of Rice Husk and *Gmelina arborea* Roxb. Particles

PORFERIO O. BAJO JR.
Western Philippines University

Abstract

The study was conducted to determine the physico-chemical properties of biomass fuel pellet from mixture of rice husk and *Gmelina arborea* Roxb. particles to identify the best treatment that conforms to quality standard pellets EN 14961-2 (2011) suitable to traditional biomass fuel for industrial and heating application. A complete random design (CRD) of experiment with three factors (applied pressure, die temperature, and moisture content), three levels (low, normal and high) and six treatments rice husk/ *G. arborea* of fuel pellet was used to determine its physical properties, heat value and proximate value. From the analysis of variance (ANOVA) with P-value of .05, all the three pelletization factors were significant parameters to its physical properties particularly particle density and compressive strength. The optimum processing condition to produce the best quality of pellets in terms of its physical properties was at 100 MPa applied pressure, 120 ^{0}C die temperature and 8 % moisture content. For heating value treatment 40/60, 20/80 and 0/100 ratio of fuel pellet are within the ranged of quality pellets. Proximate analysis showed volatile matter, fixed carbon and ash content were statistically significant to the treatment employed. However only treatment 0/100 or pure *G. arborea* with ash content of 1.3 % was within the said guidelines and it is recommended to have only 18 % of rice husk and 82% *G. arborea* mixture to have a quality fuel pellet.

Keywords: *bioenergy, fuel pellet, heating value, compressive strength, proximate value*

Anthocyanin Content of Two Genotypes of Eggplant (*Solanum melongena* l.) Cultivated at Varying Nitrogen Levels

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Department of Pure and Applied Chemistry, College of Arts and Sciences, Visayas State University, Visca, Baybay City, Leyte, Philippines (s.maeb12@yahoo.com)

Abstract

This study was conducted to determine the total anthocyanin content of two genotypes of eggplant (Morena and Casino) grown at Visca agro-climatic condition and investigate the effects of nitrogen levels on the anthocyanin content of the harvested eggplant. The experiment was laid-out in a split-plot randomized complete block design with the following treatments: T1=0, T2=50 kgN/ha, T3=100 kgN/ha, T4=150 kgN/ha, T5=200 kgN/ha, T6=250 kgN/ha and T7=300 kgN/ha. The anthocyanin content of harvested eggplants was analyzed by pH-differential method with ultraviolet-visible spectrophotometric technique. Results showed that the total anthocyanin content of Morena (0.2170mg/L) is significantly higher than Casino (0.1474mg/L). This means that the Morena hybrid possessed better total monomeric anthocyanin which is a good source of antioxidants. The application of 150 kgN per hectare gave the highest anthocyanin content (0.2560mg/L) in both hybrids of eggplants. Application of higher levels of Nitrogen diminished its anthocyanin content until such a level comparable with the control as

exemplified by T6 and T7. These results imply the relevance of precise application of nitrogenous fertilizer for food production and environmental care.

Keywords: anthocyanin, eggplant hybrids, nitrogen levels, pH-differential method, spectrophotometric method

Diversity of Eathworms (Oligochaeta) in Mount Parker, T'boli South Cotabato, Philippines

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Abstract

Philippine earthworm diversity in Mindanao has scarcity in data. Thus, to determine its richness and diversity, its ecological niche, soil moisture content, pH, temperature, and organic matter across habitat types, the study was conducted. Five habitats were selected; regenerating forest, grassland, agro-ecosystem, primary forest, beside the lake. A 10 x 10 m plot was established. In each plot, about 500g-1000g of soil were collected and analyzed using Walkey-Black method (1994). Correlation between richness and habitat type and between species diversity and soil physicochemical parameters were determined using Pearson's test. A total of 137 earthworms were collected from five habitats, two species from family Megascolecidae namely*: Pheretima enormis* and *Pheretima hamiguitanensis* and one from the family Glossoscolecidae; *Pontoscolex, corethrurus* native in South America. *P. corethrurus* was identified as endo-epigiec while *P. enormis* and *P. hamiguitanensis* were endogeic. Habitat beside the lake (H'=0.53) is the most diverse while grassland is the least (H'=0.80). Physico-chemical profiling of the soil samples revealed an average soil pH of 8.1, organic matter content (3.5%) and moisture content (20.48). Correlation between species diversity and physico-chemical parameters revealed significant negative correlation in soil pH suggesting diversity increases soil's alkalinity. However, other parameters do not significantly influence species diversity.

Keywords: diversity, earthworms, Mount Parker, Pearson's Test, Pontoscolex corethrurus

Free Radical Scavenging Activity of Harvested Eggplant (*Solanum melongena L.*) Coated with Cat's Whisker (*Orthosiphon aristatus Miq.*) Extract at Different Temperature Gradient

IVY MONICA B. CURAYAG* AND FELIX M. SALAS
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Abstract

This study was conducted to determine the free radical scavenging activity (FRSA) of two eggplant varieties upon storage under ambient condition, quantify the shelflife of harvested eggplant coated with aqueous cat's whisker extract (CWE) at different temperature gradient and evaluate the effect of storage time on the FRSA of the CWE coated eggplant at different temperature gradient. The FRSA was conducted through UV-Visible spectrophotometry. Two

eggplant varieties were coated with CWE following a Completely Randomized Design with the treatments: T_0= control, $T_{1=}$ distilled water, $T_{2=}$ CWE at 20°C, T_3= CWE at room temperature and T_4= CWE at 40°C. The eggplants were stored until its shelflife termination. Results revealed no significant difference in FRSA between Casino and Morena varieties. Morena exhibited the highest shelflife of ten days and higher FRSA particularly those treated with CWE at 20°C, ambient and 40°C temperatures than Casino. This means that CWE coatings of the three gradients can further enhance shelflife of eggplant particularly the Morena which has been correlated with the Oxidation Reduction Potential values. CWE coated eggplants exhibited enhanced FRSA at ambient temperature and at 20°C. The overall result indicated that phytochemical coating with CWE is an important strategy to enhance shelflife of vegetables.

Keywords: cat's whisker extract, eggplant varieties, free radical scavenging activity, temperature gradient

Conservation and Restoration of Biodiversity through Reforestation in CPSU Reservation

REYNALDO T. TABABA[1], MARY ANN S. DAGUNAN[1*], LUIS T. TABABA[1], GREGORIO D. PREDO[1], DOMINIC L. BILLEN[2] AND MAE FLOR G. POSADAS[3]
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[2]Deutsche Gesellschaft fur Internationale Zusammenarbeit (GIZ),
[3]Research and Development Services, CPSU

Abstract

This paper aimed to address sustainable supply of forest products and provision of ecosystem services particularly biodiversity and watershed protection and landscape beauty for the mutual benefit of Central Philippines State University and the community living within the 4,653.70 ha university reservation area. Specifically, it aimed to develop a land use plan and rehabilitate the degraded reservation using various site-specific indigenous and fast-growing exotic tree species through the establishment of multi-purpose tree plantation, EP/ANR and rubber-based agroforestry system. A Land Use Plan Technical Working Group was created while geospatial and socio-economic data were gathered and used for resource assessment, tenure assessment, stakeholder analysis, and organizational analysis. A co-management scheme good for 25 years, renewable for another 25 years with production sharing of 25% (institution) and 75% (farmer beneficiaries) was initiated. A total of 122 farmer-occupants participated in the project covering a total of 201.76 ha were reforested using the three project models. Recommendations were directed at: (1) unwavering commitment of the administration and project personnel to plan, implement and monitor the project; (2) allocating internally generated funds for protection, care and maintenance practices of the forest plantation/agro-forestry project and the establishment of additional forest plantations without any external financial subsidies; and (3) collaborating with NGAs, LGUs, NGOs and other government agencies for budget and technical assistance in the absence of sufficient budget to support the implementation of the land use plan strategies.

Keywords: biodiversity restoration, land use plan, reforestation, reservation area, state colleges and universities

Liquid Nutrient Formulations for Red Rapid Lettuce (*Lactuca Sativa* L.) Production Under Aggregate Hydroponic System

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Abstract

This study was conducted to investigate the effect of liquid nutrient formulations on the horticultural characteristics, yield, pigment composition, and free radical scavenging activity of lettuce under aggregate hydroponic production system. The efficacy of three nutrient solutions derived from golden snail, madre de agua, and fish effluents were evaluated using lettuce (Red Rapid) as test plants in completely randomized design. The aggregates were composed of river sand and coconut coir in a ratio of 3:1 by volume. The pigment composition and free radical scavenging activity were done through an ultraviolet-visible spectrophotometer. Results have indicated that lettuce grown on fermented golden snail (FGS) have comparable plant height and number of leaves with the plants grown on commercial solution. However, lettuce grown on FGS exhibited greater leaf size and yield significantly. Plants grown on tilapia fish effluent (TFE) showed the highest chlorophyll a and total carotenoid contents followed by the plants grown on FGS which is comparable with the control. Moreover, lettuce grown on FGS gave the highest chlorophyll b content and free radical scavenging activity. These results indicate the potential of FGS and TFE as valuable sources of organic fertilizer material for lettuce production under an aggregate hydroponic system which can be helpful in community resilience and preparedness program.

Keywords: aggregate hydroponics, red rapid lettuce, liquid nutrient formulation, pigment composition, free radical scavenging activity

Water Governance for the Sustainability of Irrigation Water in Sta. Cruz River Watershed, Laguna, Philippines

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Abstract

Irrigating rice consumes a huge volume of water. Sustainability of water lies on the effective irrigation water governance model. The study aims to determine the stakeholders influence, hindering factors, assess the relationship of water governance and availability of water, and the development of water governance model for the sustainability of irrigation water. The study

was conducted in Pila and Sta. Cruz, Laguna among 176 members of the 26 IAs. Methods used were household interview, key informant interview, focus group discussion, review of documents, and observation. Data were analyzed through descriptive statistics and inferential statistics particularly Spearman Rho in analyzing the relationship between water governance variables and availability of water. Result revealed that the NIA, IA, and the LGUs are of the same degree of influence in the sustainability of the irrigation water although the NIA and IA are the institutions that are closely working together. The hindering factors in the sustainability of water include insufficient water supply during the dry season, deforestation and quarrying, and the limited funds for rehabilitation of the irrigation canals. There is positive strong linear association between management of water resources and regulation of irrigation water and availability of water while equitable water allocation, water distribution, and management of the IAs were found to have positive moderate linear association with the availability of water. The IA is at the core of the water governance model since ownership of the irrigation system was already transferred by the NIA to the IA. The four factors such as political, social, and economic aspects including the administrative systems should be taken into consideration by the IA however, the various institutions play a vital role for the IA to address the different factors. Through this, good water governance can be achieved resulting to water security thereby achieving rice security.

Key words: sustainability, water governance, stakeholders, irrigation

Antibiotic Susceptibilities of *Lactobacillus* spp. Isolates from Philippine Probiotic Food Products to Amoxicillin, Doxycycline and Ciprofloxacin

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Abstract

Probiotic microorganisms are ingested for their beneficial activity on the health of their human hosts. In this study, we assessed the susceptibility of probiotic bacteria that were isolated from commercial food products in the Philippines against commonly used antibiotics amoxicillin, doxycycline and ciprofloxacin. Our results demonstrated that the isolated species of *Lactobacillus* bacteria, namely, *L. paracasei*, *L. casei* and *L. bulgaricus* are more susceptible to amoxicillin and doxycycline than the reference bacteria, *Escherichia coli* ATCC 25922 strain. These findings suggest that amoxicillin and doxycycline may perturb the homeostasis of the gut by preferentially targeting *Lactobacillus* spp. Interestingly, we also found that *Lactobacillus* spp. are more recalcitrant to ciprofloxacin, and that this observed antibiotic resistance is likely due to mutations in their chromosomal genes that alter the hydrophobicity of the quinolone resistance-determining region (QRDR). We note that the intrinsic nature of ciprofloxacin resistance of *Lactobacillus* spp. is not easily transferable to other microorganisms in natural environments. Altogether, our study provides insights on the potential impact of commonly used antibiotics against *Lactobacillus* spp. and the importance of screening lactic acid bacteria in

probiotic food products for antibiotic resistance genes. This is necessary to prevent the use of bacterial strains that could contribute in the expanding problem on antibiotic resistant bacteria.

Keywords: antibiotic susceptibility, ciprofloxacin, MIC, QRDR, Lactobacillus

Carbon Stock Estimates at Various Landuse System at Sub Watershed Sumber Brantas, East Java

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Abstract

Natural forests have the highest C stock compared to agricultural land. Changes in the forest because of logging resulted in the loss of carbon. So, it is needed to get the the C-stock changes caused of land cover changes. This research conducted at each landuse at Junrejo, Batu, and Bumiaji district. Estimation of land cover classes in the sub-watershed Sumber Brantas was conducted by determine the control points and check the validity of land cover that are made through satellite imagery. Carbon stock was measured in plot and landscape level, using RACSA. The results showed that mixed forest conversion into plantation forest (Albizzia chinensis, Anthocephalus cadamba) or crops causedC-stock losses above ground about ± 200 MgC ha-1, while under ground C losses was ± 40 Mgha-1. But, forest conversion into pine or teak plantation, will caused increase above ground C stock about ± 100 MgC ha-1. Tree biomass have the highest contribution on total C-stock (60 % on average), while understorey and necromass contribute only about 2% and 5% of C-stock. Field measurement showed that plantation forest 2 has above ground C-stock as much as 320,86 Mgha-1, followed by mixed forest (235,95 Mgha-1), and plantation forest 1 (47,71 Mgha-1). Agricultural land and Shrubland has the lowest C-stock (51,57 Mgha-1 and 12 Mgha-1) respectively. As the consequences of forest conversion into cropland (2008-2012), sub watershed Sumber Brantas (139447 hectares) has already loss the C-stock as much as 0,83 Mg C/ha/th or equivalent with 3.04 Mg CO2 ha-1 th-1.

Keywords: landuse systems, carbon stock, Sub Watershed Sumber Brantas

A Preliminary Application of Mathematical Modeling to the Rainfall Data of the Weather Monitoring System of Nueva Vizcaya State University

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Abstract

In tune to the purpose of the Weather Monitoring (WMS) of Nueva Vizcaya State University – the WMS as a localized climate change adaptation strategy for Nueva Vizcaya – the study looked into modeling the periodic monthly rainfall of Bayombong, Nueva Vizcaya using hourly rainfall data from 2012 to 2015 gathered by a unique field monitoring system device used by the WMS. By fitting a Fourier series to the computed monthly cumulative rainfall from the hourly rainfall data, Fourier series harmonic analysis was performed using backward elimination stepwise time series regression. Ten models were generated and their statistics show that the model with the first and second harmonic and the cosine term of the fifth harmonic – the 12-, 6- and 2.4-month periods in the observed data respectively – is the most parsimonious making it the best-fit model. The best-fit model was then used to describe the periodic monthly rainfall of Bayombong. From the results of the study, it can be inferred that the periodic monthly rainfall of Bayombong can be described and represented by a Fourier series. Furthermore, the results of the study can also aid the WMS in providing local farmers practical knowledge about climatic rainfall conditions conducive to farming.

Keywords: field monitoring system, fourier series harmonic analysis, rainfall modeling, time series regression, weather monitoring system

Psychological Well- Being of Street Children in Catbalogan City

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Abstract

Cases of community-based street family has been offered services such as rehabilitation, counseling, and child sponsorship programs. However, upon release from the rehabilitation center, the identified families still went back to the streets, specifically, children. The study looks into determining the psychological well-being of these street children in the city of Catbalogan. The descriptive and comparative analysis research design were utilized in determining the psychological well –being of the street children. This study revealed that street children are enjoying their stay in the streets because they have friends who affirm their activities because they are doing the same thing. Hence, these children feel happy, joyful and cheerful. They are satisfied about themselves. However, the source of this happiness is plainly basic-getting what they need-food through begging. Therefore, parents should be provided with livelihood

programs so they can sustain their capacity to provide for their family and keep their children out of the streets.

Keywords: Psychological well-being, Street Children, Parenting Style

Free Radical Scavenging Activity of Harvested Eggplants (*Solanum melongena* L.) Cultivated with Varying Levels of Chicken Dung

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Abstract

This study was conducted to determine the free radical scavenging activity (FRSA) of two genotypes of eggplant, namely Casino and Morena, cultivated under Visca agro-climatic conditions, investigate the FRSA of harvested eggplants as influenced by the different levels of chicken dung (CD), and evaluate the FRSA of two genotypes of eggplant upon storage under ambient conditions. The experiment was setup in split-plot randomized complete block design with the following treatments: T_1= control, T_2= 200 g CD/plant, T_3= 400 g CD/plant, T_4= 600 g CD/plant, T_5= 800 g CD/plant, T_6= 1.0 kg CD/plant, T_7= 1.6 kg CD/plant and FRSA was determined through Ultraviolet-Visible spectrophotometric method. Results show that the Casino (65.54 µmolTE/100g) has significantly higher FRSA than Morena (54.40 µmolTE/100g). The application of 200 g CD/plant exhibited the highest FRSA although comparable with T_1 and T_5. This indicates reduction of FRSA with increasing levels of chicken dung application. After ten days of storage at ambient conditions, the best FRSA was observed in Casino variety applied with 200 g CD/plant, whereas no significant influence was observed on Morena. This implies that judicious application of soil ammendments like chicken dung should be observed and practiced by farmers to conserve natural resources for food productivity.

Keywords: chicken dung, eggplant genotypes, free radical scavenging activity, ultraviolet-visible spectrophotometric method

Bio-Engineering and Diversified Farming: A Solution to Soil Denudation

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Abstract

Soil erosion is a common problem of farmers and landowners in the Philippines which diminishes their income and productivity due to soil nutrients depletion. The causes of this problem are the annual flood and the absence of sustainable effort to strengthen river bank and irrigation canal. One hundred ninety eight (198) tropical fruits and 218 endemic plants were planted in a farm in barangay Irawan, Puerto Princesa City to determine whether bio-engineering and diversified farming can be used to minimize the damage created by annual flood. Data were collected using observation, field-notes and focus group discussion. Qualitative

data management and analysis was performed using regular assessment of the different intervention strategies such as bio-fencing, intercropping and organic farming. Findings of the study revealed that bio-engineering and diversified farming are not enough to prevent destructive water current from damaging soil. This was validated during the flood that occurred on December 14, 2016. More specifically, it was found that the intervention strategies have established slow and partial rehabilitation of the denuded area. On the other hand, sprouting of endemic trees like bankal and ipil-ipil alongside the bio-fence area provided an effective defense mechanism against strong water current that destroy the soil. The roots of these plants strengthened the riverbank and the irrigation canal. It also promoted future seasonal harvest. The paper concludes that bio-fencing and intercropping can slowly and partially rehabilitate the river bank and solidify irrigation canal. It is recommended that the barangay,in general, and the farmers and landowners, in particular, adopt bio-engineering and diversified farming to minimize land denudation and enhance crop yield.

Keywords: bioengineering, diversified farming, endemic trees, intercropping, soil denudation, organic farming

Green Operation Practices of Restaurants in Cebu City

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Abstract

This study primarily determined the green operation practices of the identified restaurants in Cebu City. It specifically assessed the practices according to the four major area of environmental concern consumption of waste, water, energy and its purchasing policy. This study utilized the descriptive survey method utilizing the researchers made questionnaire as it is the main instrument to gather data from the thirty-five identified restaurants in Cebu City.This study included the restaurant's profile in terms of the capital, number of years in operation and number of personnel involved. The data were collected from the representative sample of thirty-five restaurants around Cebu City. The percentage method was used in profiling and the weighted mean and the average weighted mean was used in determining the degree of environmental practices of the sites. In recent years there has been an increased awareness of how the actions of the foodservice industry are affecting the environment. This research proposes a program to implement green practices in every restaurant around Cebu City. The expected outcome would be that a restaurant that is certified green or, implementing measures to become more sustainable will have higher customer retention, than those who choose to operate using traditional operational practices.

Keywords: Restaurants, Green practices, Waste Reduction, Water and Energy consumption and Purchasing Policy.

The Rice Cycle and Its Attendant Folk Rituals in the Island of Cuyo, Palawan

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Abstract

With the advent of modernization, some rituals in this particular Cuyono cultural activity are fast disappearing and may soon be lost to posterity. This rice production cycle and its folk rituals illustrate unique aspects of the culture of Cuyo Island, Palawan. This cultural practice differs significantly in form and pattern from the lowland rice production in provinces in Central Luzon and other areas where there are irrigated fields. This attempt to document a unique but interesting Cuyono cultural tradition- the rice cycle- grew out of a sincere desire to revive and preserve an almost disappearing aspect of Cuyono culture, the rice cycle, and its associated rituals and values. Observations and descriptions about the Cuyo Rice Cycle were subjected to the confirmation of resource persons or consultants; their common qualifications qualified them to prepare separate confirmatory statements on the availability of the data presented. The researcher used investigation and observation to gather date and later confirmation to resource person or consultants. Rice planting in Cuyo is therefore undertaken in relation to the year-round religious activities the attendant rituals permeated with religious overtones make the rice cycle in itself a way of life. Cuyonon farmers practice organic farming, without the use of chemical fertilizers this farming method has to be sustained because Cuyo Island has a very limited area for rice production. Should the soil be further degraded by the use of chemical fertilizers, the meagre rice production of Cuyo which is mostly of various verities of upload rice will decrease and will not be sufficient even for the sustenance needs of the farmers.

Keywords: rice cycle, folk rituals, organic farming, Cuyono culture.

Yield and Postharvest Qualities of Two Sweet Pepper (*Capsicum annuum* L.) Genotypes Applied with Different Levels of Nitrogen

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Abstract

This study was conducted to evaluate the effects of the different levels of nitrogen on the yield and postharvest qualities of two sweet pepper genotypes under Visca agro-climatic conditions. The experiment was laid-out in a split plot randomized complete block design with levels of nitrogen as the main plot and sweet pepper genotypes (Emperor and Sultan) as subplot. The levels of nitrogen were divided as T1 (0 kg N/ha), T2 (50 kg N/ha), T3 (100 kg N/ha), T4 (150 kg N/ha), T5 (200 kg N/ha), T6 (250 kg N/ha), and T7 (300 kg N/ha). The postharvest qualities such as carotenoid content, free radical scavenging activity (FRSA), and oxidation-reduction potential

(ORP) were assessed using spectrophotometric and potentiometric methods. Results revealed that sweet pepper applied with 100 kg N/ha during the wet season and 300 kg N/ha during the dry season significantly produced the highest yield in tons per hectare. Sultan genotype produced more number of fruits and heavier fruits which consequently gave higher yield than the Emperor genotype in both dry and wet cropping seasons. Sweet pepper applied with 100 – 250 kg N/ha exhibited the highest carotenoid content particularly the Sultan genotype in both dry and wet seasons. The application of 150 kg N/ha gave the best FRSA of sweet pepper in both cropping seasons especially with the Emperor genotype. However, the Sultan genotype yielded better oxidation-reduction potential during the dry season to indicate better shelf-life and storability. All these results would indicate the importance of accurate nitrogen fertilizer application to attain the best yield and the best postharvest qualities for food security, food quality, and environmental safety.

Keywords: Sweet pepper genotypes, Levels of nitrogen, Postharvest quality, Yield

Oral Paper Abstracts

Towards Creating a Sustainable Society: An ODeL-Sustainability Framework

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Abstract

The role of universities in social transformation is integral in the development of society. Universities are not only expected to produce the knowledge workforce that will satisfy the demands of the time, but to contribute as well to the society's capacity building towards sustainable development. However, limiting factors such as geographical, financial, political, and other social conditions make it impossible for some societies to be educated, and thereby, may threaten their sustainability. Open and distance e-learning (ODeL) institutions are widening opportunities for individuals who cannot be reached and afford education and training from residential universities. Through a systematic review of literature, this conceptual paper aims to determine what constitute a sustainable society as a product of social transformation through ODeL, and to conceptualize a framework for the analysis of ODeL contribution in achieving sustainable development goals.

Keywords: open and distance e-learning, social transformation, sustainable society, sustainable development

Palawan's Prime Tourist Destinations' Tourism Landscapes and Discourse

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Abstract

This study investigated Palawan's Prime Tourist Destinations' Tourism Landscapes and Discourse. Employing Pennycook's (2007) *Language as a local practice*, it highlighted the relationship between language, locality, and practice; as to the determination of locale's identity through discourse, Quakenbush's (1989) *language use and proficiency in a multilingual setting* was used and Bourdieu's (1992) concept of linguistic capital and market was also included. To comprehensively analyse the discourses present in the tourism landscapes, the study used quasi-descriptive quantitative and descriptive qualitative design employing casual interviews with tourism officers, observations, photo taking, and textual analysis. Specifically, the study used 150 photographs or 50 photos taken from each of the chosen locales; particularly in the City of Puerto Princesa, and Municipalities of Coron and El Nido as the primary sources of data. Furthermore, the data were classified into five genres such as: tarpaulins, panaflex, wood, brochure and t-shirts/souvenir. Informed by Pennycook's (2007) Language as a local practice in the tourism landscapes, it was found that as to the language choice, English language and the combination of both English and local languages were prevalently used in the landscapes. Highlighting the inevitability of the use of local language in the signs is tantamount to giving value and importance to the language, thus, making it stable and preserved. Moreover, textual and multimodal properties in the signages displayed clarity in terms of aesthetic presentation

and linguistic efficacy. Further, existential authenticity and mobility were observable in the discourses of the landscapes, were structured in non-hegemonic mechanism, and had established an inimitable identity of the Province. Finally, linguistic landscapes investigation may be conducted using other approaches with consideration of other possible domains that could provide a different angle or perspective of their linguistic value.

Field Evaluation of BIOJADI Organic Plant Supplement for Pechay (*Brassica chinensis* L.) Production Towards Sustainable Agriculture

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Abstract

In the pursuit of society's development, sustainable agriculture as one among its pillars, it significantly suggests that there is a necessity to conduct inquiries relative to the sustainability of agricultural produce. Hence, this study introduces the use of BioJadi Organic Plant Supplement alone over with its combination with organic fertilizer was conducted at CLSU-RM-CARES experimental area from January to March 2016. The study aimed to evaluate the efficacy of Biojadi organic supplement as nutrient supplement for pechay (*Brassica Chinensis* L.) production for sustainable agriculture. Specifically, the study aimed to a) determine the marketable yield of different treatments; b) to compare the effectiveness of Biojadi organic supplement against solid organic fertilizer; c) determine the best combination of solid organic fertilizer and Biojadi organic supplement for pechay production; and d) to generate data for BAFS registration. Results showed that application of Biojadi Organic Plants Supplement alone at recommended rate per hectare significantly increased the yield of pechay by 16.77%. Combining the effect of Biojadi Organic Plants Supplement with the organic fertilizer resulted to 11.90 t/ha yield which is 33.11% higher than the yield of plants applied with Biojadi Organic Plants Supplement alone and 44.28% higher in plants applied with organic fertilizer alone. Based from the results of the study, application of Biojadi Organic liquid Plant Supplement alone could be a good source of nutrient for pechay production. Furthermore, Biojadi combine with the recommended rate of organic fertilizer ensure higher yield of pechay.

Employees' Productivity and Accountability Towards the Sustainable Economic Development in the Municipality of Brooke's Point, Palawan

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Abstract

This study was conducted in order to analyze and find out the employees productivity and accountability in the Municipality of Brooke's Point. This study used the descriptive survey of investigation in the Local Government Unit of the Municipality of Brooke's Point. Stratified random sampling was used in determining its sample size and the research instrument used in

gathering data was survey questionnaire. The questionnaires were in Likert-Scale Type where the respondents showed the extent to which they believe the local government has the features being described in every statement in the questionnaire. The statistical tools used in organizing, analyzing and interpreting the gathered data were the following: frequency distribution, percentage, mean, and standard deviation. The employees in the Local Government of Brooke's Point when it comes to job satisfaction are "satisfied". It shows that in the level of accountability in terms of ethical, administrative, and individual accountabilities the employees agreed that every employee is accountable to God and to his fellowmen the social responsibility he/she neglected to do, follow the Administrative policies issued by the office as they are employed, and uphold the interest of the organization more than their own interest. It clearly states that the employees' satisfaction, commitment, and loyalty to their jobs contribute to their productivity. The productivity and accountability of the employees in the Local Government of Brooke's Point have a great impact to the "Inclusive Growth" program of the National Government for 2011 – 2013 because of the satisfaction and commitment made, and through the support programs of the local government units for the betterment of the locality and the community too. The programs for human resources development and poverty alleviation must be fully implemented to minimize if not totally eliminate poverty in the locality. The employment rate must be strengthened by attracting investors to establish businesses in the locality and investing much in education for a locality with educated constituents have higher level of development. Completing of other programs towards poverty alleviation on the basis of "inclusive growth" so that it can totally eliminate or minimize poverty. Sustaining and improving the strategies on how to satisfy the employees for the development of their productivity. Trusting employees to perform special assignments, assume supervisory positions, given appropriate parity and responsibility to increase the level of accountability on the job satisfaction of employees. A deeper study must be conducted regarding on how the job – related variables, administrative – related variables, organizational climate, and other variables that affect productivity contribute to the impact on "inclusive growth" program of the National Government.

Keywords: accountability, productivity, poverty alleviation, inclusive growth

Integrating the *Pala'wans* Indigenous Knowledge with Science Concepts for Natural Disaster Risk Reduction in Southern Palawan

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Abstract

This paper aims to integrate indigenous knowledge systems and practices (IKSPs) of the *Pala'wans* with science concepts for disaster risk reduction and management (DRRM). Through observation of natural indicators, approaching disasters like floods, storms, drought and epidemics can be predicted. This study was conducted on January to February 2017 in selected barangays of Southern Palawan. Fifty respondents composed of elders and local government

officials were consulted using triangulation method – key informant interview, questionnaire and focus group discussion. Findings showed that *Pala'wans* could predict flood if they observe lots of flying termites, and frequent chirping of birds due to sensitivity to atmospheric and barometric pressure changes. For storm, they observe dragonflies flying near the ground – the extra moisture in the air makes their wings damp and heavy; and lots of swallow birds enter into houses. For drought, they observe birds, and the reddish color of sunset. For epidemics, they observe howling of dogs and banca-like phase of moon. Integration of these scientifically explained IKSPs with local DRRM plans, and information education campaigns can contribute to *Pala'wans* and local communities resiliency. This would be most successful if government supports these endeavors and formulate policies to promote IKSPs as priorities in DRRM plans.

Keywords: indigenous knowledge, science, disaster risk reduction, natural indicator, Palawan

A'WOT Quadrilateral Analysis of Community-Based Ecotourism in Taytay, Majayjay, Laguna

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Abstract

Community-based ecotourism (CBET) consist of tourism activities, environmental conservation, and participation. The study focused on the community-based ecotourism in Taytay, Majayjay, Laguna. The objectives includes to determine the socio-economic characteristics of the residents in the area, describe the CBET in Taytay, and identify the strengths, weaknesses, opportunities, and threats of CBET. Research methods used include survey, key informant interview, and review of documents. Forty seven (47) residents within the vicinity of Taytay Falls served as respondents. Data were analyzed through descriptive statistics and hybrid method called A'WOT, an integration of analytic hierarchy process (AHP) and the eigenvalue calculation technique with strengths, weaknesses, opportunities and threats (SWOT). Result revealed that 14 internal and external factors were identified and associated with the CBET in Taytay Falls. The internal factors include 4 strengths (S1, S2, S3, S4) and 3 weaknesses (W1, W2, W3). Meanwhile, the external factors comprised of three (3) opportunities (O1, O2, O3) and four (4) threats (T1, T2, T3, T4). The results indicate that the most important aspect is the perceived strengths (0.4938) followed by opportunities (0.2837), weaknesses (0.1572) and threats (0.0653). This implies that the key informants perceived ecotourism in the area as a beneficial economic activity for the community and give higher consideration into it over its negative impacts. Corresponding measures were being imposed to counter these negative effects and shortcomings. Further, security of tourists (S4), non-compliance for taking care of the surroundings of Taytay Falls (W2), use of social media in promoting ecotourism (O1), and carrying capacity (T4) are the dominant factors related to the CBET in the area.

Key words: community-based ecotourism, quadrilateral analysis, participation

Chemical Characterization and Quantification of Soil Fungal Siderophores

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Abstract

Increasing demands on food security and nutrition requires researches about sustainable agricultural development including microbial amendments. Microorganisms such as fungi and bacteria secrete compounds for survival including siderophores. Siderophores are iron chelating ligands that can increase agricultural yield by increasing the availability of assimilable iron for plants and other organisms, control pathogen, and mediate soil bioremediation of heavy metal pollution. Aside from this, siderophores have important applications in the medical field. Siderophore production of soil fungal isolates from Benguet was screened via Chrome Azurol Sulphonate Assay revealing fifteen (15) siderophore producing isolates. Examination of the chemical nature of the siderophores showed that nine (9) isolates were positive for hydroxamate siderophores, two (2) for carboxylate and four (4) for mixed-type siderophores. Among the isolates, *Aspergillus oerlinghausenensis* produced the highest percentage of siderophore units which is 68.43 %. Percent siderophore unit measures the siderophore content present in the sample aliquot. Other isolates that showed significant siderophore production include *Penicillium citrinum, Aspergillus brunneoviolaceus, Aspergillus fumigatus,* and *Perenniporia vanhullii.* These isolates are prime candidates for further researches especially on the molecular characterization of the siderophores for possible application in agriculture and medicine.

Key words: siderophore, CAS assay, hydroxamates, carboxylates

Waray-Speaking residents' Local Beliefs on Natural Hazards and Preparedness in Selected Municipalities of Northern Leyte, Philippines

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Abstract

Locales' beliefs on natural hazards are important for awareness leading to preparedness. This study gathered local beliefs of Waray-speaking residents of Leyte. Among twenty five Waray-speaking, municipalities of Leyte, five municipalities- Alangalang, Babatngon, Capoocan, Palo and Tanauan- were chosen as sampling sites using techniques adapted from Gay (1976) as part of the study. Pre – survey was conducted to provide list of beliefs and preparedness course of action. Results showed that *(1)* Tsunami is expected if peculiar disappearance of waters in the sea will be observed; and *(2)* Heavy rains is expected if insects are noticeably seeking higher grounds, topped the listed beliefs considered as prelude to occurrence of natural hazards. For preparedness course of actions, they listen to radio and watch television to be updated, prepares emergency kit, flashlight and evacuate to a safer place before of a natural hazard. They

feel restless during the occurrence of a natural hazard. Moreover, respondents will thank God, fix, clean their house, and ask their relatives and neighbours if they are safe after the hazard took place. It is found imperative to strengthen these knowledge of locales for preparedness to hazards and be included as integral part of government's disaster risk reduction efforts.

Keywords: waray-speaking residents, natural hazards, preparedness, local beliefs

Community-Based Ecotourism in Taytay, Majayjay, Laguna

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Abstract

Community-based ecotourism (CBET) is the most successful form of tourism managed and owned by the community environmental conservation, and participation. The study focused on the CBET in Taytay, Majayjay, Laguna. The objectives are to determine the socio-economic characteristics of the residents in the area, describe the CBET in Taytay, and perception towards CBET. Research methods used include survey, key informant interview, and review of documents. Forty seven (47) residents within the vicinity of Taytay Falls served as respondents. Data were analyzed through descriptive statistics. Result show that the tourism activities are only limited to swimming and trekking. In terms of environmental protection, this include regular cleaning and waste segregation to keep the place of good ecotourism value and maintenance of water in the falls to ensure good water quality. For participation, men show greater participation in tourism development than women. Only 57% attend meeting related to CBET associated to low sense of responsibility among the people, internal problems between the facilitator and the people, and miscommunication as to the conduct of the meeting. Further, the respondents perceived CBET positively with a total mean score of 4.62 attributed to the preservation of natural resources but mostly focuses on decreasing poverty and sharing knowledge and increasing awareness concerning the environment with the visitors.

Key words: community-based ecotourism, participation, environmental conservation

Awareness of Administrators, Faculty and Staff on Quality Assurance and Institutional Sustainability in Higher Education Institution at PSU ESC CCRD Brooke's Point, Palawan.

MARILYN C. BAACO

Abstract

This study aimed to find out the level of awareness of the administrators, members of the faculty and staff on quality assurance and institutional sustainability of Higher Education Institution at PSU ESC CCRD Brooke's Point, Palawan. This study employed descriptive, correlation and comparative research methods with a total of thirty nine (39) respondents from PSU ESC CCRD Brooke's Point Campus. It involved two (2) administrators, twenty nine (29)

college faculty members and eight (8) non-teaching staff. The study used three parts research-made questionnaire. Frequency, percentage, mean, weighted mean, Pearson r-correlation, t-test and f-test were used to treat the data at 0.05 level of significance for the null hypothesis. The grand mean age of the respondents is 34.74 or 35. They are female faculty dominated professionals mainly Bachelor's degree holders. Majority of them are in the field of business and education that are rendering their services in a form of contract of service nature of appointment. The administrators, faculty members and staff are just moderately aware of the are just moderately aware of quality assurance mainly on governance and management, integrity , institution's management, financial control and quality assurance arrangement to respond to development and change, and the institution's governance arrangement that demonstrates effective monitoring performance, less aware in the institution's sufficient management, financial control, and quality assurance arrangement to manage the existing operations, and just somewhat aware in the institution's relation with the community. They are also moderately aware of institutional sustainability along financial resources, organizational strategy, external cultural framework, organizational management, but less aware on legal and political framework, and quality of professional exposure, research and creative works and linkages/networks. The null hypothesis which states that there was no significant relationship between the internal stakeholders and selected profile and their level of awareness on quality assurance and institutional sustainability were accepted at 0.05 level of significance respectively. The profile of the administrators, faculty members and staff did not affect their level of awareness on quality assurance and institutional sustainability. The null hypothesis which states that there was no significant difference among administrators', faculty members' and staff level of awareness on quality assurance was accepted along quality of professional exposure, research and creative works but rejected along governance and management, quality of teaching and learning, support for students, relation with the community at 0.05 level of significance. The null hypothesis which states that there was no significant difference among administrators, faculty members' and staffs level of awareness on institutional sustainability was accepted along organizational management, financial resources, infrastructure, performance, competence, and linkage/networks but rejected along organizational strategy, personnel, cultural framework, and participation and legitimacy at 0.05 level of significance. The administrators should develop and implement efficient and effective faculty and staff development plan in the different fields related to programs offered and build up and employ a system to inculcate the culture of quality among all stakeholders specially the administrators, and collaborate with external organizations or institutions and offer extension services to enhance linkages/networks, quality of professional exposure, research and creative work to increase awareness on quality assurance and institutional sustainability.

Morphometric Characterization of the Southern Cauayan Municipal Forest and Watershed Reserve (SCMFWR) using GIS

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Abstract

This study describes the morphometric features (linear, aerial, relief) of the three major river systems found at SCMFWR and relates these information to an existing study on the hydrological profile of the river in order to characterize the responsiveness of the watershed to rain events or its susceptibility to natural calamities like flood and erosion. These information are useful in making appropriate conservation and management decisions for the watershed. The basis of the computations used in the study is the DENR Manual for the Watershed Characterization. It used existing thematic and topographic maps and ArcGIS© to analyze and generate the basic morphometric properties of the watershed. The morphometric results show that the three rivers are designated as third order, with a total of 66 streams, dominated by first order steams. Bifurcation ratio is low to moderate. Elongation ratio and circularity ratio reveal an elongated watershed. Low values of drainage densities and stream frequency, and a coarse drainage texture indicate that the area has widely spaced streams, dense vegetation, high infiltration capacity and has permeable soil and rock subsoil. Length of overland flow, basin relief, relief ratio and ruggedness number reveals a gentle to medium slope and a relatively flat terrain suggesting a flatter peak of flow. The morphometric results confirm and support the earlier study on the hydrological profile of the area and led the researcher to infer that the rivers have low sediment transport capacities, the basin is less prone to erosion and flooding and the watershed has high capacity for groundwater recharge. These characteristics make the watershed ideal for conservation. It is currently a source of domestic water for residents and as irrigation water for people downstream. More significantly, the results of the study could serve as basis for LGUs benefited by the watershed to pursue collaborative management.

Keywords: Southern Cauayan Municipal Forest and Watershed Reserve (SCMFWR), morphometry, GIS, watershed, Negros, rivers

Vegetative Growth Responses to Boron Toxicity of *Vigna radiata* L. (Mungbean) 'NSIC Mg 17'

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Abstract

After the Philippines experienced one of the most severe El Niño last 2015 to 2016, there is likelihood that this will again form this 2017. This could lead to extreme drought causing the agricultural sector to depend on groundwater as an alternative source of irrigation--a

contributory factor to boron toxicity in plants. With this assumption, this study was conducted to investigate the vegetative growth responses to boron toxicity of *Vigna radiata* L. (mungbean), an economically important Philippine legume, using a local cultivar, 'NSIC Mg 17' or 'Mabunga 4'. Hydroponics culture method with increasing boron concentrations was utilized in the experiment. Results showed that concentrations of up to 25 ppm caused a decrease in plant survival percentage, root and shoot elongation, and plant dry weight; and an increase in the number of chlorotic and necrotic plants. Among these growth parameters, excessive boron significantly influenced plant survival percentage and number of chlorotic and necrotic plants only. These findings indicated that only trace amounts of boron were essential for the vegetative growth of mungbean. Similar investigation on the effects of boron toxicity using other local crops may also be done for additional information and as basis in making policies concerning agricultural practices.

Keywords: hydroponics, mungbean, necrosis, vegetative growth, Vigna radiata

Biodiversity of Earthworms on Selected Sites in Mt. Tabayoc, Kabayan, Benguet

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Abstract

Mt. Tabayoc, Kabayan, Benguet is the second highest mountain in Luzon, next to Mt. Pulag. It is suspected to be harboring diversity of earthworms since it is one of the Protected Areas in the Cordillera Mountain Ranges and is predominantly forested. Nine presumptive and one confirmed species under the Family Megascolicidae were identified based on morpho-anatomy (*Pheretima* (1 species), *Amynthas* (4 species), *Pithemera* (1 species), *Metaphire* (1 species), and *Polypheretima* (2 species). While two species were verified using DNA barcoding, only one species was identified up to species epithet, the *Pheretima philippina*. The abundance of species in a particular site is found to have positive correlation with temperature. Diversity analyses revealed that there was significantly higher diversity in undisturbed areas as compared to disturbed sites (i.e. forest transformed into agricultural land) indicating the importance of conserving the landscape to maintain high biodiversity. Based on the KAP survey, earthworms are not yet considered as pest in their locality.

Keywords: biodiversity, earthworms, Mt. Tabayoc, DNA barcoding, COI gene, KAP survey

Belief and Attitude among University Students towards Solid Waste Management (Swm): Its Implications to Revisiting the Curriculum

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Abstract

Despite the different programs and ordinances implemented, solid waste management (SWM) problem remains to be a menace. For almost two decades after the implementation of R.A. 9003, the Philippines is still facing this problem. The underlying reason is the mind-set of the people – their belief regarding SWM. Ajzen's Theory of Planned Behavior (TPB) explained that belief is the underlying influencer of attitude/behavior. For instance, an individual takes action based on what he/she believed is right/wrong. Academes could imbue their students the right belief towards SWM. Curriculum could be revisited; subjects in SWM and sustainable development could be added. Hence, for policy-making purposes, this descriptive-survey study was conducted with university students to determine their beliefs and attitude towards SWM issues. Though most of them agreed that they have roles to play in SWM, the major findings of the study are the following: many of the respondents believed that SWM is not their concern and trash could be deposited anywhere when there is no SWM facilities available, that SW is a natural product of nature and could be burnt. And, almost all of them, however, believed that education is the best way in fixing SWM problem.

Keywords: Solid waste management, belief, attitude

Response of Irrigated Lowland Rice (NSIC Rc212) to Water Management System and Method of Nitrogen Fertilizer Application

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Abstract

The study was conducted to: 1. To determine the growth and yield performance of lowland rice NSIC Rc212 to water management system and method of N fertilizer application; 2. To determine the appropriate method of N fertilization for lowland rice to water management systems; and 3. To evaluate the cost and return analysis on lowland rice production as influenced by the different water management systems and method of nitrogen fertilizer application. The study was laid out in split plot arranged in RCBD with three replications. The water management was designated as the main plot while method of N fertilizer application as the subplot. Intermittent irrigation reduced water used by 70.66 % compared to continuous flooding. Rice plants grown under intermittent irrigation significantly grew taller, produced more number of tillers, higher LCC reading, higher LAI, produced abundant straws, more

resistant to root pulling, abundant number of NRS, and more elongated NR axis that contributed to achieve higher root dry weight and more production of productive tillers but not on the production of grains. Fertilized plants in T_3 obtained significantly higher grain yield, number of productive tillers, percent filled spikelets, weight of 1,000 grains and harvest index than the control. This was comparable to those fertilized plants under T_2 and T_1. Plants grown under continuous flooding obtained a high net income of PhP 46,786.80 than those plants under intermittent irrigation. Fertilized plants in T_3 under continuous flooding achieved the highest net income of PhP 56,744.80. However, the lower net incomes were achieved in unfertilized plants under both intermittent irrigation and continuous flooded conditions.

Keywords: irrigation, rice, plant physiology, water managements, agriculture

Cyprinidae 'Paet' as Toxine Eliminator of Water Quality within the Abandoned Mining Siltation Pond of Trident: A Water Analysis

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Abstract

This is a qualitative-descriptive study that described the potential of Cyprinidae "Paet" as Bio-indicator of minerals and other chemical compounds present in the abandoned mining siltation pond in Narra, Palawan. During the process, the "Paet" were exposed and housed in the aerated aquarium at a temperature of 26-28 degrees Celsius and under a photo period of 12 to 14 hours of lighting. There were four (4) set-ups made, a control set-up and the 3 experimental setups. Chemical test was conducted to find out the minerals and other chemical compounds present in the abandoned mining siltation pond of Trident before the exposure of Paet. The result showed the presence of the following minerals such as Iron (Fe+6), Sodium (Na+), Calcium (Ca+2), Phosphorus (P+), Chlorine (Cl) -, and Magnesium (Mg+). The presence of some chemical compounds were also observed like Phosphate (PO4) -2, Pentoxide (P2O2) -, and Calcium Carbonate (CaCO3) -.Chemical test was made on the water samples after 12-14 days of exposure with Paet at different set-ups. It was found out that there is a significant removal of heavy metals like iron in the 3rd samples with 6 fishes with foods. Phosphorus had negligible value. The increase in the amount of Calcium Carbonate, Calcium and Magnesium in the 3rd sample was also observed due to the foods that were fed to the fishes. Chemical compounds such as Pentoxide and Phosphate had negligible values in the 2nd sample. This implied that the absence of the foods and the size of the fish were the factors to decrease the amount of minerals and chemical compounds in water. Physical test on water was also conducted before and after the process. It was found out that there is a significant increase in the conductivity, salinity, turbidity and ph level of water in the 2nd samples with big fishes and the absence of foods. Evidences on the chemical and physical tests proved that Cyprinidae "Paet" is a potential bio-indicator to lessen the amount of minerals and chemical compounds in the siltation pond of any mining industry.

Unos, Mangingisda, Kooperatiba: Disaster as a Social Construction in an Urban Coastal Barangay

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Abstract

This paper illustrates how disaster is crafted by the fisherfolks in an urban coastal barangay in the city of Parañaque as members of fishing cooperatives. Anchored on the theoretical lens posited by Hannigan (2006), this study argues that disaster is socially constructed which "does not rise and fall according to some fixed, asocial, self-evident set of criteria." Joel Best notes that "constructionism," as cited in Hannigan (2006), "is not only helpful as a theoretical stance but also that it can be useful as an analytical tool." Specifically, it focuses on claims-making activities concerning disaster as subject of analysis. This paper therefore highlights the grievances, assertions, and demands of the cooperative-based fisherfolks as part of their claims-making activities. This research used qualitative methods using field observation, in-depth interviews, review of secondary data, and focus group discussions. Tools used were field notes, recorder, and transcriptions. Initial results uncover that the idea of disaster is framed based on how the fisherfolks make sense of their fishing experiences, support provided by the fishing cooperatives, and how they deal with danger in the open sea including natural and man-made calamities. Moreover, the local government lacks the sensitivity in responding to the needs of the fisherfolks. In conclusion, disaster is constructed beyond environmental problem but a social problem that affects the livelihood, food security, and safety of the individuals and society at large.

Keywords: disaster, social construction, fisherfolks, social problem, fishing cooperative

Efficacy of Stain from Turmeric *Curcuma Longa* Products used to Enhance Monocot and Dicot Stem Sections

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Abstract

Use of staining agent in examining specimens under a microscope is highly recommended to have a better, clearer view of its image formed. But, the accessibility of the chemical staining agents especially to areas and or schools away from urban places where to buy this is a reason why students could not enjoy the beauty of scientific experiments. The primary purpose of this study is to obtain stain from Turmeric (*Curcuma longa)* products, **curry powder** and **luyang dilaw** powder, and test their effectiveness as staining agents in monocot and dicot angiosperm stem. The 15g and 20g of turmeric and Luyang dilaw powders were weighed using a triple beam

balance and mixed with 100 ml of 70 percent isopropyl alcohol in a beaker. The mixtures were transferred into several 25 ml test tubes and then centrifuged at 3000rpm for 5 minutes. The supernatant from each mixture were collected using a glass pipette and filtered using filter paper while transferring it into another beaker. It was observed that at concentration 20g revealed more appreciable compared to 15g for both stains. But, stain from luyang dilaw is even better than that of curry powder. Finally, specimens used in the experiment with the luyang dilaw stain revealed more appreciable structures compared to that of curry powder. Therefore, between the two yellow stain shades, luyang dilaw can give a better result in studying monocot and dicot stem sections.

Floral Diversity and Phytosociology of the Beach Forest Patches in Pan-ay, Capiz Western Philippines

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Abstract

This research project was initiated to describe the floral diversity and structure of beach forest community in the three coastal barangays (Buntod, Navitas and Lat-asan) in the municipality of Panay. Specifically this study revealed the different plant species that was found growing in the beach forest of each barangay. It showed a picture of the plant community thriving in the beach forests according to the following parameters: species composition species diversity and distribution, basal area, relative frequency, relative dominance. The levels of intrusion (anthropogenic and natural) in the beach forest areas were also determined. Circular plot method was used. Measurements of tree diameter at breast height and frequency count for individual species were done. Species were identified onsite and plant samples were collected for further taxonomic identification. Results of the study discovered thirty nine 39 different species of plants. Buntod is the most diverse area having 26 species, followed by Navitas with 22 species, and lastly Lat-asan with only 10 species. *Terminalia cattapa* has the highest basal area in sampling sites which indicates the growth of mature trees. Single monospecific stand *of Casuarina equestifolia* was found in Navitas, a relict of previous succession. Shoreline creepers : *C. maritime, I pes-caprae* and *S. litoreaus* grows extensive covers in the sampling sites. Buntod has four *Pandanacea* species, while Lat-asan had a high intrusion impact due to the cutting of trees, clearing for fishponds and human settlement. The result of this study initiated to establish local initiatives such as forest recovery, protection, conservation and species propagation. Recommended species for reforestation includes: *Casuarina equisetifolia, Camptostemon philippinense, Cerbera manghas, Baringtonia asiatica, Rhizopora spp. , Xylocarpus granatum , Milletia pinnata, Heretieralittoralis* and several others.

Keywords: beach forest, forest, mangroves, plant, ecology, coastal ecology, education, school, nursery, local initiatives.

Bamboo Species Inventory in the Riparian Habitat of K'laja Karsts Area, General Santos City Philippines with Notes on its Local Utilization

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Abstract

Bamboo species composition, abundance, and diversity along two riparian habitats of Klaja Karst Area General Santos City, the Amsicong River and Sansapan River, were assessed by means of systematic based adaptive cluster sampling. Description of the riparian habitat through qualitative analyses of soil physico-chemical parameters including notes on bamboo local utilization of the community were as well described. A total of five species were documented belonging to four genera that includes *Schizostachyum lumampao, Dendrocalamus giganteus, Dendrocalamus asper, Bambusa blumeana* and the rare species of sympodial bamboo, *Cyrtochloa* sp from a newly assigned genus. Simpson's diversity index revealed an average diversity level in Amsicong area (D=0.62) and high diversity level in Sansapan area (D= 0.23). Higher abundance of bamboo species was observed in a sandy and slightly acidic (6.8-7.6 pH) environment with high contents of Nitrogen, Phosphorus and Potassium (NPK). S*hizostachyum lumampao* found to be the most abundant species in the area with a standing-culm density of 3.24 culm/m^2 in Sansapan area and 2.2 culm/m^2 in Amsicong area. Backyard bamboo-based industry thrives in the area particularly furniture making. For local use, bamboo is used as building material and for traditional purposes such as for traditional cooking.

Keywords: adaptive cluster sampling, Klaja Karst Area, bambuseae, bamboo resource utilization

Isolation and Culture of Benthic Diatoms Potentially Useful for Top Shell (*Trochus niloticus*) Mariculture

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Abstract

Benthic diatom films are traditionally used to induce settlement and as initial food in marine invertebrate hatcheries. A method commonly used is to establish a visible or dense film of diatoms using flow-through in tanks to trigger settlement and to provide food for post-larvae. However, without control over the diatom species combination, settlement and corresponding growth rates of cultured marine invertebrates are unpredictable. Hence, it is important to isolate locally adapted and suitable benthic diatoms that can be used for settlement and growth of various marine invertebrates in hatcheries. In this study, three isolated diatom species (*Navicula ramosissima, Pleurosigma* sp., and *Cocconeis* sp.) were isolated, identified, and used as food source for top shell (*Trochus niloticus*) juveniles. Early juveniles (2 mm shell diameter) were cultured in culture dishes and given the 3 diatom species as food source for 24 days under

laboratory conditions. Highest growth rate was achieved on *N. ramosissima* in terms of shell growth (23.33±0.64 µm/d) as compared to *Pleurosigma* (12.36±2.17 µm/d) and *Cocconeis* sp. (12.64±0.77 µm/d). In terms of weight gain, fastest growth was observed using *N. ramosissima* (1.13±0.10 mg/d) than the other treatments, *Pleurosigma* and *Cocconeis* at 0.43±0.09 mg/d and 0.55±0.09 mg/d, respectively. Significant differences were observed in shell growth and weight gain between *Navicula* and the two other treatments beginning day 12 ($P<0.05$), which persisted until the end of the experiment. On the other hand, survivorship of the early juveniles was not affected by the food items they consumed. The growth rate of the early juveniles was probably affected by the quality (size, biochemical composition, etc.) and quantity (density) of food ingested. It is important to screen isolated diatoms before use in marine invertebrate hatcheries. For the culture of top shell (*T. niloticus*), *N. ramosissima* appears to be a suitable food source for early juvenile stage. This diatom grows fast, easy to culture, and maintain under laboratory conditions.

Keywords: Navicula ramosissima; Pleurosigma; Cocconeis; Growth, Survival

Sustainability of Indigenous Upland Rice Production: A Basis for Policy Recommendation and Formulation

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Abstract

The study aimed to determine the sustainability of indigenous upland rice production for policy recommendation and formulation. It uses questionnaires, FGD, PI and identification in getting important data. A total of 250 respondents taken from multi-stage sampling is utilized. Results revealed that crop rotation, slashing, plowing, harrowing, and furrowing were land clearing and cultivation that were highly practiced. Hill method of planting, grass cutting, integrated pest management, traditional methods of controlling pest and diseases were also highly practiced Bladed convex iron is used for harvesting while foot is used for threshing. Multi-purpose pavement dryer for drying products and own houses as storage. Highly practiced beliefs were the use of traditional farming calendar, consulting rice farming ritualist and supplicatory prayers. Rituals such as soil greetings, control of pest and disease and harvesting were existing. Private traders was highly accessible market. Radio is always accessible source of agricultural information. There were 24 upland rice varieties identified. The germination percent of these rice varieties ranges from 73.66% (Guyod) to 96.66% (Bares). Tillering capacity ranges from 2.33 to 3.00. There were useful insects highly available such as spider, dragon fly and butterfly. The overall sustainability of the indigenous upland rice production is moderate. As computed, the socio-economic profile is related to sustainability. Recommend policy on the conservation of the existing indigenous upland rice varieties and its exploitations.

Keywords: Sustainability, indigenous upland rice, traditional farming, rituals, supplicatory prayers

Agricultural Knowledge Management in the Local Extension Services of Selected Masbate Municipalities, Philippines

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Abstract

Agricultural research and extension organizations generate and disseminate new knowledge to enrich farmers' management options and strategies, and improve their farming practices. This study analyzed the system of agricultural knowledge management in the local agricultural extension office in three municipalities. Data for the study were obtained through interviews with key informants including municipal and city agricultural officers (MAO/CAO) and agricultural technicians (ATs). In the surveyed extension offices, agricultural innovations were mainly sourced from the Department of Agriculture (DA) and its attached agencies and bureaus. Practically, no formal technology or knowledge creation activities emanated from the local extension service. Hence, new agricultural knowledge were largely acquired through the participation of MAO/CAO and ATs in trainings, seminars and collaborative undertakings with DA-affiliated agencies. Evidence of a formally organized system of sharing acquired knowledge between and amongst MAO and ATs is scant hindering the propagation and development of such into organizational knowledge. There appeared to be a lack of formal documentation of successful agricultural innovations and best practices done by farmers. Respondents recognized the need for a systematic collection, organization, and documentation of newly acquired and locally generated knowledge so that they can be stored and retrieved by potential users. It is recommended that program successes and failures and their contexts be documented to promote organizational learning from experiences. Furthermore, the LGU extension service need to invest in information technology to facilitate access to alternative knowledge sources and recording of valuable information for better knowledge management and improved quality of extension services to farmers.

Keywords: knowledge management, extension service, knowledge generation

Rice-Fish Farming in Pangasinan, Philippines: A Farmland Use Optimization Experience

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Abstract

After 2,000 years, rice-fish farming experienced a revival in the province of Pangasinan, Philippines. The rice-fish farming, an approach to farmland use optimization, is a new experience to three initiators. This study was carried out generally to examine the rice-fish farming, its influence to bio-physical environment and the socio-economic conditions of the rice-fish farmers. Descriptive research technique through field surveys and survey questionnaire were used. From the result, it was fund out that the initiators of rice-fish farming who owned the farmlands were elderly yet schooled rice farmers and members of farmers organization. Their farmlands with varying farm type, physical, and chemical soil characteristics improved the soil fertility as influenced by the presence of fish. Rice-fish farmers experienced increase of income of about 20% from the production of both rice and fish and assurance of reliable source of protein for their families. Despite the risk and tedious task, rice-fish farming not only optimize the farmland but also protect nature's cycle. An intensive Information, Education and Communication (IEC) and training needs assessment for would be rice-fish farmers especially the younger ones should be conducted out by the local government units with the Department of Agriculture and the local farmers organizations to ensure appreciation and adoption by many, and sustainability of rice-fish farming in the province.

Honda Bay Island Hopping in Puerto Princesa City, Palawan: Its Ecological and Socioeconomic Contribution

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Abstract

This study examines the ecological and economic benefits derived in transforming a small-scale fishing village of Sta. Lourdes, Puerto Princesa City into a community-based sustainable tourism site catering to an average of 600 visitors a day. The establishment of Honda Bay Boatowners Association was vital in this community's transformation. Before (year 2007) and After (year 2014) study method, which involved key informant interviews, household interviews, focus group discussion and site validation were used. Results indicate that the present condition of mangroves (+25%), beaches (+23%), and coral reefs (+14%) are progressively improving during the past seven years; however, seagrass beds (-2%) near the Sta. Lourdes Wharf are deteriorating due to oil spill from confiscated boats. There is a general view that the bay's reef ecosystem is gradually restored as dominant catch composition are reef-associated species. Majority of fishers' income source has shifted from fishing to tourist boat service. In 2007, fishing was the major source of income with 54% of boat owners and 61% of boatmen. However

in 2014, tourist boat service has become the major income source of about 86% of boat owners and 93% of boatmen. For inclusive economic growth, the association should establish spin-offs for other community stakeholders.

Keywords: sustainable tourism, ecosystem services, fishing

The *Aytas* of Floridablanca and Their Capacity to Adapt to Future Climate Hazards

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Abstract

Similar to many Indigenous Groups, the *Aytas* of Floridablanca, Pampanga, were dependent on natural resources for their livelihood and food. However, their natural resources as well as livelihood are highly vulnerable to the effects of climate change. It is important to determine the *Aytas'* adaptive capacity to climate change, otherwise, climate change could aggravate the *Aytas'* vulnerability and impede development in their communities. The study analyzed the adaptive capacity of the Floridablanca Indigenous Cultural Community (ICC). Using the Sustainable Livelihood Approach Framework of the Department for International Development (DFID) (1990), the Natural, Physical, Economic, Human and Social assets of the households and the ICC were accounted and used to compute for the ICC's Household Adaptive Capacity Index (HACI). The HACI revealed that *Aytas* have a medium or limited adaptive capacity. The *Aytas* are capable of recuperating from a single climate change related event but will have difficulties recuperating from successive ones (e.g., typhoon after prolonged drought, typhoon following a typhoon). There is a room for improvement to the adaptive capacity of the Floridablanca *Aytas* to climate change. The study recommends improving all five different assets of the ICC in order to increase their capability to face extreme climate-related events.

Keywords: Indigenous Peoples, Aytas, climate change, adaptive capacity, adaptation

Canonical Correspondence Analysis of Larval Mosquito Diversity and Habitat Characteristics Association in Selected Areas of Cavite, Philippines

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Abstract

Existence of larval mosquito habitat and the type of mosquitoes that they cater are one of the most important factors that contribute to increased frequency of mosquito-borne diseases in

the Province of Cavite. The aim of this study was to describe and visualize the mosquito preferred habitat using an ordination diagram. A total of 7 municipalities and 3 cities were surveyed from December 2015 to April 2016 for mosquito larva and habitat characteristics. Canonical correspondence analysis (CCA) was done using the Paleontological Statistical Tool (PAST) to elucidate the relationship of mosquito species with the respective habitat characteristics. A total of 7 mosquito species were identified from 217 sampling points and 10 environmental covariates were recorded. CCA produces 2 axes: the 1st canonical axis represents the upland and lowland areas of Cavite as influenced by increasing elevation and temperature while the second canonical axis represent the different habitat quality. Position of species centroids along the canonical axes confirmed their habitat preference and association. The generated model could serve as an important source of information in crafting vector control and management plan across the province to mitigate possible onset of mosquito-borne outbreaks.

Keywords: mosquito larva, habitat association, CCA, Cavite, Philippines

In Vitro Study of Anticholinesterase and Antioxidant Activities of Endophytic Fungi Isolated from *Sechium Edule* (Jacq.) Sw.

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Abstract

Degenerative diseases are among the disorders that affect millions of people worldwide. These are linked to oxidative damage due to free radicals. Nerve cells are also greatly affected by their activities, as well as the activity of cholinesterase that breaks down neurotransmitters, which eventually lead to neurodegeneration. Fungal endophytes isolated from the fruit of *Sechium edule* were tested for their antioxidant activity using the ABTS and DPPH assay, and anticholinesterase activities using TLC and UV-Vis spectrophotometry. Five endophytes showed activities in these assays and were identified as *Aspergillus* sp., *Mucor fragilis*, *Cladosporium cladosporioides*, fungal isolate 5C, and fungal isolate 6A. The lattermost showed the best result for anticholinesterase activity at 27.68±8.52% which was significantly higher than the blank, whereas *M. fragilis* showed the best results for antioxidant activity at 80.87% (DPPH) and 22.84±1.70% (ABTS) among the fungal extracts. Results strongly suggest the therapeutic importance of the bioactive compounds from the fungi, especially for their antioxidant activities.

Keywords: Sechium edule, endophytic fungi, anticholinesterase, antioxidant, in vitro analysis

Job Competence and Functional Capability of Elderly Living in a Disaster Risk Region

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Abstract

This study determine the job competence of working retirees as function of functional capability in terms of physical and mental health. A total of 102 respondents from eleven public higher education institutions and seventeen private higher education institutions with graduate school in Region 8, Philippines. Correlation analysis was used to determine if relationships exist between job competence and functional capability. The analyses of the data revealed that job competence of the respondents had positive relationship with their functional capability based on physical and mental health. It is noteworthy that these findings have implications to the work confidence for both government and non-government employees who have extended their employment after retirement. The results are also fertile grounds for further research.

Keywords: job competence, retiree, physical health, mental health, functional capability

Assessment of Selected CBFM Areas in Negros Occidental

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Abstract

The study focuses on the assessment of Community Based Forest Management areas in Negros Occidental implemented, managed and operated by the two People's Organizations such as Bagong Silang Binhi Farmers Association Incorporated located at Brgy. Bagong Silang, Don Salvador Benedicto and United Canlusong for Upland Reforestation and Development located at Brgy. Canlusong, E.B. Magalona. It seeks to determine the extension and funding support services, empowerment of CBFM members towards project implementation, types of forest tree species and agricultural crops planted, gender issues, benefits derived from the project in terms of incentives, access and security of tenure, and sustainability of CBFM implementation in terms of natural resource capacity, community capacity building and role of support organizations or institutions. The study uses focus group discussion and interview with the two PO Officers and members. Secondary data were gathered from the files and records of the concerned POs and DENR-CENRO Bacolod City. Study showed that not only the Department of Environment and Natural Resources supported and funded the implementation of the different reforestation projects of the two organizations but also from private sectors represented by Energy Development Corporation (EDC) that generously supported the project implementation. Several trainings/workshops were conducted to PO officers and members to enhance their knowledge and skills in the project implementation, protection and maintenance. But despite investments and community organizing efforts, farmer training, and related capacity-building efforts, some community organizations are still need technical support in carrying out their obligations under

the CBFMA. All member of the POs are free to access the whole area awarded to them. They have enjoyed and received equal shares financially and by means of harvested products. The implementation of the projects is sustainable in different aspects such as natural resources capacity, community capacity building and the well define role of support organizations.

Keywords: *reforestation, agroforestry and community based forest management*.

Assessment and Economic Valuation of Seagrass Meadows in Del Carmen, Siargao Island, Philippines

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Abstract

This study deals on assessment and economic valuation of seagrass meadows in Del Carmen, Siargao Island. A modified uniform transect-line quadrat method was used with three stations and six quadrats established in the study area. A total of seven species were found in three stations namely: *Cymodoceaserrulata, Cymodocearotundata, Haloduleuninervis, Syringodiumisoetifolium*, *Halophilaovalis*and,*Thalassiahemprichii*and Enthalusacoroides species which occupies dominantly. The index of dominance in Station Three had low value, the index of diversity was not very high and the evenness had the highest density with 35.5 percent cover. The salinity ranged from 26 ppt to 28 ppt; turbidity ranged from 88 cm to 134cm; temperature ranges from 32.2 °C to 33 °C and water depth ranged from 2.35 m to 4.05m with a total 0f 450 hectares. Estimation of the economic value of seagrass meadows in the waters of Del Carmen, Siargao island as the total economic value (TEV=use value+non-use value) is 17,142,880.91 considering the area covered by seagrass meadows. The fisherfolks as stakeholder should be provided with continuing education regarding conservation and economic valuation of seagrass meadows.

Keywords: assessment, seagrasses, seagrass meadows, economic valuation

Failure Mode and Effect Analysis (FMEA) and Reflection among Medical Technology Students in Improving the Health-Care Waste Management in Southwestern University, Cebu City

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Abstract

Health-care wastes (HCW) are special wastes that need utmost attention by medical institutions that produce them in substantial amounts not to mention their mixing with general wastes that complicates further the Cebu City-wide waste management. Hence, a continuing study involving level 3 Medical Technology students is pursued to identify faulty areas and processes in an existing means of management of health-care wastes generated by Clinical Chemistry classes in Southwestern University Phinma conducted in the second semester of academic year 2016-2017

using the Failure Mode and Effect Analysis (FMEA) and reflection strategies. The HCW classed primarily into six (6) types namely: general, sharps, rubbers, biohazards, inorganic chemical, and organic chemical will be the areas that will undergo scrutiny. The processes such as the assignment of students in-charge of wastes per class, segregation of HCW, scheduling of HCW collection, and monitoring by accountable personnel will be part of the study as well. The data that will be obtained from the study in the form of cause-and-effect from FMEA and common themes from reflection narratives of the students shall provide useful data for improving the current practices in handling the HCW generated.

Risk Perceptions, Attitudes, and Risk Coping Strategies of Mango Farmers in Negros Oriental, Philippines

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Abstract

Mango production is a risky enterprise owing to the biological nature of the production process. Various bio-physical, socio-economic, political, and market-related factors pose varying levels of threats to the profitability of mango farming. The study sought to determine farmers' perceptions on risks affecting mango production, their attitudes towards risks, and their coping and management strategies. Using survey questionnaires and purposive sampling strategy, a total of 100 farmers from five municipalities in the province of Negros Oriental provided data for the study. Results show that the surveyed mango farmers faced recurring and substantial production, marketing, and financial risks as major concerns in their farming operations. Insect pest infestation, weather variability, and disease outbreaks were considered major risks with direct impact on yield. Volatility in prices of produce was identified as the second most important risk directly affecting farm incomes. On the other hand, access to sufficient capital to meet production requirements and expected obligations, and ability to meet profit projections were the major financial risks. The surveyed farmers were generally risk-averse, and employed a variety of coping strategies that resembled mostly risk avoidance practices such as pre-emptive pest management strategies, reconfiguration of timing for floral induction, irrigation, nutrient management, and contract market arrangements. As a priority high value crop, the study recommends that government extension agencies develop and implement educational programs geared towards enhancing the risk coping and risk management competencies of mango farmers.

Key words: Risks, risk perception, risk aversion, risk coping strategies

Soil Erosion: A Mapping of Southern Palawan Cross Connecting Road Risk Areas

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Abstract

Roads is considered to be one of the most important determinants of development. Road accessibility determines in different situation as describe and measures to a location of interest, specifically crossing the risk of soil erosion or landslide prone areas. Soil erosion has a great impact to the nation as the economic benefits diminished and increased hardships to both producer and consumer of agriculture products. In this study, soil erosion along the cross connecting roads of Southern Palawan specifically the national roads in the municipalities of Narra, Quezon, Rizal, Bataraza, Brookes Point and Sofronio Espaniola were documented. Locations were identified and tagged using Geographic Information System to further verify erosion, control and rehabilitation techniques as well as linkages between road and soil erosion. In this study, 53 sites were identified and has physically appeared soil erosion. There are 21 showed collapsed roads and partly passable, 10 hanged pave roads, 8 areas with stiff landslides, 14 gully erosions were documented and tagged respectively, none of those has proper signage. Notably, landslides and or erosions causing hindrances to the distribution and transportation of agriculture inputs and produces considering both the individual and societal risk.

Key word: Soil erosion, Geographic Information System, land slide, gully erosion

Vegetation Analysis of Mangrove Forest of Dulapo, Oroquieta City, Misamis Occidental, Philippines

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Abstract

A vegetation analysis was conducted at the Mangrove Forest of Brgy. Dulapo, Oroquieta City Misamis Occidental, using a Modified-Whittaker nested method. Three (3) 20m X 50m (1000m^2) plots were established and placed randomly along three designated zones of the area namely: landward zone, middle zone and seaward zone. The establishment of plots and data gathering were conducted in ten (10) non- successive days. Thirteen (13) species, nine (9) true mangroves and four (4) mangrove associates belonging to ten (10) families namely; Acanthaceae, Arecaceae, Combretaceae, Lythraceae, Malvaceae, Meliaceae, Myrsinaceae, Rhizophoraceae, Lamiaceae, and Moraceae were identified. The data gathered were utilized to calculate the attributes needed to determine the Important Value Index (IVI), Similarity Index (SI) and Shannon-Wiener Diversity Index (H). *Nypa fruticans* is the most abundant species (IVI= 53.63%).

The middle zone and seaward zone has the highest percentage of resemblance of species (SI= 88.89 %). The mangrove forest has a relatively high diversity (H= 1.43) compared to other mangrove communities of the Philippines. The seaward zone had the highest level of diversity (H= 1.32), followed by the landward zone (H= 1.30) and middle zone (H= 0.77).

Keywords: mangrove, vegetation analysis, diversity, Modified-Whittaker nested method, attribute

Importance of Sanchez Mira, Cagayan as a stopover site for the migratory Grey-faced Buzzard (*Butastur indicus*)

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Abstract

Stopover sites along migration flyways are important feeding and resting grounds for migratory birds such as the Grey-faced Buzzard, which use the oceanic flyway connecting wintering grounds in Indonesia and the Philippines to breeding grounds in Japan and Korea. No study has been conducted on the status of stopover sites in the Philippines. We sought to determine the importance of Sanchez Mira, Cagayan as stopover site through: (1) bird counts and interviews, (2) characterization of habitat, (3) stomach content analysis of buzzards killed by local hunters, and (4) assessment of prey abundance in association with habitat characteristics. One-third of the global population of *B. indicus* (35,000) passed through Sanchez Mira in March and April 2016. Lizards and insects are their major prey with small mammals as minor prey which is different from their mainly frog and insect diet in Japan. Skink abundance was associated with tree and overstory density while small mammals were associated with open canopy and few trees. Sanchez Mira is an important flyway corridor for Grey-faced Buzzards, however, the migrating population is heavily hunted. Habitat protection and a ban on hunting will help ensure the long-term conservation of Grey-faced Buzzards.

Keywords: migration, raptor conservation, Grey-faced Buzzards, prey abundance, diet

Challenges in mainstreaming Disaster Risk Reduction in the Philippine K-12 curriculum

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Abstract

The Philippines faces several natural hazards every year that usually turn out as disasters and greatly affect people's lives because they are unprepared for such acts of nature. The academic sector can help in educating its clientele. In fact this is not a new idea; besides children are most vulnerable to the perils these hazards bring. This paper looked at how responsive is the K-12 curriculum to the demands of the common natural hazards in the country. Based on the K-12 Grades 1 to 10 curriculum guide and the accompanying learning materials provided in public

schools, the learners are introduced to weather disturbances on the fourth quarter of Grade 3. Earthquakes and volcanic eruptions, two other common natural hazards in the Philippines, are introduced to learners on their Sixth Grade, while tsunami is introduced only on the Tenth Grade. But the most striking is the non-inclusion of storm surge, that hit Tacloban City and nearby areas hard during Typhoon Yolanda, in the basic education curriculum. Such late introduction of these common natural hazards and the non-inclusion of storm surge and floods in the curriculum, leave children unprepared during their early and vulnerable years of their lives; and later on as adults especially for those who dropout early from formal schools. Supplementary educational materials are therefore needed in order to prepare these children to be resilient to natural hazards.

Keywords: natural hazards, basic education in Disaster Risk Reduction, K-12 curriculum

Growth and Yield of Two Varieties of Grafted Tomatoes (*Solanum lycopersicum* L.) as Influenced by Single and Combined Application of Organic and Inorganic Fertilizers

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Abstract

Tomato is the most widely grown vegetable in the world because it's a very good source of vitamins and minerals. It outranks all other vegetables in total contribution to human nutrition because it is consumed in so many different ways. This study was conducted to evaluate the effects of organic, inorganic fertilizers and their combination on the growth and yield of two varieties of grafted tomato. The experiment was laid out in a Split-plot design with 3 replications. The varieties, Diamante max and Improved pope were designated as the main plot and the different fertilizer materials as the sub-plot which were: Control, Vermicast (10 t/ha), Chicken dung (10 t/ha), ½ RR (45-30-30 kg N, P_20_5 ,K_20/ ha) + 5 t/ha Vermicast, ½ RR (45-30-30 kg N, P_20_5 ,K_20/ ha) + 5 t/ha chicken dung, and RR (90-60-60 kg N, P_20_5 ,K_20/ ha). Application of organic, inorganic fertilizer and their combination significantly improved the growth and yield of the two varieties of tomato particularly the number of days to first flower, first fruiting, weight of marketable fruits and total yield. The application of the combination of chicken dung + $^1/_2$ RR significantly produced the highest yield and was comparable with those applied with vermicast + one half recommended rate and inorganic fertilizer alone.

Keywords: Diamante max, grafting, bacterial wilt.

Growth and Yield of Tomato (*Solanum lycopersicum* L.) as Influenced by Different Soil Organic Amendments and Types of Cultivation

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Abstract

Tomato is extensively cultivated throughout world and one of the profitable crops in the Philippines. However, its production faces different pest problems particularly bacterial wilt and adverse environmental condition that greatly reduced its yield. Two separate studies were conducted simultaneously in a single factor experiment arranged in randomized complete block design (RCBD) with three (3) replications. The studies were conducted to evaluate the effects of the different soil organic amendments on the growth and yield of tomato in the open field (Study I) and under protective structure (Study II) with the following treatments: control, cabbage waste, carbonized rice hull, chicken dung, hagonoy, wedelia, and wild sunfower. Protective structure grown plants had better protection from adverse environmental condition, thus had better performance in terms of lower bacterial wilt infection and weed incidence, higher percent survival, enhanced flowering and high yield than those grown in the open field. On the other hand, only the weight of marketable fruits and total yield were enhanced by the application of the different soil organic amendments. All of them had comparable effects but were superior than the control control. On the other hand, protected cultivation showed higher net return than open field. Particularly, sunflower amended plots was the most profitable with a profit of almost 8 times greater than the corresponding amendment done in the open field

Keywords: Bacterial wilt, Isothiocyanates, wedelia, devil weed, natural supressiveness

Coastal Marine Water Qulaity oPalawan Tourism Areas and its Implications to Biodiversity

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Abstract

The unprecedented tourism development in Northern Palawan earned the province the attention from the global community. With its natural aesthetics, the recreational spots of Palawan have been catering an increasing influx of tourists and witnessed the mushrooming of tourism-related establishments. This study sought to understand the impacts of the anthropogenic activities, which are tourism-related, on the coastal marine waters of Palawan. Three mainland municipalities of Northern Palawan where major tourism sites are found were tested for different water quality parameters. Specifically, nutrients (nitrates and phosphates), oil and grease, total coliform and physical parameters (pH and temperature) were utilized as

pollution indicators. Comparing to existing data from 2012-2015 and as against the water quality standards for recreational waters under the DENR Administrative Order No. 2016-08 for coastal marine waters, traces of pollution were detected. Majority of the sampling stations had oil and grease limits for Class SC or Recreational Waters II which is not intended for primary contact recreation. Meanwhile, total coliform levels of some stations were generally high and above the set standards for Class SC. Due to the evidence of anthropogenic input in the monitored coastal areas, potential risks are posed to marine biodiversity in the study sites.

Keywords: pollution, anthropogenic activities, parameters, marine biodiversity, Palawan

HMG-CoA reductase inhibitors from leaf associated fungi

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Abstract

Cholesterol is an important biomolecule for cells. However, because of lifestyle, the amount of cholesterol can increase beyond what our bodies can consume. This condition is referred to as hypercholesterolemia. This is may result to the accumulation of cholesterol in the blood leading to atherosclerosis. Ultimately, this can lead to congestive heart failure. Lowering the levels of cholesterol therefore reduces the risk for this disease. This reduction is mediated by compounds referred to as statins. It does so by inhibiting the hydroxymethyl glutaryl-coenzyme A (HMG-CoA) reductase, the first committed enzyme in cholesterol biosynthesis. In the light of increasing cases of hypercholesterolemia, there is a need to discover novel classes of HMG-CoA inhibitors. In this research, 71 leaf associated fungi were screened for their capacity to inhibit HMG-CoA. The highest % inhibition was observed in *Pestalotiopsis lespedezae* with 65.01 % inhibition. The other fungi with notable inhibitory activities were *Colletotrichum cymbidiicola* (64.16%), and *Schizophyllum commune* (57.85%). Results indicate that indeed fungi are good sources of HMG-CoA inhibitors. It is necessary that further research, especially looking for the bioactive compounds, be done on these fungi.

Keywords: HMG-CoA reductase inhibitors, fungi

Teachers' Awareness and Attitudes Towards Gender Roles as Well as Classroom Discipline

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Abstract

This study aimed to determine the Bangsamoro elementary and secondary school teachers' awareness and attitude towards gender roles and classroom discipline. Descriptive survey research was employed to gather the teachers' awareness and attitudes towards gender roles as well as discipline. Regression was used to measure the relationship of variables. The study was conducted in selected public elementary and secondary schools in the municipalities of Maguindanao. The respondents were 200 elementary and secondary Bangsamoro teachers focusing on the major ethno linguistic groups that comprise the Bangsamoros (Maguindanaon, Iranon and Maranao). The findings revealed that the Bangsamoro teachers possessed a progressive awareness on gender norms and attitudes towards gender roles as well as on classroom discipline. However, the Bangsamoro teachers tend to hold traditional awareness on gender beliefs, gender relations and household decision making. Furthermore, the demographic profile of the respondents like, age, length of service and training on gender roles were not significant to the awareness and attitudes of the respondents towards gender roles and classroom discipline.

Keywords: Bangsamoro teachers, gender awareness, attitudes, classroom discipline,

Overloading Activity of Passenger Tricycles in Selected Public Schools in Narra, Palawan: Basis for Municipal Transportation Policy and Implementation Review

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Abstract

This study aimed to determine the overloading activity of passenger tricycles in Narra National High School (NNHS) and Narra Pilot School (NPS), Narra, Palawan. Interviews were conducted to TODA presidents and municipal employees in Narra, Palawan on the municipal transportation policy on overloading. Selected Palawan State University-Narra (PSU Narra) students conducted a three-day observation of overloading activity in the selected schools. Tricycles that loaded more than 5 passengers in a ride were recorded. The Municipality of Narra has no ordinance on overloading passengers. There were fifty-six tricycles that loaded more than five passengers in NNHS and NPS during the conduct of the study. Some drivers have an overloading habit with twelve passengers loaded the most in a ride. The Municipality of Narra should create an ordinance to stop the overloading activity of passenger vehicles to ensure the safety of the riding public and drivers. Moreover, residents should be reminded of the danger of overloading activities.

Keywords: passengers, drivers, tricycles, TODA, road safety

Street Food Preferences of Consumers in the Sixth District of Cavite

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Abstract

A study was conducted to determine the demographic characteristics of consumers of street foods, street foods preferred by these consumers, and reasons for buying street foods. One hundred participants per municipality in the sixth district of Cavite were randomly selected through convenience sampling and were interviewed and requested to answer a prepared questionnaire. Results revealed that one third of the respondents belonged to the age bracket of 14-19, nearly one third were high school students, and more than half were female. Snack foods and cold and hot drinks were preferred. Specifically, majority love to eat "taho", various kinds of "ihaw-ihaw" and varied rice meals. A number of participants buy street foods everyday but majority say they buy these foods sometimes only. The reasons for buying street foods include affordabilty, accessibility, and taste.

Keywords: street foods, demographic characteristics, consumers, preferences

The Effect of the Integration of Reading in Teaching College Algebra on the Attitude and Achievement of Students

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Abstract

Using descriptive-experimental design, the study sought to determine the effect of integrating reading in teaching College Algebra on the attitude and achievement of the first year Bachelor of Entrepreneurship students of Palawan State University-Narra. It employed the Attitude towards Mathematics Inventory to determine the students' attitude and the Achievement Test in College Algebra to determine their achievement. Data were tabulated, analyzed and interpreted using the frequency, percentage, mean, standard deviation, Paired-samples T-test, and Pearson Test of Correlation. The students showed a moderately positive attitude towards College Algebra throughout the course of the experiment. The students in the experimental group showed an increase in the computed overall mean values of 2.83 and 3.07in the pre- and posttests, respectively. They demonstrated a fairly satisfactory achievement throughout the course of the experiment. The students in the experimental group showed an increase in the computed overall mean values of 7.77 and 11.77 in the pre- and post-tests, respectively. It can be claimed that the students' significant achievement in College Algebra can be accounted for

their attitude towards the subject at 0.05 level of significance. The students who were taught with the integration of reading in class had significant improvements in their attitude towards and achievement in College Algebra. This is further reinforced by the students' affirmative reflections regarding the integration of reading in teaching mathematics. Hence, mathematics teachers should regard the importance of the integration of reading in teaching College Algebra and do further research to affirm the influence of students' attitude to their achievement.

The Disaster Preparedness Programs and Responses of Bislig City on typhoon "Pablo"

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Abstract

This study aimed to formulate a sustainable framework illustrating the disaster preparedness and responses of the city of Bislig in Mindanao along with neighboring areas Compostela Valley and Boston, Davao Oriental. It also identified and discussed the disaster preparedness programs and responses implemented by 1.) City Disaster Risk Reduction and Management Council (CDRRMC) of Bislig, 2.) Provincial Disaster Risk Reduction and Management Council (PDRRMC) of Compostela Valley and 3.) Municipal Disaster Risk Reduction and Management Council (MDRRMC) of Boston, Davao Oriental, before typhoon "Pablo". A descriptive survey method was used in the study. The results revealed that the ecological concepts, principles and theories embedded in the disaster preparedness programs and responses of the three (3) institutions were: ecological concept that Risk is an inherent aspect of decision-making; Adaptive Management; and ecological principle that Disturbances shape the characteristics of populations, communities, and ecosystems. The ecological theories embedded in the disaster preparedness programs and responses of the above entities were: The complexity theory and the resilience theory. This study uncovered that by adapting localized disaster management, city of Bislig experienced minimal casualties during typhoon Pablo, despite of the same gale warnings and typhoon categories raised by the Philippine Atmospheric Geophysical and Astronomical Services Association (PAG-ASA) to the other provinces in Mindanao.

Keywords: localized disaster management, City Disaster Risk Reduction and Management Council (CDRRMC), ecological concepts and principles, typhoon "Pablo".

Disaster Vulnerability, Resiliency Level and Coping Mechanisms of Coastal Dwellers in Selected Barangays Of Virac

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Abstract

This study sought to determine the vulnerability, resiliency and coping mechanisms of coastal dwellers in selected barangays in Virac. It specifically sought information on the socio-demographic characteristics of coastal dwellers in selected barangays in Virac; their level of

vulnerability to typhoon-induced risks and threats; adaptation strategies employed to mitigate the impact of typhoon-induced disaster; the length of the period prior to resiliency after typhoon-induced disaster; and mechanisms adopted to cope with the effects of disaster. This study is a descriptive survey with validated questionnaire used for data collection. In the analysis, descriptive statistics were applied. The findings of the study include the following: Almost 66 percent of the respondent coastal dwellers have 5-8 members in the household; Most of them have reached high school education with almost one-fifth who are degree holders; One-fourth are skilled workers or labourers and another one-fourth are non-skilled workers; Almost 50 percent have income below P5,000; and More than one-half of the respondents (101 or 54.89%) have shelters that are Semi-concrete with galvanized roofing. As to level of vulnerability to risks and threats, the respondents encountered some forms of physical risks with "Storm surge" posted the highest level of vulnerability. Along socio-economic risks, coastal dwellers were most vulnerable to "Reduced quantity/quality of food" with the general vulnerability level being Low. For psychological and health risks, respondents were most vulnerable to "fear and nervousness" and "sleeplessness" which got the highest mean response but on a Moderate level. General level is Moderate. The five highest ranking adaptation strategies to mitigate impact of disaster are Praying, Stocking up on drinking water, Stocking up on food, Securing important things, and Always being alert. On the period of resiliency, the biggest number of respondents (173 or 94%) signified having experienced the effect, 'Damaged house'. Most of them waited for just one week before they were able to recover although there were five of them bounced back only after 5 months to one year. Other effects like 'acquired debts' as manifested by 23.91 percent of respondents, and 'difficulty to acquire money to buy basic needs' as indicated by 26.09 percent, 28 household heads in each effect had a recovery period within the range of more than 1 week to 1 month to more than 3 months to 5 months. The first five coping mechanisms employed by coastal dwellers are: Using other alternative food sources; Use of family savings; Asking assistance from parents/relatives; Having already prepared things prior to calamity; and Resorting to other income sources. The first three were manifested by more than 50 percent of the respondents with the other two indicated by more than 40 percent.

Participatory Approaches in Capacity Building among Agrarian Reform Beneficiaries in an Agrarian Reform Community in the Province of Rizal, Philippines

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Abstract

The Comprehensive Agrarian Reform Program (CARP) is the country's program on addressing landlessness among farming households. It has been implemented nationwide by the Department of Agrarian Reform (DAR). The agrarian reform beneficiaries (ARBs) have been playing active role in the development process. As such, they should be capacitated for them to truly participate in the program. Under its Agrarian Reform Community Connectivity and Economic Support Services (ARCCESS) Program, the DAR has provided agricultural extension services (AES) to ARBs through their agrarian reform beneficiary organizations (ARBOs). The

objective of the AES was to improve the crop productivity of the agrarian reform beneficiaries through capacity development on agricultural technologies and other communication and learning activities. One of these ARBOs is the Sampaloc Agrarian Reform Beneficiaries' Multipurpose Cooperative in Tanay, Rizal. Agricultural extension services in the form of training, cross-site visit, and technodemo farm were provided to build the capabilities of the ARBs. The scheme involved training of 20 farmers who will eventually become farmer-trainers. The action research was conducted in January 2015 until December 2016 and involved training needs assessment, training on ginger production, and production of training modules and technoguides. All these activities were done with substantial participation of the farmer-trainers to enhance learning and capacity building.

Keywords: participatory approaches, capacity building, agrarian reform beneficiaries, agrarian reform communities

Nematode diversity of phytotelmata of *Nepenthes* spp. in Mount Hamiguitan Range Wildlife Sanctuary, Philippines

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Abstract

Nematodes isolated from phytotelmata of *Nepenthes* in Mt. Hamiguitan, Philippines recorded three new, two known and three uncertain species of the genera *Molgolaimus*, *Dominicactinolaimus*, *Tripylella*, *Tylocephalus*, *Pelodera*, *Paractinolaimus*, *Plectus*, *Anaplectus*. Measurements and illustrations are provided. *Molgolaimus* sp. nov. is characterized by absence of pre-cloacal supplements, shape of the spicule with lamina widened distally, conical tail with swollen tip and without digitate prolongation.. Moreover, a comprehensive identification key for the genus *Molgolaimus* is presented. *Dominicactinolaimus* sp. nov. differs from *D. dominicus* by having fewer pre-cloacal supplements. *Tripyllela* sp. nov. fits with the measurements of *T. iucunda* but differs in the female reproductive system (reduced posterior vs. didelphic-amphildelphic). The morphological description and morphometrical data of our *Tylocephalus auriculatus* and *Pelodera strongyloides* samples fit well with the original description. Phylogenetic analysis of *T. auriculatus* and *P. strongyloides* supported sister relationship with respective species sequences available in GenBank. Furthermore, *Molgolaimus* and *Actinonema* were observed from the samples which support the initial discovery of marine nematodes in the *Nepenthes* phytotelmata in 2008. In addition, the presence of freshwater and marine nematode throws a new light on a better understanding of the complex scheme of *Nepenthes* carnivory and enzyme production of pitcher plants.

Keywords: new species, marine, freshwater, integrative taxonomy, ecology

Ethnobotanical Practices of Tagabawa Tribe at Barangay Jose Rizal, Sta. Cruz, Davao Del Sur, Philippines

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Abstract

Ethnobotany is the study of plants and human interaction with regards to cultural practices. This study was conducted at Barangay Jose Rizal, Sta. Cruz, Davao del Sur, Philippines to gather information on medicinal plants used by Tagabawa Tribe which aimed at documenting its detailed ethnobotanical practices. To determine the ethnobotanical practices of Tagabawa tribe, the researchers used a validated survey questionnaire. Semi-structured interviews were also administered among 50 randomly selected informants, with ages between 20 years old to 70 years old. The study revealed 47 medicinal plant species used by the tribe belonging to 36 families. The dominant family was Liliaceae (6.38%). Tagabawans mostly use leaves (57.89%) fruits and roots (15.79%) as ethnomedicines. The disease categories with the highest Informed Consensus Factor values were dengue (0.925 each), wounds (0.854) and sprain (0.833). The study revealed 28 plants species with a Fidelity Value of 100%. The major mode of preparation was decoction of leaves (58.82%) and most of the remedies were taken orally (82.14%). The study revealed that the Tagabawans were dependent on medicinal plants for their primary health care needs. Thus, conservation of the medicinal plants and preservation of the knowledge on the utilization of medicinal plants are essential.

Keywords: ethnobotany, medicinal plants, descriptive, Tagabawa Tribe, Philippines

Abundance and Size Distribution of Coquina Clams (*Donax* spp.) in the Coastal Areas of Cavite.

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Abstract

This study was conducted to investigate the abundance and size distribution of coquina clams (*Donax* spp.) in the shoreline of Cavite along with the sand temperature and water salinity. It was conducted in May to July 2015 from the 12 identified sampling stations in Ternate, Naic, Tanza, Rosario, and Noveleta, Cavite. Analysis of Variance showed that sand temperature has no significant difference within three months but salinity of water in June is significantly different from May and July. With regards to size distribution of coquina clams, significant differences were noted for size classes 23 – 28 mm and 29 – 34 mm of station 2 to all other size classes and stations. Results also revealed that there were no significant differences in the abundance of coquina clams within three months and among the 12 stations. However, there is 95%

confidence that the mean number of coquina clams per sampling area in the population from which the sample is drawn lies between a lower limit of 999.44 and an upper limit of 2,509.06.

Keywords: coquina clams, abundance, size distribution, coastal areas

Amphibians in secondary succession forests in Samar Island, Philippines

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Abstract

Wildlife species of Samar Island have not been studied extensively in recent years. The onslaught of Supertyphoon Yolanda (Haiyan) and the subsequent forest fires highlight the need for more research on these natural resources. This study, conducted last October to November 2016, focused on the amphibians in Bulusao River Watershed and Balangiga River Watershed both in the town of Lawaan, Eastern Samar. Both areas were severely affected by Supertyphoon Yolanda in 2013 and have areas cleared for farming. Bulusao River Watershed was razed by wild fires in the aftermath of Supertyphoon Yolanda and is a site of illegal logging activities for what tree was left after. In contrast, Balangiga River Watershed did not have forest fire. The amphibian abundance and species richness, in these two adjacent watersheds, varies greatly. Bulusao has two species on a part of the watershed that was not razed by fire. Balangiga River Watershed, on the other hand, has seven species and proved more abundant. The habitat damage due to Supertyphoon Yolanda was bad enough to open the river banks and streams from vegetation cover. But forest fire may have had the greatest effect to amphibians since it rapidly destroyed vegetation and habitat along its path.

Keywords: Bulusao Watershed; Balangiga River Watershed; Lawaan, Eastern Samar; Super Typhoon Yolanda (Haiyan); and Forest fire

Growth and Quality of Aquaponically Grown Kale (*Brassica Oleracea* Var. Sabellica) Supplemented with Different Nutrient Solutions

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Abstract

Kale is popular grown leafy vegetables that has received a lot of attention in recent years for its powerhouse nutritional benefits, making kale one of the so-called "super foods" which has great nutritive value and high antioxidant activity. A study was conducted in Visayas State University

inorder to assess the growth and quality of aquaponically grown kale supplemented with different nutrient solutions. The study was laid out in randomized complete block design with different nutrient solutions as treatments. Kale was harvested 36 days after planting and results obtained shows that, application of commercial nutrient solution attained higher weight per plant (g), total yield (g), number of leaves as well as root length(cm). Application of effluent, fermented kuhol, fermented malunggay and combination of fermented kuhol and malunggay reduces its yield and growth. However, the combination of this organic fertilizer to commercial nutrient solution promoted growth as well as yield but is significantly different to commercial alone. Postharvest qualities of kale have been evaluated and results showed that its pH iss slightly acidic in all treatments with higher chlorophyll *a, b,* total chlorophyll and total carotenoids in kale applied with commercial nutrient solution and in combination with fermented kuhol. However, highest free radical scavenging activity (FRSA) in kale grown in aquaponic system followed by combination of fermented kuhol and malunggay, fermented malunggay, fermented kuhol and commercial nutrient solution respectively. Therefore, application of commercial nutrient solution in combination with fermented kuhol and malunggay promotes growth and better qualities of kale.

Keywords: kale, ferments, nutrient solution, effluent

Optimization of Water Supply Allocation Using Fuzzy Goal Programming

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Abstract

One of the problems concerning clean water is the sufficiency on its supply in some area at specific period while insufficiency in others. The study aims to formulate a mathematical model that minimizes the total impact of water deficit and the transaction costs while taking into account the imprecision of the data. For this multi-objective problem that needs to capture the uncertainty of some variables and parameters of interest simultaneously, fuzzy goal programming (FGP) model was formulated. The FGP model was applied to a particular data set. Different scenarios have been considered to analyze the given water optimization problem.

Keywords: optimization, water supply allocation, fuzzy goal programming

Safe and Economical Alternative Stain from Three Common Garden Plants for Staining Plant Tissues

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Abstract

The availability and cost of chemical stains used for staining specimens can be constraints in junior and senior high schools in the country. Natural and readily available substitute stains will

not just be economically preferable but may be safer to users and environment too. This study investigated staining capabilities of atsuete (*Bixa orellana)* seeds, turmeric (*Curcuma longa)* powder and red cabbage (*Brassica oleracea*), extracted using distilled water and ethanol as solvents, in staining the stems of dicot and monocot plants. Thin transverse sections of the young stems of Lucky bamboo plants (*Dracaena braunii*) and mayana plants (*Lamium purpureum*) were submerged in the distilled water and alcohol stain extracts for 3-5 minutes and were observed under a compound microscope as representative of monocot and dicot plants respectively. The ethanolic stain extracts stained better than distilled water extracts in both plants stems. The sclerenchyma, collenchyma and xylem tissues of stem sections were stained remarkably by the alcohol extracts. But a combination of the ethanolic extracts of red cabbage stain with either ethanolic stain extracts of turmeric or atsuete gives a more noticeable and enhanced staining effect that is almost comparable to chemical stains. Hence, the mixture of red cabbage ethanol extracts with turmeric or atsuete ethanol extracts are safer and economical substitute staining agent in plant histology.

Keywords: natural dye/stains, eco-friendly and economical stains, monocot and dicot plant, plant histology

Efficacy of Wild Basil Extract (*Ocimum Sanctum* L.) as an Organic Attractant of Male Fruit Flies (*Bactrocera Philippinensis* L.) Infesting Bitter Gourd (*Momordica Charantia* L.)

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Abstract

The quest for safe and healthy food has provided the impetus for sustainable farming practices such as the use of botanicals for pest control. This study tested the efficacy of wild basil crude extract as an organic attractant for fruit flies which are major pests in bitter gourds. Specifically, the study sought to determine which method of preparation of crude wild basil extract is most effective in attracting male fruit flies and at what concentration of each preparation. The field experiment was laid out following a Randomized Complete Block Design (RCBD) with 9 treatments, each with 6 replications. Bitter gourds were grown from seeds in 9 micro-plots. The concentrations of the wild basil extract tested and compared with the control (distilled water) were 50%, 100%, prepared and administered as fresh, fermented, and refrigerated extracts. Results showed that basil crude extracts, regardless of the method of preparation and concentration, were found to have the ability to attract male fruit flies. ANOVA and LSD tests showed that at 50% and 100% concentrations fresh crude extract produced a significantly higher capacity to attract male fruit flies as compared to fermented and refrigerated extracts. Results further showed that regardless of the method of preparation, pure crude basil extract attracted more fruit flies than at 50% concentration. Findings imply that basil extracts have the potential to reduce pest damage caused by fruit flies on bitter gourds.

Keywords: organic, fruit flies, wild basil extract, attractant

Population Density of Black Shama (*Copsychus Cebuensis* Steere) in the Forest Patches of Southern Cebu

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Abstract

Point count method was used to determine the population density of Black Shama (*Copsychus cebuensis* Steere) among the selected forest patches in the four municipalities of southern Cebu namely: Badian ;Carcar; Malabuyoc; and Dalaguete. Of which one of the four study sites is part of the key biodiversity areas (KBA) in the Philippines with high conservation priority. Distance 6.2 Release 1 software program was also used in the estimation of the population density of *C. cebuensis* and the microhabitat and microclimate factors were also characterized. Badian had 33 individuals per ha with a coefficient of variation (CV) of 47.02%. Carcar has no encounter with the target species while Malabuyoc had 29 individuals per ha with 24.20% CV. Dalaguete had 20 individuals per ha with 60.46% CV. The higher variation among the sampling sites could be attributed to smaller number of samples. For Carcar there was no encounter with *C. cebuensis* this could be attributed to higher human disturbance made to the area as observed during the survey. Results of the redundancy analysis (RDA) between the response variable (*C. cebuensis* no. of contacts on Badian only) and the environmental variables (microclimate and microhabitat factors) showed that they are linearly related with each other ($p<0.05$). Specifically, the response variable is highly and negatively correlated with elevation ($p<0.05$, $r=-0.5744$) of which 32.99% explained by the independent variables and is positively correlated with the tree mean basal area ($p<0.05$, $r=0.4160$) and 17.30% of its variation were accounted.

Keywords: black shama (Copsychus cebuensis Steere), forest patches of Southern Cebu, distance sampling point transect method, Conservation priority

Agro-Ecological and Economic Benefits of Vermicomposting

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Abstract

This survey was conducted in order to determine the agro-ecological and economic benefits of vermi composting as perceived and/or experienced by vermicomposting project operators.

Respondents were however limited to farmers/operators in Aborlan and Narra who have been trained or provided technical assistance by WPU Aborlan campus faculty and staff. Agro-ecological benefits mentioned include (a) improved soil structure (b) increased resistance of plants to drought (c) prolonged productive stage of vegetables (d) increased yield of vegetables (e) removed foul odor in piggery (f) increased grain-filling in rice (g) increased yield or rice. The economic benefits mentioned by the respondents were increased income from (a) sale of vermi compost and worm, (b) heavier rice seed weight per cavan (c) reduced cost of production due to reduced use of organic fertilizer (d) increased yield of rice and vegatables (e) sale from other enterprises established.

Community Status and Fishery of Commercially Important Sea Cucumbers in Dasol Bay, Pangasinan

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Abstract

The study was conducted to assess the status of commercially important sea cucumber populations in Dasol Bay, Pangasinan as well as the status of its fishery in the area. Five stations were established in Dasol Bay and assessment was carried out with the use of belt transect method covering an area of 3,000 m^2 per station. Results revealed that there were only 7 species of traded sea cucumber belonging to two families present in Dasol Bay during the period of assessment, to wit: *H. leucospilota, H. scabra, H. atra, S. variegatus, B. vitiensis, and P. graeffei* were recorded in all sampling areas while the lone *H. fuscopunctata* was found only in one station with coralline-rubble substrates. Moreover, relative abundance by species showed that *H. leucospilota* is the most abundant (42.15%). With respect to density, result revealed very low values ranging from 0.02 to 0.058 individuals/m^2. Highest H' (1.67) and J' (0.85) value was obtained in Balaki Island while D) 0.37) was observed in Tambobong. In terms of size structure, sea cucumbers varied in length per species showing unimodal to multimodal length frequencies. Growth pattern of sea cucumbers is showing negative allometric pattern. Highest condition factor was obtained in *H. atra* (126.6±63.3). Three methods of gathering were noted in this study of which diving with the use of compressor is mostly practiced followed by manual picking in shallow portions and free diving. Divers recorded higher catch biomass than gleaners. However, CPUE was identified slightly higher in gleaners which could be attributed to the time spent per fishing operation.

Keywords: Relative abundance, distribution, diversity, condition factor, sea cucumber, fisheries, fishing methods

Impact Assessment of the National Greening Program in Liyang, Pilar, Bataan

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Abstract

The impact assessment was conducted in the Community-Based Forest Management area situated in Sitio Batangas III, Liyang, Pilar, Bataan with a total land area of 50 hectares which was baselined in 2013. Research methods used include transect line, quadrat sampling, sweep netting, soil and water collection, floatation method, and survey. Data were analyzed through descriptive statistics and Shannon Diversity Index. Result shows that the computed diversity (H') values of the existing vegetation had very low increased from 0.28 in 2013 to 0.56 in 2016. The computed E increased from relatively low to relatively moderate with values of 0.11 to 0.25, respectively. For ground-dwelling arthropods, calculated Shannon diversity (H') value of 1.48 in 2013 is higher than in 2016 (1.31). The values of Species Richness decreases from 8 in 2013 to 9 in 2016 but no changes in evenness (0.59). The computed dominance increased from value of 0.2739 in 2013 to 0.3340 in 2016. For foliage-dwelling arthropods, the calculated diversity is 0.95 in 2013 which is relatively lower in 2016 (2.05). There is an increase on the computed dominance from 0.00035 in 2013 to 0.10632 in 2016 and also in the evenness from 0.38 to 0.82 in 2016. Soil samples were found to be more acidic compared in 2013. For the socio-economic component, 28 respondents were interviewed among the members of the Association of Mt. Farmers of Sitio Kinainisan, Incorporated. Generally, there are positive changes except for house structure wherein there is no changes (93%) and classified as neutral. There is an increase in income due to NGP from 32% to 36% which is considered positive. Almost P 5,000 of their annual income comes from NGP which is equivalent to 21% to 30% of their income. Further, there is food security at the household level in 2013 (3 meals) and 2016 (3 meals and one snack).

Keywords: assessment, vegetation, impact, socio-economics

Molluscicidal Potential of Mahogany (*Swietenia Mahagoni* Jacq.) Leachates Against Golden Apple Snail (*Pomacea Canaliculata* Lamarck)

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Abstract

The golden apple snail (GAS), (*Pomacea canaliculata* Lamarck), is considered as serious pest that can destroy 3.5% of the total area planted for rice, and finding solutions to this prevalent agricultural problem is an everyday issue to farmers. In contrast, mahogany (*Swietenia mahagani* Jacq.) is a tropical hardwood tree which is valued commercially for its beauty, durability, and color. In coherence with organic farming, utilization of botanicals as an alternative to synthetic pesticides that are harmful to the environment as well as to humans

must be undertaken. In order to combat and control GAS problem, some parts of the mahogany tree were evaluated for its molluscicidal potentials utilizing the leaves, bark, seeds, and fruit peelings in suppressing GAS by determining the mortality rate at varying levels of leachate concentrations (i.e. 5%, 10% and 15%). GAS with more or less the same operculum sizes were collected and placed in prepared plastic containers with 300 ml of different mahogany plant parts leachates which served as treatments with different levels of concentrations and the untreated as the control. Significant results of 100% mortality rate of GAS were obtained after applying mahogany leaves and seeds leachates, hence successfully killing GAS even at the lowest concentration of 5%.

Keywords: Pomacea canaliculata, Swietenia mahagoni, leachates, mortality

Gravity Wall made of Woven Plastic Blocks for Slope Protection

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Abstract

The effectiveness of Gravity Wall made of Woven Plastic Bottle Blocks for Slope Protection was the intention of this study. The Wooden Plastic Blocks were fabricated into blocks and installed on a stair-like slope. It observed and measured the difference on the protected slope with woven plastic bottle blocks compared to the unsupported slope for 3 weeks on a weekly basis. Photo documentation was done taken in front, top, left and right views to assess the effects of the plastic bottle blocks. To quantify the eroded soil, it was gathered, oven dried, then weighed for both conditions. The results showed that there were no soil particles that fell on the protected slope while the unsupported slope exhibited an eroded steps with considerable amount soil particles collected. With this result, soil erosion was effectively controlled by the Woven Plastic Bottle Blocks as Gravity Wall.

Keywords: gravity wall, protected slope, soil erosion

Assessing the Level of Awareness of Electronic Waste among the Business Economics Majors of the University of Santo Tomas College of Commerce and Business Administration

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Abstract

Utilizing the model developed by Roy (2016), this research measures the awareness levels of four hundred and two students (402) from the Bachelor of Science in Business Administration Major in Business Economics program of the University of Santo Tomas College of Commerce

and Business Administration on e-waste. Primary data via an online survey with the following statement indicators reflecting the following assessment criteria was utilized and were evaluated using a Likert scale: awareness level of e-waste, e-waste cognition, risk perceptions of e-waste, attitudes towards e-waste recycling, and lastly, e-waste recycling behavior. Initial results revealed that twenty-six percent of the respondents learned about electronic waste in high school than those who encountered it in college. Hardly anyone reported learning about e-waste in their elementary and pre-school lessons. Seventy-eight percent of the respondents had a high e-waste awareness complemented with a high awareness level for the need to properly dispose e-waste. Respondents had the lowest relative mean of 1.87 as regard their attitude towards participative e-waste recycling. However, this e-waste awareness was not complemented by the provision of waste disposal facilities. Included in the study is the role of the Local Action for Sustainable Development accord as it addresses e-waste in the action agenda for urban ecosystems by developing short-term treatment, storage and disposal options for hazardous wastes presently used by the industrial sectors and the identification, remediation and rehabilitation of contaminated sites. In conclusion, the respondents' relatively high level of e-waste awareness was not complemented by institutional infrastructure/facilities that address the specific requirements for proper waste disposal. This calls for the Local Action for Sustainable Development accord to collaborate with the academe as they are responsible for coming up with specific actions and projects on sustainability in public programs and projects. It is recommended that the dangers of e-waste and its proper waste management be integrated in the elementary level curricula and be followed through in both the secondary and tertiary levels.

Diversity of Limnetic Freshwater Zooplankton in Lake Danao, Ormoc City, and Lake Bito, MacArthur, Leyte

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Abstract

Freshwater zooplankton is vital animals to the ecology and dynamics of a lake and can be used as bio-indicators of effects of climate change and anthropological interventions to the lake ecosystem. Studies about the diversity and abundance of freshwater zooplankton in Lake Bito (LB) and Lake Danao (LD) are currently lacking, but the taxonomic composition of Cladocera and Copepoda are already beginning to be accounted on since 2012. This study was conducted to determine the composition, abundance, biomass, diversity, similarities of diversities, and relationships of physico-chemical parameters to the zooplankton in LB and LD. Sampling was done once on June 2016 in LB and July 2016 in LD. Water samples were collected one meter below the surface in the limnetic regions of the lakes. Results identified one endemic species in LD, the *Diaptomus vexillifer*, and two similar species in LD and LB, the *Diaphanosoma excisum and Brachionus* sp. *Thermocyclops taihokuensis* and an unidentified rotifer species were also found from LB, while a different species of *Thermocyclops* was found in LD. Turbidity in LB was

not within the normal range, and all its physico-chemical values were higher than LD's. *T. taihokuensis* displayed to have the highest density and abundance in LB, which is then presumed to be a consequence of algal blooms in the lake. Zooplankton diversity and evenness was higher in LB, but species richness was higher for LD. Comparisons revealed that they were more similar than dissimilar and that there were no significant differences in the biomass and density/relative abundance of the zooplankton in both lakes.

Keywords: Freshwater zooplankton, Lake Danao, Lake Bito, limnetic, diversity

Combined Effect of Vermicompost and Earthworm *Pontoscolex Corethrurus* Inoculation on The Yield and Quality of *Broccoli* (*Brassica Rapa* L.) using Organic Growing Media

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Abstract

Combined effects of three kinds of vermicompost and *Pontoscolex corethrurus* inoculation on plant yield and quality of broccoli were investigated in pot cultures organically. The experiment used a factorial complete randomized design which consisted of two factors. The first factor is the kind of vermicompost consisted of three levels : V1= the mixture of spent mushrooms waste (SMW), cow dung (CD) and vegetable wastes (VW), V2=SMW, CD and leaf litter (LL), V3= SMW, CD, VW and LL. The second factor is the population of *P.corethrurus* consisted of five levels : 0, 25, 50, 75, and 100 indiv.m^{-2} and one control (inorganic treatment). Vermicompost was made by earthworm *Lumbricus rubellus* activity. The results of this study showed that the application of various vermicompost had significantly ($p< 0.05$) higher total biomass and marketable weigth of broccoli than the control treatment. The highest total biomass (1.40-1.48 kg plant^{-1}) was found on the vermicompost V1 and V2 with population 75 indiv.m^2 and the vermicompost V3 with population 25-50 indiv.m^{-2}. But the highest marketable weight (378.26-412.10 g plant^{-1}) was found on the vermicompost V1 with population 50 indiv.m^2, V2 with population 75 indiv.m^{-2} and V3 without inoculation earthworm. Vermicompost application significantly increased the quality of broccoli compared with the control, with increase in the contents of sugar and vitamin C by 53% and 35%, respectively. The treatments using vermicompost V2 with population of *P.corethrurus* by 100 indiv.m^{-2} gave the highest quality. Vermicompost application significantly ($p<0.05$) also increased shelf life of broccoli by average storage loss of 16,4% for the treatment of 7 days of storage at room temperature and 6,47% for the treatment of 14 days of storage at cold temperature compared with the control treatment by 59,53 % and 19,79 %, respectively. The treatments using vermicompost V1 and V3 with population of *P.corethrurus* by 50 indiv.m^{-2} gave the best shelf life.

Keywords: vermicompost, P.corethrurus, broccoli, vitamin C, sugar content, shelf life.

Indicator Microorganisms on the Surface Sediment at Selected Stations in Lake Lanao

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Abstract

This study was conducted to assess the abundance of microorganisms and the presence of *Escherichia coli* and *Salmonella* spp., in the surface sediments of the four selected stations in Lake Lanao. The selected stations were Ramain, Ganassi, Marantao and Marawi City which are near agricultural land use, forested area, lower population area and high population area, respectively. The abundance of Gram positive bacteria, Gram negative bacteria, Actinomycetes and Fungi were determined through Total Viable Count using selective culture media. The Multiple Tube Fermentation (MTF) Technique and Indole, Methyl Red, Voges-Proskaeur and Citrate test (IMViC) test were used to examine the presence of *Escherichia coli*. Brilliant Green Agar (BGA) was used in detecting the presence of *Salmonella* spp. Results showed that the four stations have similar microbial abundance. The Gram positive bacterial group was proven to be the most abundant microorganisms. *E. coli* and *Salmonella* spp. were detected in all four sampling stations around Lake Lanao indicating that the lake sediment is contaminated with fecal pollution.

Keywords: indicator bacteria, sediment, Lake Lanao, Microbial abundance

Catbalogan City Dumpsite Leachate Waste Transport

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Abstract

Uncontrolled leachate produced from a poorly managed dumpsite poses several dangers such as contaminating water bodies including ground water. Catbalogan City, Philippines produces about 77 tons of waste disposed in its current open dumpsite. This volume of waste may produce about 24 cu.m. of leachate daily depending on the precipitation, some of which seeps into the ground and allegedly runs towards the sea causing algal bloom. This study is an initial assessment on the truth of the claim through actual survey, water quality analysis and waste water transport through physical model. Result of physical model simulation suggests that the leachate runoff towards the sea is feasible which when in large volume and in right environmental condition may trigger Harmful Algal Bloom (HAB). The study proposes a more in-depth assessment on the amount and concentration level of this leachate running towards the sea.

Level of Awareness and Practices of Students in Wpu-Quezon Campus in Solid Waste Management: Its Implications to Formulating Applicable Educational Strategies

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Abstract

Despite the implementation of Republic Act 9003 in 2001, problems relative to solid waste management (SWM) remain overwhelming. Though the Act gives LGU the leading role in SWM, academe is in the better position in molding its students to become responsible individuals and future mentors for a garbage-free community. The academe could inculcate the concepts of sustainable development and appropriate SWM through innovative teaching strategies in teaching its subject matters. Thus, this descriptive study which aimed at determining the students' level of awareness and practices in SWM was conducted to gather data as basis for policy and plan-making decisions. The following are the salient findings of the study: most of the student-respondents are aware of the concept of sustainable development and ill effects of climate change; but, lesser knowledge on the principle of SW minimization, correct method of waste segregation, and effective mechanisms in SWM; many burnt SW and did not practice composting, recycling and selling reusable materials at home; and, seven out of 10 threw their trash out from home to garbage heap for possible burning. At school, four out of 10 of the respondents burnt trash and did not practice compost making.

Keywords: SWM, awareness, practices, teaching strategies

Comparison of Bird Diversity and Composition in the Agricultural Land and Forested Area of Mt. Kabuyao, Luzon, Philippines

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Abstract

Birds play vital roles in ecosystems and select habitats based on available resources. Subsequently, changes in the resources and conditions of the habitat affect the birds. Mt. Kabuyao is among the Cordillera mountains with distinct pine and oak forests which has been partly converted to agricultural land. In this study, bird diversity and composition were studied to determine the effect of land conversion on the habitat quality of Mt Kabuyao. The line transect method was done in the agricultural land and forested area. Also, locals were interviewed to obtain supplementary data. A total of 4664 bird observations representing 54 species from 28 families were recorded using the line transect, and an additional 16 species and 6 families were obtained from interviews. Both habitat types had moderately high bird diversity, though the agricultural area had a higher species diversity (H'=2.86). Moreover, the forested area had a higher species dominance (D=0.13). It was mostly dominated by the family

Zosteropidae, a frugivorous-insectivorous group. Conversely, the agricultural area was dominated by the insectivorous Cettidae family. There was a low similarity of species composition between the two habitat types (C_s=0.39). Thus, both habitat types have good habitat quality but for different feeding guilds.

Keywords: bird diversity, habitat selection, agricultural land, conservation

Effectiveness of the National Greening Program in Laguna and Quezon, Philippines

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Abstract

The study focused on the effectiveness of the National Greening Program (NGP) in Laguna and Quezon. The objectives of the study include characterize the stakeholders, differentiate expectations of men and women stakeholders in program implementation, and determine the effectiveness of the NGP. Survey was conducted among 291 respondents. Data was analyzed through descriptive statistics. Result shows that most of the respondents were adult married males, attained elementary level only, with four to six household, farmers, and also earn from their involvement in the NGP by planting rattan and forest and fruit trees. Men have higher expectations than women in partaking with the program. Men are expected to be more involved and active in showing their support for NGP. Men from Quezon have greater expectations than from Laguna on actions like actively participating in all phases of the program, sharing knowledge and skills, expressing their insights on planning and decision-making, and promoting the program. Men from Laguna are expected to be more visible during meetings than men from Quezon. For the women, greater expectations are seen for respondents in Quezon than Laguna. Women from Quezon are more anticipated to participate in every activity, contribute knowledge and skills, and be more expressive during brainstorming and directing while women from Laguna are more likable to attend meetings regularly and promote NGP to others. Almost all the respondents agreed on the effectiveness in implementing the program in their area while only a few disagreed because there is no NGP volunteer, poor maintenance of the program, inaccessibility of the area, intermittent budget system, late inspection of seedlings, exclusion of some POs in NGP projects, conflict on Protected Area Community Based Forest Management Agreement (PACBFMA), and not updated maps of protected area and CBFMA area, and database of CBFMA beneficiaries.

Keywords: effectiveness, stakeholders, implementation

Non-Government Organization (NGO) and Local Government Unit (Lgu) Collaboration on the Road to Zero Waste: Barangay Potrero and Mother Earth Foundation as Context

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Abstract

This study analyzes the collaboration between Barangay Potrero in Malabon and Mother Earth Foundation in implementing ecological solid waste management strategies towards zero waste. It is anchored on the Participatory Action Plan Development, which articulates the importance of enabling the community to develop the ability to express their needs so that they gain the capacity to influence policies and processes at the district, national, and international levels (Lewis, 2007). This is a qualitative research that uses interviews, observation, and document review for data and information gathering. The study found that the seminars, workshops conducted by MEF in cooperation of Barangay Potrero became a take-off point for more community engagements to reduce garbage problem. Collaboration encountered inevitable challenges such as lack of financial resources and low level of participation due to lack of awareness on ecological solid waste management. In the long run, after a series of workshops, waste characterization and house to house campaigns, a material recovery facility was constructed in the barangay to reduce waste dumping. In conclusion, collaboration between the LGU and NGO was successful. However, the challenge now is how the LGU can sustain ecological solid waste management after Mother Earth leaves the area.

Keywords: Mother Earth Foundation, local government unit, collaboration, ecological solid waste management

Broccoli (*Brassica oleraceae L. var. italic Plenck*) Production as Influenced with the Application of Different Organic and Inorganic Nutrient Solution Using Aggregate Hydroponic System

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Abstract

The study was conducted to identify the most efficient age of fermented leaf extracts of malunggay, kudzu and ramie as organic nutrient solution and determine the growth response of broccoli as influenced with various organic and inorganic nutrient solutions. A Split-plot Randomized Complete Block Design (RCBD) comprising of the different age of fermented leaf extracts as the main plot and the seven (7) treatments as the subplots. The study was conducted at the vegetable area of the Department of Horticulture, Visayas State University, Visca, Baybay City, Leyte. The results showed that tallest plant height, earlier curd formation and heavier curds

were obtained from broccoli plants applied with commercial nutrient solution. Broccoli plants supplied with three month old fermented malunggay leaf extracts were able to initiate curd formation compared to the other organic nutrient solutions. However, the mixture of organic nutrient solutions with inorganic nutrient solution enhanced growth performance and curd production of broccoli plants. On the other hand, the postharvest qualities of broccoli were also tested. Based on the result, the broccoli applied with inorganic nutrient and fermented ramie solution obtained the highest free radical scavenging activity (FRSA), chlorophyll a, b and total chlorophyll. Therefore, organic nutrient solution derived from malunggay, kudzu and ramie and the combination of organic and inorganic nutrient solutions is promising and can be used as good nutrient source for broccoli production under aggregate hydroponics system.

Keywords: broccoli, hydroponics, nutrient solutions, free radical scavenging activity

Participatory Assessment of the *Aytas*' Livelihood Vulnerability to Climate-related Hazards[1]

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[1]This paper is an output of the research project entitled *Enhancing Resilience and Coping Capacity of Indigenous Peoples to Changing Climate.* This project was funded by the Oscar M. Lopez Center for Climate Change Adaptation and Disaster Risk Management Foundation, Inc. and administratively managed by the UPLB Foundation, Inc.
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Abstract

The paper presents the results of a participatory assessment of the vulnerability of the *Ayta* community to climate related-hazards in the municipality of Floridablanca, Pampanga. Through focus group discussions (FGDs), the *Aytas* provided information on their livelihood resource and knowledge base; experience with climate change and adaptation strategies; and how IPs address the effects of climate change. The climate-related hazards which the *Aytas* themselves identified as posing major risks to their livelihood resources in include typhoon, continuous rain, delayed rainfall and dry spell. Typhoons have become stronger as observed by the *Aytas*. Continuous rain and delayed rainfall has likewise affected their cropping schedule. The risk posed by climate hazards is a combination of the socio-economic impact on livelihood resources and the frequency of these hazards. To the Ayta community, the risk often relates to losses in food production and income. Typhoons and continuous rain pose greater risk to their livelihood resources as they severely constrain availability of these resources to cope with their impacts. Climate change projections in the province of Pampanga indicate hotter summers, longer dry season, wetter wet season, and more intense downpours. Limitations in most of the livelihood capital indicate the need for support of the IPs to become more resilient to climate-related

hazards. IPs also need to build social capital to effectively interact with both government and private sectors to secure and manage their resources. There is also the need to enhance human capital and establish among the youth the appreciation and knowledge on preserving the environment and ancestral domain. Collective action and solidarity must continually be practiced for long-term community-based adaptation.

Keywords: indigenous peoples, sustainable livelihood framework, climate change, vulnerability assessment

Host Penetration and Location of *Meloidogyne Chitwoodi* and *Pratylenchus penetrans* as Affected by Woodchip Extract

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Abstract

Root knot and the lesion nematodes are the most damaging and frequently observed plant-parasitic nematodes in vegetable production which cause economic loss if left unattended. The use of soil amendments which includes compost and other organic matter is an accepted practice used to improve soil structure and fertility. The effects of compost extract coming from woodchips on root-knot (*Meloidogyne chitwoodi*) and lesion (*Pratylenchus penetrans*) nematodes were evaluated in vitro under different concentrations of exposure periods using bean, carrot and tomato host plants. Result revealed that host penetration and location was concentration and exposure dependent up to 75% and 48-hour, respectively. The highest concentration (100%) decreased nematode extraction as well as longer (72-hour) exposure time. However, lower concentration of compost didn't significantly decrease both penetration and location for both nematode species. Thus, sensory organs of the nematodes were not affected at lower compost extract concentration.

Keywords: root knot nematode, lesion nematode, woodchip, compost extract, soil amendmen

Radiation Effect of Gamma ^{60}co on the Quality Of Truee Shallot Seed of Bauji

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Abstract

True shallot seed is the seed tubers produced in addition to generative. The use of TSS as a seed source still has many weaknesses, i.e., low viability and low seed quality. One solution to enhance the growth and seed quality of TSS is by 60Co Gamma ray radiation. Gamma radiation

will improve the genetic characteristics of plants, due to mutation or change in physiology. True shallot seed which is used in this study was Bauji variety. The purpose of this study was to determine the effect of radiation of Gamma ^{60}Co against seedling growth and tuber yield of True Shallot seed . This study used single factor of completely randomized design (CRD) , with 6 treatments and repeated 3 times. The treatments used are, R0; Seeds without radiation, R1; Gamma ^{60}Co radiation with radiation doses 5GY , R2; Gamma ^{60}Co radiation with a radiation dose of 15Gy, R3; Gamma ^{60}CO with radiation dose 25Gy radiation, R4: Gamma ^{60}Co radiation with doses of 35Gy and R5: Gamma ^{60}Co with radiation dose 45Gy. Parameters measured were percentage of germination, plant growth rate, fresh weight and dry weight of root and tuber number. The results showed that gamma radiation ^{60}Co significant effect on all parameters. However, from the all of the treatment, R1 (doses of 5 Gy radiation) is the best doses of Gamma radiation to produce mutants 1 bulb onion plants from seeds.

Keywords : Gamma ^{60}Co radiation, Seed quality, True Shallot Seed

Level of Awareness and Participation of Coastal Women on Various Fisheries Management Programs

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Abstract

The study was conducted to determine the extent of involvement of women in three coastal municipalities of Pampanga to various fisheries management programs implemented by local and national government agencies. Result of the study revealed that most of the women respondents are dominated by the age group of 31-40, married, secondary undergrad and graduates, and having a household size of 1-3 members. Most of the respondents are not members of a civic organization and most of them did not receive trainings or seminars related to fisheries management. In terms of socio-economic profile, most of the women don't have a source of income and efforts are mainly on domestic workloads that usually unpaid. Result also indicated that level of awareness of women on fisheries management is low with verbal interpretation of "slightly aware". Awareness was found to affect participation in which level is very low with a verbal interpretation of "slightly aware". A strong positive association between level of awareness and level of involvement was revealed. Furthermore, women considered conflict among resource users as the main problem identified needing implementation of management programs. Lastly, reproductive and childcare responsibility was considered a major barrier to their participation in resource management. Trainings, seminars, workshops, and another study are highly indispensable.

Keywords: awareness, involvement, coastal women, fisheries management

Interspecific Agonistic Behavior of *Macrotermes gilvus* (Isoptera: Termitidae): Implication on Termite Baiting in the Philippines

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Abstract

The study investigated interspecific agonistic behavior of *Macrotermes gilvus* Hagen (Isoptera: Termitidae: Macrotermitinae) against three economically important subterranean termites in the Philippines, viz., *Coptotermes gestroi* Wasmann, *Nasutitermes luzonicus* Oshima and *Microcerotermes losbanosensis* Oshima. Termites with a pairing ratio of 1:1 were introduced into the test arena consisting of a petri dish lined with moistened filter paper, with glass slide in the middle as a partition. The partition was then remove and the interaction behaviors were then video recorded for 5 minutes. The videos were reviewed and analyzed for agonistic behavior. The experiment showed that *M.gilvus* workers and soldiers were highly aggressive against the opponent termites leading to severe injury or death in a short period of time. The levels of agonism were caste and species specific. Worker termites of *M. gilvus* showed an equally aggressive behavior as soldiers contributing to the high mortality of opponent species used in this study. It is likely that the highly aggressive behavior of *M. gilvus* limits foraging activity of *C. gestroi, N. luzonicus and M. losbanosensis* around in-ground bait stations contributing to the low success of termite baits containing chitin synthesis inhibitors in the Philippines.

Keywords: agonism, termites, foraging behavior, baiting, aggression

Assessment of Selected Community-Based Sustainable Tourism Projects Towards Developing Green Tourism Practices Handbook in Puerto Princesa City

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Abstract

This study assessed the respondents' Green Tourism Practices (GTP) of two (2) Community-Based Sustainable Tourism (CBST) projects in Puerto Princesa City**.** These were the Ugong Rock Zip line and Spelunking Adventure, Iwahig Firefly Watching. This study used three sets of questionnaires- Part 1 on the demographic profile; Part II on the salient features of the CBST projects; Part III on the assessment on the pre-identified 25 Green Tourism Practices' significant relationship between the respondents' profile and their GTP assessment. Several guidelines on

Green Tourism practices were presented where few practices were adopted. The compliance and practices on the implementation of the environmental sustainability, preservation of local culture, economic sustainability and community participation were assessed. The result led towards Green Tourism Practices Manual, whose main objective is to improve and instill the right values that translate into changes on the responsible behavior and attitudes of the CBST Stakeholders on Green Tourism Practices. Finally, the Manual could serve as an instructional reference which could be integrated in the syllabus of tourism and hospitality programs of Higher Education Institutions (HEIs) to develop the students' cognitive, affective and psychomotor skills not only as Tourism Managers but as Green Tourism Managers.

Keywords : *green tourism practices, community-based sustainable tourism, responsible behavior, green tourism practices manual*

Yield and Postharvest Qualities of Two Sweet Pepper (*Capsicum annuum* L.) Genotypes Applied with Different Levels of Nitrogen

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Abstract

This study was conducted to evaluate the effects of the different levels of nitrogen on the yield and postharvest qualities of two sweet pepper genotypes under Visca agro-climatic conditions. The experiment was laid-out in a split plot randomized complete block design with levels of nitrogen as the main plot and sweet pepper genotypes (Emperor & Sultan) as subplot. The levels of nitrogen were divided as T1 (zero), T2 (50 kg N/ha), T3 (100 kg N/ha), T4 (150 kg N/ha), T5 (200 kg N/ha), T6 (250 kg N/ha), and T7 (300 kg N/ha). The postharvest qualities such as carotenoid content, free radical scavenging activity (FRSA), and oxidation-reduction potential (ORP) were assessed using spectrophotometric and potentiometric methods. Results revealed that sweet pepper applied with 100 kg N/ha during the wet season and 300 kg N/ha during the dry season significantly produced the highest yield in tons per hectare. Sultan genotype produced more number of fruits and heavier fruits which consequently gave higher yield than the Emperor genotype in both dry and wet cropping seasons. Sweet pepper applied with 100 – 250 kg N/ha exhibited the highest carotenoid content particularly the Sultan genotype in both dry and wet seasons. The application of 150 kg N/ha gave the best FRSA of sweet pepper in both cropping seasons especially with the Emperor genotype. However, the Sultan genotype yielded better oxidation-reduction potential during the dry season to indicate better shelf-life and storability. All these results would indicate the importance of accurate nitrogen fertilizer application to attain the best yield and the best postharvest qualities for food security, food quality, and environmental safety.

Keywords: sweet pepper genotypes, levels of nitrogen, postharvest quality, yield

Community Awareness on the Changing Administration in the Local Government of Puerto Princesa City: Its Effect on Solid Waste Management

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Abstract

The study focuses on determining the awareness of residents regarding Waste Segregation Management in terms of household and changes in administration of Solid Waste Management (SWM) in the City of Puerto Princesa. Specifically it sought answer on the ways employed by the City Government in terms of waste segregation management and how they dealt with the different problems on SWM. Should the method and the development plans of City Government in terms of waste segregation management effective enough to make their vision and mission attainable with the political changing of administration. Both qualitative and quantitative methods of research were used. Qualitative method of researched applied observation and ocular visit to the area whereas the quantitative method used questionnaire to gather the data. The respondents were the barangay officials and committee members of SWM of two selected largely populated barangays in the city. The study was done to have an in depth understanding of how Solid Waste Management at the Barangay level was done. The study also provides information on the participation of the residents in every "Purok" in Brgy. San Miguel and Brgy. San Pedro response on the imposed RA. 9003 of Ecological Solid Waste Management Act of 2000.

Keywords: community awareness, changing administration in the local government unit, solid waste management

Green Practices of Tourism Destinations in Palawan, Philippines Towards Sustainable Tourism

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Abstract

This study was conducted to determine the Green Practices of the Tourism Destinations in Palawan, Philippines toward Sustainable Tourism. The Provincial Government of Palawan (PGP) put forth effort to encourage municipalities to instigate responsible initiative programs that would preserve, conserve and protect the environment. PGP provided with an all out support through funding, providing logistics and technical assistance. The municipalities of El Nido, San Vicente and Coron in Palawan have soaring tourist arrivals. Since, these municipalities are Tourism Destinations, they consume more energy, water, liquefied petroleum gas, and fuel for transportation and various tourism activities were done both in land and water. Thus, adherence to Green Practices should be done to reduce resource consumption, carbon emission and discourage illegal tourism activities that devastate and deplete our natural resources. The study found out that Tourism Stakeholders and local community are actively contributing and

become accustomed in the eco-friendly practices: Adapted Zero Carbon Resorts Projects; Instituted Climate Change Resilience and Ecotown programs and Perform Sustainable Operations-waste management, provided Material Recovery Facility (MRF), carried out water and energy conservation, put up Desalination Plant; Keenly Observed Nature Protection and Conservation - Marine Protection and Conservation, Monitoring Wildlife, Established Marine Turtle Conservation Programs, Initiated Coastal Clean ups, Installed Mooring bouys, and Created Marine Monitoring Task Force; Built Sustainable Communities-local livelihood and employment opportunities, patronized local products and extended community service; Provided Environmental Education – educating guests and local community; Active participation of local legislators in creating Ordinance regulating the use of plastic bags and Styrofoam on business establishments; Increasing participation of Zero Carbon Resorts Projects members all over Palawan. The study recommended that the PGP and its local government unit should strengthen promotion and strict implementation of Green Practices; Civic and Tourism Associations may actively endorse and participate in Green Practices Advocacy, Local legislators may pass ordinances pertaining to responsible initiatives and principles towards Sustainable Tourism. Academe sector may also help in information dissemination and continuously conduct environment and tourism related researches. All of these may be considered in preparation to International Airport which soon to operate in Puerto Princesa City, Palawan this year. This descriptive qualitative study utilized focus group discussion, observation, and key informant interviews in data gathering. The respondents of the study were tourism stakeholders, local residents, and local government officials of Palawan, Philippines.

Keywords: green practices, tourism destination, zero carbon resort project, sustainable tourism

Vegetation as Predictor of Litter and Soil Arthropod Community Assemblages across Environmentally Critical Areas Network of Palawan, Philippines

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Abstract

This study aimed at determining the influence of vegetation on litter and soil arthropod community assemblages across environmentally critical areas network (ECAN) in Palawan. Primary (core zone, CZ), residual (restricted use area, RUA), and marginal (controlled use area, CUA) forests, coffee plantation (traditional use area, TUA), and grassland (multiple use zone, MUZ) were the sites. Plant survey was done to record the species richness, abundance and canopy cover of tree (>3m height), shrub (1-3m) and herb (<1m) layers. Previously reported litter and soil arthropod assemblage data on these sites were utilized. Forward selection of multiple regression analysis was employed for relationships.
The general vegetation composition was tree-shrub-herb in CZ, RUA and TUA, tree-shrub in CUA, and herb in MUZ. No vegetation variables significantly explained the overall assemblage of

litter and soil arthropod communities across ECAN sites except herb canopy cover which accounted 78% variation of N1 diversity (abundant species) of litter arthropods. Specific vegetation variables significantly explained the abundance and species richness of litter (5 and 9, respectively) and soil (5 and 8, respectively) arthropod taxonomic groups.
Results suggest that vegetation does not influence the general litter and soil arthropod assemblage pattern across land uses but is more pronounced in lower taxonomic resolutions.

Keywords: soil and litter arthropods, community assemblage, vegetation, Palawan

Screening and Identification of Soil Actinomycetes Producing Chitinolytic as Biological Agents for Fruit Flies

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Abstract

Actinomycetes can be found in several areas in Indonesia such as: Kelud volcano mount, coffee and pineapple plantation, tomato fields in Pare District and Merubetiri Protection Forest. This study was to obtain and identify Actinomycetes candidates which capable to produce chitinolytic and controlling fruit flies insect pests (*Bractocera* sp.) in the in-vitro conditions. Screening and identification were done with descriptive method. The antagonism test was designed using a Complete Randomized Block Design (CRBD) with nine treatment combinations and each treatment replicated four times. The results showed that Actinomycetes tomat pare (Atp) isolated from tomato field in Pare, also Actinomycetes Merubetiri 1 and 2 (Amb1 and Amb2) could produce chitin. The three actinomycetes capable as parasite in fruit fly larvae and pupae and inhibited them up to 100%. DNA and morphology analysis indicated that those Actinomycetes have a kinship with *Streptomyces narbonesis, Streptomyces spectabilis* SHH and *Streptomyces deserti.*

Keywords: biological agents, antagonism, chitinolytic, bractocera, streptomyces

Isolation and Identification of Bacterial Endophytes Inhibitory to Coffee Rust

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Abstract

A study was conducted to isolate and identify bacterial endophytes found in healthy and infected coffee leaves with potential to inhibit the coffee rust pathogen, *Hemiliea vastatrix*. One hundred forty five bacterial endophytes were isolated from five coffee-growing towns of Cavite, and were preliminary screened for their biological control potential against fungi. The test organisms included the yeasts, *Candida utilis* and *Saccharomyces cerevisiae*, and molds,

Aspergillus niger and *Fusarium oxysporum*. Three endophytes were able to inhibit all the four test organisms, two inhibited only three, five were effective against two fungal organisms while 19 of the isolates inhibited only one test organism. When these 29 endophytes were tested against *H. vastatrix* using coffee leaf discs, seven, when applied 24 hours before the application of *H. vastatrix*, produced lesions which did not significantly differ to the means of percentage lesions when leaf discs were treated with Dithane (positive control). Likewise, five, when applied simultaneously with rust pathogen also inhibited the growth of *H. vastatrix* comparable to the effect of Dithane. Based on morphological and physiological characteristics, the isolated bacterial endophytes positive for inhibition belonged to six genera including *Citrobacter, Klebsiella, Enterobacter, Corynebacterium, Bacillus,* and *Serratia.*

Keywords: bacterial endophytes, Hemiliea vastatrix, biological control, leaf disc

High Throughput Screening of Lipoxygenase (LOX) Inhibitors from Fungi*

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Abstract

Lipoxygenases (LOXs) are widely occurring in plants, animals and fungi. Lipoxygenases are involved in metabolism that produces fatty acid hydroperoxides. These products have been identified as mediators of a series of diseases including rheumatoid arthritis, inflammatory bowel disease, atherosclerosis and types of cancers. In this study, forty fungi were isolated from different plants namely *Pinus kesiya*, *Cenchrus polystachios*, *Rubus fraxinofolius*, *Phragmites australis*, *Tithonia diversifolia*, *Dicranopteris linearis*, *Cyathea contaminans* and *Marchantia polymorpha* and their inhibitory activity toward soybean 15-lipoxygenase were determined. Spectrophotometric measurements revealed that *Aspergillus jensenii* produced the maximum percent inhibition among the fungi studied with 94.67 ± 4.49% followed by UPB-Sp. 252-R1b8-AQ with 92.74 ± 7.03% and *Penicillium griseofulvum* with 92.22 ± 5.56%. The rest of the fungi tested had percent inhibitions greater than 50%. Our results suggest that the studied fungal species prove to be viable sources of compounds that can inhibit lipoxygenases. Further researches, i.e isolation and characterization of the bioactive compounds, are necessary.

Keywords: lipoxygenase, enzyme inhibition, fungi

Optimization of the Levels of Kappa-Lambda Type Carrageenan & Citric Acid in Mango-Flavored Gummy Cubes

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Abstract

This study was conducted to determine the effects of carrageenan kappa grade and citric acid level on the acceptability of sensory attributes necessary in determining the optimum combination. Results of the analyses significant differences among the treatment samples in all sensory qualities evaluated. Response surface regression analyses showed significant effects for aroma acceptability alone. Mango Flavored gummy cubes with low carrageenan and high level of citric acid was found to be the highly acceptable in sensory analysis. The superimposed region satisfied the requirement sensory scores of > 6.50 between 0.80-1.50% carrageenan levels with combination of 0.25-0.95% citric acid levels. Treatments with high percentage level of carrageenan seemed to obtain higher moisture content and water activity. Results showed significant differences on the moisture content and Aw among treatments means. Mango-flavored gummy cubes have a calorie content of about 104.5cal/30g of serving size.

Keywords: product optimization, response surface methodology, carrageenan, citric acid, mango, food dehydration, and confectionery

Assessment of the 3R (Reduce, Reuse, Recycle) Policy Implementation in the Philippines

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Abstract

To address the growing problems of mismanaged waste and the threats it poses to the environment and human health, the Philippine government enacted the Republic Act 9003, also known as the Ecological Solid Waste Management Act of 2000 in 2001. However, it seems that even after about 16 years since its implementation, the problems on waste remains a challenge to many local government units (LGUs). By reviewing the existing literatures and available secondary data coupled with key informant interviews, this study assessed the implementation of the 3R (Reduce, Reuse, Recycle) in the Philippines. Considering the composition and sources of waste in the country, this study shows that if only households and commercial establishments will practice waste segregation and manages the biodegradables and recyclables, only very small percentage of residual waste will be left for final disposal. Therefore, expensive and advance technologies may not always be necessary in the Philippines. Instead, the promotion of 3R and the use of simple, local and low cost technologies should be strengthened. This will reduce pressure on the nation's finite natural resources and can address not only environmental but also economic and social problems by turning waste into a resource (Atienza, 2013).

Keywords: 3R (Reduce, Reuse, Recycle), Ecological Solid Waste Management Act (ESWMA)

Phytochemical Screening of Mid-Polar Nematicidal Fraction of *Dioscorea hispida* Against *Meloidogyne graminicola*

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Abstract

The study was conducted to extract the mid-polar components of the tuber of *Dioscorea hispida* using dichloromethane and acetone as solvents; test the nematicidal activity of dichloromethane and acetone extracts against *Meloidogyne graminicola*; phytochemically screen the bioactive components; and separate the components through thin layer chromatography. Results showed that the mid-polar extracts had nematicidal activity with more than sixty percent mortality rate after 24 to 48 hours of exposure at 250 ppm and 500 ppm. The acetone and dichloromethane extracts had comparable bioactivity at 95% confidence level. From phytochemical screening and thin-layer chromatography (TLC) results, it was found out that dichloromethane extract contains terpenoid and alkaloidal components and had resolved six spots while the acetone extract contains terpenoids, tannins and polyphenols and had resolved five spots. These components may have contributed to the nematicidal activity of the extract. The results suggested that mid-polar components of the *D. hispida* can be a potential nematicide against *M. graminicola.*

Keywords: phytochemical screening, Nematicides, D. hispida, M. graminicola

Angiotensin-Converting Enzyme Inhibitory Activity of Fungal Metabolites*

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Abstract

The need to address lifestyle related illnesses is urgent. One of these is high blood pressure. Angiotensin-converting enzyme (ACE) regulates blood pressure by converting the inactive angiotensin I into a potent vasoconstrictor. It also inactivates bradykinin which is a vasodilator. To alleviate this problem, discovery of ACE inhibitors is vital. In this research, high throughput screening of fungal extracts was done toward the discovery of possibly novel compounds that inhibit ACE activity. Endophytic fungi were isolated from *Pinus kesiya, Cyathea contaminans, Dicranopteris linearis, Marchantia polymorpha, Phragmites australis, Rubus faxinifolius, Tithonia diversifolia* and *Cenchrus polystachios*; all indigenous plants of Benguet. ACE inhibition assay was

performed on a total of 172 isolates. *Aspergillus syndowii* UPB-Sp.6-f76-AQ has the highest inhibition rate with 99.49%, *Nectria ipomoeae* UPB-Sp.52-PT6-AQ follows with 92.65%, *Penicillium echinulatum* UPB-Sp. 124 – f8g - EtOH with 92.33%, *Pestalotiopsis lespedezae* UPB-Sp.3-PT20-ETH with 91.73% and *Penicillium chrysogenum* UPB-Sp.11-PT39-AQ with 90.48%. This high throughput screening for ACE inhibition will direct future researches on these interesting isolates toward the isolation and purification of bioactive compounds that can inhibit the ACE enzyme.

Keywords: angiotensin-converting enzyme, endophytic fungi, ACE inhibition assay

Phytotoxicity of Some Parts of *Excoecaria agallocha* Leachate Concentrations Against Golden Apple Snail (*Pomacea cannaliculata*)

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Abstract

Excoecaria agallocha is an endangered mangrove species in the Philippines. Proper pruning of branches of any trees could improve the general looks and structural integrity of the tree. The leachate of any parts of a plant have either positive or negative allelophatic effect on other plants or aquatic animals. The main purpose of the study was to evaluate the phytotoxicity effect of different concentrations (i.e. LC 25, LC 50, and LC 75) of leaves and branchlets leachates of the mangrove (*Excoecaria agallocha*) to golden apple snails (*Pomacea canaliculata*) with the untreated (i.e. without leachate) as the control. The data on percent mortality of snails in response to the different concentrations of leachates were analyzed using the two-way Analysis of Variance with interaction. When significant difference of mortality of golden apple snail (GAS) between treatments and among concentrations were detected the data were subjected to a post hoc test. Statistical results showed a significant difference among the variables, the higher the concentration of leachates applied, the more mortalities were observed. Furthermore, leachate of branchlets were more effective molluscicide than the leachates of leaves. Therefore, leachates of the *E. agallocha* could be utilized as organic molluscicide.

Keywords: phytotoxicity, molluscicide, excoecaria agallocha, leachate, and golden apple snail

Role of Shallot Bulbs on Distribution of *Fusarium Oxysporum* F.Sp. *Cepae* Cause Twisting Disease

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Abstract

One of the important shallot diseases is twisting disease by *Fusarium oxysporum* f.sp. *cepae* (Hanz.) Snyd. & Hans, and it causing great loss to the farmers in several main shallot fields. Approximately 50% of loss reported confirms the seriousness of the problem. *F. oxysporum* f.sp. *cepae* is known as soil-borne pathogen. However, twisting disease was found greatly in the field that used bulbs from the previous planting. The aim of the research was to evaluate the role of shallot bulbs as the distribution agent of *F. oxysporum* f. sp. *cepae*. The research was comprised of two stages: 1) greenhouse experiment: studied whether or not shallot bulbs as the distribution agent, 2) laboratory experiment consisted of isolation, pure-culture breeding, and identification of *F. oxysporum* f. sp. *cepae*. The results showed that shallot bulbs might carry *F. oxysporum* f. sp. *cepae* propagules contained in soil, thus shallot bulbs could role as the distribution agent of *F. oxysporum* f. sp. *cepae*.

Keywords: shallot bulbs, distribution agent, twisting disease, Fusarium oxysporum f. sp. cepae,

Extension Program of the University for Sustainable Community Development: A Case Study of the Faculty of Arts and Letters, University of Santo Tomas

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Abstract

This study aims to evaluate the outreach programs of the Faculty of Arts and Letters, UST with its partner community, Cecilio Apostol Elementary School. It identifies intended and unintended outcomes to keep track of the com development process and determines what significant impacts the project has brought forth using the Context, Input, Process and Product model. The research invokes interviews and community observation. Results of the study indicate that partner community gained from the activities of the students and the college through the ABCD program model. Moreover, the community went beyond physical improvement that included expanded community capacity building, more local dialogues among the stakeholders and opportunities for a sustainable community development school-based approach.

Flora and Carbon Stock of Timber in a Forest Patch in Sitio Apis, Brgy. Apoc-Apoc, Aborlan, Palawan, Philippines

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Abstract

The existence of a lowland forest patch in Sitio Apis, Barangay Apoc-apoc, Aborlan, dominated by dipterocarp species, is a very significant reservoir of native plants and habitat of wildlife species. The presence of large trees in this forest patch is also important for carbon sequestration. A survey was conducted to determine the flora, the biomass and the carbon stored in the timber species in the forest patch. The allometric equation developed by Brown (1997) was used in the determination of above and below ground biomass while the formula of Lasco and Pulhin (2000) was used in the determination of carbon stock of timber species. At least 48 plant species were recorded in the area with *Dipterocarpus grandiflorus* having the highest importance value and the most abundant species indicating that the forest patch is remnant of a dipterocarp forest. Among the species encountered, 6 were listed as threatened and 4 as endemic. The total biomass were 46.70 Mgha^{-1} (ci ± 11.8, P=0.05) while the estimated carbon stored in the forest patch were 21 Mgha^{-1} (ci ± 5.31, P=0.05). The presence of several wildings and sapling of *D. grandiflorus* indicates that the forest patch will return into a dipterocarp forest if the government, the local community and other concerned agencies join hands to protect this important habitat.

Keywords: forest patch, carbon stock, tree biomass, Palawan

Households' Attitudinal Response to Disaster Preparedness Strategies: Implications for Preparing a Community for a Disaster

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Abstract

Households' attitude towards disaster preparedness strategies is important in preparing the entire community for a disaster. The Philippines has experienced several extreme climatic disturbances in recent years such as massive floods, strong typhoons, and drought. Community disaster preparedness has become necessary because these disturbances both destroyed major food sources, properties, and life. A survey involving 577 households in a flood-prone area in the Philippines was conducted from May to July 2015 to determine households' attitudinal response towards disaster preparedness strategies. Disaster preparedness strategies considered were as follows: (a) ensuring home safety; (b) buying a disaster supply kit; (c) preparing an evacuation

plan; (d) informing the entire family about the household's disaster preparedness plan; (e) attending disaster preparedness training; (f) following the advice of the local authority during a disaster. Results of the study indicate a favourable attitude of the respondents towards the identified strategies. More respondents had agreed to do them except the buying a disaster supply kit strategy. Local authorities should invest on this attitude to prepare, develop, and implement a strategic community-wide disaster preparedness plan.

Keywords: disaster preparedness, attitudinal response, community, disaster

Open and Distance e-Learning: An Approach towards Sustainable Education for All

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Abstract

Inclusive and equitable quality education is targeted to: (a) ensure that the greater portion, if not all, of the global population are both literate and numerate by 2030; (b) ensure equal access of quality education; and (c) ensure an increase in functional citizens, i.e. a citizenry consists of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship. In all of the targets for this sustainable development goal, ODeL has some potentials to offer. This paper is intended to present: (a) the potential roles of ODeL in attaining an inclusive education; (b) issues concerning ODeL implementation; and (c) recommendations to make ODeL significantly contribute to attaining inclusive and equitable quality education.

Keywords: open and distance e-learning, education, inclusive education, sustainable development

Assessment on Quarry Operations in Talakaigan and Cabigaan Rivers Aborlan, Palawan, Philippines

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Abstract

The quarry operations in Talakaigan and Cabigaan Rivers, Aborlan, Palawan, Philippines were assessed whether they complied with the terms and conditions in the SEP Clearance, had effects on water quality and altered the rivers' physical characteristics.

Six (6) active quarry operations in the two (2) rivers were legal and complied some of the terms and conditions in the SEP Clearance. Notable violations of most operators were: depth limit exceeded 1.0 m, no installation of visible markings in corners and boundaries of their quarry sites and erosions on riverbanks. Quarry operations showed no negative effects on the temperature (˚C), pH, dissolved oxygen (ppm), salinity (psu), conductivity (µS/cm), and total dissolved solids (ppm) but excavations created water to become turbid up to 206.2 FNU/NTU. Physical characteristics of the rivers such as channel width, stream width, depth and substrate were found to be dramatically altered.

Keywords: quarry, river, SEP clearance, violations, Palawan

Adversity Quotient and Coping Mechanisms of Farmers and Fishermen Towards Natural Disasters in Dinahican, Infanta, Quezon

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Abstract

The study focused on the AQ and coping mechanisms of the farmers and fishermen in Barangay Dinahican. The objectives of the study includes to identify the effects of natural disasters among the households; determine the AQ of the households; determine the coping mechanisms in overcoming the effects of natural disasters; and to develop group dynamics activities to overcome the effects of natural disasters. Research methods used include survey, key informant interview, focus group discussion and photo voice technique. Sixty (60) respondents served as respondents consisting of 30 farmers and 30 fishermen. Data were analyzed through descriptive statistics, inferential statistics, and thematic analysis. Result show that natural disasters had effects at the household level and individual level. Natural disasters affected the livelihood of the residents in terms of the capital assets of the fishermen, the farm and crops of the farmers. Other effects at the household level include shelter, food security, and health issues. At the individual level, the adverse effects include emotional states and faith in God. Majority of the AQ of the respondents falls under the mid-range which make them capable of facing, controlling and be able to bounce back to normal life. In terms of category, majority of the respondents are campers determined to have the potential to pursue in life adversities even at some point they tend to rest for a while. Only slight difference between problem-focused and emotion-focused was used to overcome the effects of natural disasters. Further, the researchers developed group dynamics activities module consisting of five (5) activities intended to enhance their AQ and coping mechanism towards natural disaster.

Keywords: adversity quotient, coping mechanisms, natural disasters, climate change

Economic Valuation of the Mangrove Forest in Sitio Marikit, Brgy. San Juan, Aborlan, Palawan, Philippines

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Abstract

Mangrove ecosystems are ecologically and economically important, providing basic functions to sustain the life support system. This important ecosystem is threatened not only by the growing population residing along coastal areas but also by other development projects. Unless the community and government leaders see the economic value of the mangrove forest, this ecosytem will be totally destroyed. The use and non use value of the mangrove forest in Sitio Marikit, Brgy. San Juan, Aborlan, Palawan, Philippines were determined to estimate the total economic value of this important ecosystem using different valuation techniques. Results show that the total economic value coming from the direct, indirect and existence value of the 84.26 ha mangrove forest in the area amounted to $ 336,140.97 or Php 16,134,766.85 per year. Local people and government officials should work together and apply the best and strictest measures to prevent further degradation of such very important ecosystem.

Keywords: Total Economic Value, Mangrove Ecosystem, Palawan Island, Philippines

Organizational Discourse as an Approach for Sustainability Studies

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Abstract

Sustainable development (SD) aims for "long-term stability of the economy and environment; this is only achievable through the integration and acknowledgement of economic, environmental, and social concerns throughout the decision making process (Emas, 2015). The challenge of sustainability lies in having individuals and institutions who can collectively design and implement interventions, transitions, and transformative governance strategies toward sustainability (Bammer, 2005). Since sustainability issues are created and shaped and affected by multiple actors with needs and perspectives, generating sustainability opportunities requires collaborations as well as negotiation among scientists from a variety of disciplines, politicians, entrepreneurs, artists, farmers, business, and community leaders. This only shows that sustainability requires organizing. To understand how sustainability is achieved or not, we need to understand how its organizing is enacted. One field of study that is interested in the organizing process is "organizational studies," which focuses on "the examination of how individuals construct organizational structures, processes, and practices and how these, in turn, shape social relations and create institutions that ultimately influence people." (Clegg and

Bailey, 2008). One of the theoretical lenses used to understand organizations is organizational discourse, which is part of the linguistic turn that currently is making its mark on social science (Alvesson & Kärreman 2000a, 2000b). In organizational discourse, organizational phenomena are seen as coming into being through people's talking and writing practices rather than the 'realist' view that these realities exists 'out there'. Organizational realities arise out of social processes sustained by language, which is the system people use to "objectify subjective meanings and to internalize socially constructed meanings" (Allen, 2005: 38). Discourse is defined as a set of interrelated texts that, along with the related practices of text production, dissemination, and reception, bring an object or idea into being (Fairclough, 1992; Parker, 1992; Phillips & Hardy, 1997). Language is seen here not as a means to describe a reality 'out there' or a "route to discovering some aspect of an assumed underlying reality" (Burr, 2003: 59). Language, in discourse parlance, creates realities. To examine how how people linguistically mediate social interactions that generate, reproduce, and recreate organizational realities, discourse analysts look at the 'discourse' or 'systems of texts' in social settings. Discourse can be seen as linguistic interaction, any form of talk, systematic exchange of utterances on a particular matter, epochal-defining historically rooted systems of ideas, or any forms of texts and talk, and so on (Kärreman 2014). While discourse analysis has already been previously used in various research in environmental and sustainable development studies, more empirical work on sustainability can still be done using this lens. Discourse analysis can be done at level of a) small 'd' discourse or everyday interactions taken in the micro-contexts in which the texts (e.g., naturally occurring conversations) are produced, or b) big "D" discourse or the regimes of truth which "shapes our particular ways of talking about a subject matter, but also shapes and constitutes our understanding of the real on the experiential level" (Kärreman 2014). A discursive approach to sustainability studies can shed light on how sustainability realities are constructed in and through language and how societal or broader discourses both constrain and facilitate these discursive moves that people involved in sustainability work make to construct certain realities. Organizational discourse sees language as performative or action-oriented, which means that people's talking and writing practices have "specific functions and achieves purposes" for the people involved in the interaction (Burr, 2003: 58). A discursive approach can demonstrate the material outcomes or effects that arise from people's discursive practices in sustainability. Organizational discourse research also explore how meanings are linguistically shared and contested in ongoing and never ending processes. Discursive research can focus how people involve in sustainability work engage in discursive struggles and which groups are benefitted or marginalized in the process. Such studies can give us another lens to understand the complexity of doing sustainability work and think of ways by which sustainability goals and practices can be achieved, reproduced, reconstructed, or even resisted.

Keywords: sustainable development, sustainability studies, organizational discourse, discourse analysis

Species Diversity of and Local Knowledge on Bats in Eastern Leyte, Philippines

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Abstract

Bats constitute about one-fourth of the total mammals on earth that help keep the ecosystems functioning. This study was conducted to determine its species diversity and degree of local knowledge that has significant influence on their survival. Bat sampling was carried out through mist netting while survey and individual interviews with local residents were undertaken for the local knowledge. Results revealed that there were two types of bats in the area; fruit bats (14 individuals) *Rousettus amplexicaudatus and* (5) *Ptenochirus jagori* and insectivore bats (6) *Rhinolophus arcuatus,* (1) *Hipposideros diadema,* and (34) *Myotis macrotarsus* which is of Near Threatened status. Despite their ecological contribution, and natural threats, results of the study showed that bats are threatened by anthropogenic disturbances as particularly correlated to the locals' knowledge. Increasing people's awareness about the importance of this species through information and education campaign and implementation of conservation program in the area are viewed relevant for the sustainable population of bats in Pagang-pagang Cave.

Keywords: bats, anthropogenic threats, conservation

Carbon Sequestration in *Eucalyptus urophylla* and its associated mycorrhizal fungi in Siloo, Manolo Fortich, Bukidnon

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Abstract

At the forefront of the international movement to combat climate change is the Philippine and its reforestation scheme. The establishment of forest plantations play a significant role in the sequestration of carbon dioxide, which accounts to 79% of the total greenhouse gases in the atmosphere, into the biomass of plants. In this study, the proportion of carbon (tons ha-1) in the different parts of *E. urophylla* were determined in four time periods; February 1997, July 1998, Feb 2003, and July 2015. Based on the actual measurement of carbon density by destructive sampling, the tree biomass accumulated by a two- and a twenty-year old *E. urophylla* is 4.36 $\pm$ 0.18 and 304.56 $\pm$ 133.90 tons ha-1, respectively. The accumulated biomass of the parts of the trees was in the order: stem > primary root > bark > bark > secondary roots > branches > leaves > tertiary roots > fine roots. Meanwhile, it was determined that the mycorrhizas in this plantation account for about 1-5% share in the carbon sequestration via the host plants. From the same study period, four ectomychorrhizal species were observed: *Scleroderma* sp.*, Thelephora* sp.*, Cortinarius* sp.*, and Geastrum* sp. The results showed that ectomycorrhizal production is higher in older plantation than in younger stands.It is recommended that the

establishment and the continued study of forest plantations be pursued as one of the measures to mitigate climate change.

Keywords: carbon sequestration, Eucalyptus, mycorrhiza, climate change

Local and global distribution of the invasive blow fly *Chrysomya megacephala*

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Abstract

The oriental latrine fly, Chrysomya megacephala (Fabricius, 1794) is a medically, ecologically, and forensically important species of blow fly (Diptera: Calliphoridae). It is native to the Australasian and Pacific regions but is now distributed worldwide due to species introduction and its inherent invasive nature. This species is known to be the dominant primary colonizer, arriving first on the onset of carrion decay, in regions where it occurs. For this reason, the species is an important flagship species for forensic entomology in the Philippines. This study aimed to (1) map the distribution of the C. megacephala across the Philippines using localities from fieldwork data conducted in this study and those in the Key to the Philippine Calliphoridae by Kurahashi and Magpayo. Samples examined by Kurahashi and Magpayo were concentrated to Southern Luzon, Palawan, and in parts of Mindanao. Fieldwork done from 2013-2016 added representation to Southern Mindanao, Iloilo, and islands such as Marinduque and Tawitawi. C. megacephala was present from 10 m.a.s.l. (Boac, Marinduque) to 1200-1500 m.a.s.l. (Mayoyao, Ifugao). The authors suggests that C. megacephala is a cosmopolitan species spanning the entirety of the Philippines. Further studies on geographical and genetic variations of the species are needed for possible data to be used on quarantine regulations and studies in medicine and forensic entomology.

Keywords: Chrysomya megacephala, oriental latrine fly, distribution, invasive insects

Supplementation of Different Types of Fat on Rumen Microbial Population Dynamics and *In Vivo* Digestibility of Napier Grass (*Pennisitum purpureum* Schumach) in Goats (*Capra hircus* Linn.)

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Abstract

This experiment was carried out using twelve male goats assigned in a Completely Randomized Design (CRD) into the following treatments: T_0 – without fat, T_1 - Corn oil at 3%, T_2 – Coconut oil at 3%, T_3 – Lard fat at 3% with three replicates. The different types of fat were infused into the rumen of goats at 3% of dry matter intake requirement per day (DMI/d) for fourteen (14)

consecutive days. Results showed that the highest reduction in bacterial and protozoal population were obtained using corn oil followed by coconut oil which reflected that fats containing more of poly - unsaturated fatty acids and medium - chain saturated fatty acids have direct toxic effect on rumen microorganisms as compared to lard fat with more long – chain monounsaturated fatty acids, especially on protozoa. However, changes in rumen pH, intake and digestibility of dry matter (DM), organic matter (OM), crude fiber (CF) and crude protein (CP) were not significantly different among treatments, but appeared to be better in corn oil compared to other types of fat. From these results, it is recommended to use corn oil at 3% DMI/d to attain higher defaunation without significantly affecting rumen pH, dietary nutrient intake and digestibility.

Keywords: In vivo, fatty acids, microbial population, digestibility

Poster Paper Abstracts

Internal and External Factors Affecting Community-Based Ecotourism in Taytay, Majayjay, Laguna

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Abstract

Community-Based Ecotourism (CBET) is based on preservation on natural environment centered on the host community. The study focused on the CBET in Taytay, Majayjay, Laguna. The objectives are to determine the socio-economic characteristics of the residents in the area, describe the CBET in Taytay, and perception towards CBET. Research methods used include survey, key informant interview, and review of documents. Data were analyzed through descriptive and A'WOT analysis. A total of 14 internal and external factors were identified and associated with the community-based ecotourism in Taytay Falls. The internal factors include four strengths such as cleanliness and orderliness in the community, additional income and business opportunities to residents, quality service, and security of tourists. On the other hand, the three weaknesses are less focus on the cleanliness around Taytay Falls, some tourist's non-compliance on taking care of the Falls and its surroundings, and waste generation and noise pollution. Meanwhile, the external factors comprised three opportunities such as use of social media in promoting ecotourism, friendship between residents and tourists, and residents' support to ecotourism. Further, four threats that served as external factors include environmental degradation, decreasing water discharge rate in the falls, unclean surroundings, and shrinking carrying capacity.

Keywords: community-based ecotourism, external factors, internal factors

Dinoflagellate Cyst Distribution in Surface Sediments in Inner San Pedro Bay, Tacloban City, Leyte, Philippine

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Abstract

Dinoflagellate cysts survive harsh environmental conditions and serve as inoculums for recurrent blooms. Until this study, there has been no thorough cyst study in this inner part of San Pedro Bay, Leyte. This study assessed the presence and abundance of dinoflagellate cysts in surface sediments. Sediment samples were collected from eleven stations in the study area on March 2015. Determination of the occurrence of dinoflagellate cysts was followed by the identification to the lowest possible taxonomic level. Dinoflagellate cyst densities were determined and expressed as cysts per gram of dry weight (cysts g-1 DW). Dinoflagellate cyst taxa were sparse with relatively low occurrence and were sporadically distributed in relatively low densities in all sampling stations of the study area. A total of six cyst species from six

stations were found. These included 3 harmful species like Alexandrium sp., *Protoceratium reticulatum, and Gymnodinium catenatum* along with 3 others namely *Polykrikos schwartzii Protoperidinium* sp., and *Protoperidinium compressum.* No cysts of *P. bahamense* var. *compressum* were detected. Cell density only had an average of >1 cysts g-1. Factors such as organic content, dry bulk density of sediments, as well as depth affected cyst distribution and density in Inner San Pedro Bay, Leyte.

Keywords: dinoflagellate, cyst, surface sediments, cyst density, algal bloom

Efficacy of Three Botanical Extracts Against Diamondback Moth (*Plutella Xylostella* L.) on Cabbage (*Brassica Oleracea Var. Capitata* L.)

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Abstract

Diamondback Moth (*Plutella xylostella* L.) is a major pest of leafy vegetables belonging to the Brassicaceae family particularly cabbage. Farmers prevent and control damage caused by this insect pest mainly through the application of synthetic insecticides which have known detrimental effects to food safety, human and animal health, and the environment. Hence, the purpose of this experiment is to find a sustainable method of controlling DBM with the use of botanical extracts from plants that are widely grown in the Philippines. Specifically, the study sought to determine the efficacy of three treatments consisting of aqueous extracts obtained from the leaves of tobacco (T_1), madre de cacao (T_2), and neem (T_3) on potted cabbage plants inoculated with DBM larvae and grown under screen house conditions. ANOVA result shows that all the tested botanical extracts have the capability to control DBM producing significantly lesser damage as compared to the control. However, Tukey HSD Post Hoc Test reveals that neem leaf extract was significantly more efficacious than madre de cacao and tobacco leaf extracts in preventing crop damage based on the dumber of damaged leaves.

Keywords: diamondback moth, botanicals, sustainable, organic, integrated pest management

Socio-economic Profile of Coastal Resource Users in Islas de Gigantes, Northern Iloilo

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Abstract

Islas de Gigantes in northern Iloilo is a traditional fishing community that is rapidly emerging as a tourism destination. While changes have been rapid, there is scant information on the coastal resource users in the area. This information is necessary to guide the development in the area. The study used structured questionnaire and covered all barangays: Gigantes Norte (Asluman and Granada) and Gigantes Sur (Gabi and Lantangan). A typical coastal resource user has completed basic education (91%), owns a house (100%) of mixed (45%) or light (38%) material and which sits on a land which is mostly either owned (29%) or as informal settler (29%). Further, only more than half of the households have toilet (54%). Fishing is the major source of household income (75%). Most are engaged in squid fishing (36%), fish (33%) and crab (18%). The dominance of squid may indicate stressed environment while crabs are also targeted as there is a processing plant in the area. Mean monthly household income is PhP 6,936±3,546 which are spent on food (46%) and education (19%). Also, insufficient income (79%) dominates family related problem while sanitation (lack of waste management, 27% and toilet, 12%) and illegal and dynamite fishing (12%) are considered as community problems.

Keywords: coastal resource users, Islas de Gigantes

Towards a Potential Resilient City in the South: A Case Study of Institutional Arrangements in San Pedro, Laguna

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Abstract

This study emphasizes the initiatives of the city of San Pedro, Laguna on disaster management, solid waste and flooding. Anchored on the Critical Urban Climate Change Resilience Action Areas Framework by the Rockefeller Foundation in 2012, through its interventions in land use planning, flood management, emergency response systems, ecosystem strengthening, and disease surveillance. Methods of research used are interviews with key informants, site observation, review of secondary data and collection of city profile and environmental compliance audit. Initial results illustrate that every department has initiatives on the potential hazards the city may encounter. De-clogging, dredging and desilting are practiced in managing waterways. In addition, the utilization of the proper waste management system involves the

Materials Recovery Facility as well as the sanitary landfill. Similarly, the Office for Disaster Management has prepared a framework aligned with the national plan aiming to accomplish (1) Disaster Preparedness, (2) Rescue and Relief, and (3) Rehabilitation in case of natural and man-made calamities. In conclusion, San Pedro, Laguna has the potential of becoming a resilient city in coping with the challenges brought about by urbanization as well as weather variability.

Keywords: solid waste, flooding, disaster management, resiliency, urbanization

Use of Biological Parameters in Assessing the Aquaculture Potential of the Mud Clam, *Polymesoda erosa* (Bivalvia: Corbiculidae) in Santiago River, Dagupan City, Northern Philippines

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Abstract

Assessment on the natural population of the *Polymesoda erosa* in Santiago River was conducted. Derived asymptotic length (L_∞) and growth coefficient (K) were 87.75 mm and 1.10 yr^{-1}, respectively. Fast growth was predicted for the first two years. Longevity of the clams is approximately 11 years. Length-weight relationship showed a positive allometric growth (r^2 = 0.98). Total (Z), natural (M) and fishing (F) mortalities were 3.45 yr^{-1}, 2.71 yr^{-1} and 0.74 yr^{-1}, correspondingly. Estimated exploitation rate (E = 0.21) was lower than the predicted maximum sustainable exploitation (E_{max} = 0.36). Two recruitment pulses were derived with unequal strengths and duration. Highest CIs were recorded during May to August, averaging to 179.79 (±6.47 SE). Monthly mean GSI in ranged from 9.64 to 26.51, averaging to 16.04 (±1.54). Chlorophyll *a* concentration and sediment TOM have significant ($P < 0.05$) influenced in CI variations. DO and water temperature significantly ($P < 0.05$) affected the changes in GSI. Filtration rates under laboratory conditions significantly increased ($P < 0.05$) at lower salinities (0-15 ppt) but pseudofaeces production was not affected by the salinity variations ($P > 0.05$). These biological information are vital for the development of aquaculture techniques for *P. erosa* in northern Philippines.

Screening for Polyketide Synthase Genes from Coprophilous Fungi in Horse Dung from Wright Park, Baguio City

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Abstract

A total of thirty four (34) fungi were isolated from horse dung sourced from Wright Park, Baguio City. Of these, the amplification of the ketosynthase domain was successful in only six isolates. These six isolates were subsequently identified through molecular means using sequence

homology using their 18SrDNA sequence to the nucleotide database of the National Center for Biotechnology Information (NCBI). Of the six isolates, only three were successfully identified. These six isolates are interesting finds as these possibly synthesize polyketides. These compounds might be of help to these organisms as they compete with other microbes in the dung. Knowing that the dung is relatively ephemeral as compared to other substrata, possession of antibiotic and/or bacteriostatic secondary metabolites in the form of polyketides is adaptive relative to the environment provided by the horse dung. These fungi are very interesting in the light of natural product research toward drug discovery as their metabolites can be assayed for various bioactivities since polyketides are regarded as one of the richest ''drug gold mine'' groups since many of them are used as therapeutic drugs. It is recommended that the six dung fungi isolated in this research be subjected to downstream bioactivity testing for the possible discovery of novel medically important compounds.

Density, Size Structure and Growth Patterns of Charru Mussel, *Mytella Charruana* (D'orbigny 1846) (Bivalvia: Mytilidae) in the Riverine System of Dagupan City, Northern Philippines

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Abstract

The density, size structure and growth patterns of Charru mussel (*Mytella charruana*) were assessed in the aquaculture and fishing priority zones of Dagupan City riverine system. The zones were characterized by assemblages of fish pen/cage structures adjacent to the river banks in a chain-liked formation. Three (3) aquaculture structures (fore, middle, aft) from established sampling stations were used to collect mussels. Results showed that highest density of mussel was observed in Carael area with 235 ind. m^{-2}. Size range was between 33 to 44 mm with an average length of 36.92 mm. The growth pattern of the *Mytella charruana* demonstrate negative allometric (b = 2.662) which means that weight increase faster than the length as it grows. The high density of charru mussel in all sampling stations indicates its resiliency to wide range conditions of the river. Moreover, the high abundance of large individuals would also indicate the high adaptive capability of the said mussel species to grow within the present state of its environment. This would signify that this Charru mussel could be a potential aquaculture mussel species in Dagupan City riverine system.

Keywords: charru mussel, riverine system, growth pattern, size structure, Dagupan City

Relationship between Broiler's Live Weight and Its Slaughter By-Products

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Abstract

A study was conducted in order to determine the relationship between the individual live weights of broiler and their dressed weight, and the weights of different edible slaughter by-products. A total of 60 broilers coming from three batches with different live weight ranges were randomly picked. Fourteen birds represented the 850 to 1050 grams weight range, 24 birds for 1051-1251 grams weight range, and 22 heads for 1252-1452 grams weigh range. The birds were slaughtered using standard procedures, and the total dressed weight/carcass weight, and weights of edible slaughter byproducts of each bird were recorded and averaged. Pearson r used to analyze the data. Results show that there is a significant relationship between the chicken's live weight and its dressed weight (r=0768, p=0.00). The chicken's live weight was found to be positively related to blood volume (r=0.379, p=0.003), weight of head and neck (r=0.383, p=0.003), weight of feet (r=0.302, p=0.019), heart weight (r=0.361, p=0.005) and weight of gizzard and proventiculus (r=0.272, p=0.036). However, no significant relationship was found between the live weight of broilers and the weight of their liver (r=0.229, p=0.079) and intestine (r=0.205, p=0.115). Findings suggest that an increase in the live weight of broilers will result in an increase in the weight of some but not all marketable slaughter by products.

Keywords: dressed weight, slaughter by-products, carcass weight

Assessment of Seagrass Meadows in Concepcion, Northern Iloilo

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Abstract

Concepcion is a coastal municipality in northern Iloilo with fishing and ecotourism as major contributors to the economy. While coastal resources are important for the municipality, there is scant information on the status of these resources (such as seagrass). Further, these resources might be under threat (possible impact coal fired power plant). Thus, seagrass meadows assessment was conducted in nine sites (two sites in mainland and seven sites in five islands) in the municipality. Two transects, lengths ranging from 50 to 140 m, were laid for each site. Transects were laid perpendicular to the shore from 50 m to about one km. Percent cover was determined by laying quadrats (0.5 x 0.5 m divided into 10 cm grid) in the transect 5 to 10 meters depending on seagrass vegetation. The area surveyed totaled to 93.8 ha, ranging from 1.0 (Tagubanhan) to 19.6 (Bacjawan). There are nine species of seagrass in the area. *Enhalus acoroides* is the dominant species in five sites surveyed while *Thalassia hemprichii* dominated

two sites and *Halophila minor* dominated in one site. The mean percent cover is 11.22% and is within the range of 1.8% (Butlog gamay) to 26.6% (Tagubanhan). This study provides baseline information on the status seagrass resources in the municipality.

Keywords: concepcion, seagrass, transect quadrat method

Use Value of Tagpait, Aborlan Afforested Mangrove

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Abstract

With the continuous decline of mangrove forest cover in the Philippines, especially due to conversion to fish ponds, it is necessary to raise awareness about the importance of mangroves and the benefits they provide. One way of doing so is determining the value of such resource. This study was conducted to determine the use value of Tagpait Afforested Mangrove Forest located in the municipality of Aborlan, Palawan. Market-based and travel cost methods were used to determine the direct use value (coastal livelihood activities and aesthetic value) of the afforested mangrove forest, while benefit transfer and contingent valuation method were used to determine the indirect use values (biodiversity function, buffer for storm and soil erosion, and carbon sequestration). Household interviews using a semi-structured survey questionnaire through random sampling were also conducted to determine fish and shell production and willingness-to-pay of residents. Results show that the total use value of the afforested mangrove forest of Tagpait, Aborlan is estimated to be Php 150,465,370.00 per year, derived from its total direct use value of Php 69,079,000.00 per year and its total indirect use value of Php 81,386,370.00 per year.

Keywords: use value, afforested mangrove forest, willingness-to-pay, direct use value, indirect use value

Incidence of Fruit Flies on Ampalaya *(Momordica Charantia* L.) Grown with Wild Basil (*Clinopodium Vulgare* L.) Extracts as an Attractant

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Abstract

A field experiment was conducted in order to evaluate the incidence of fruit fly infestation and severity of damage on ampalaya grown with crude wild basil leaf extract placed as trap/attractant in different locations within each plot. The study tested the effects of 100% Crude Extract (T1), and 50% crude extract (T2) versus the control-water (T3). This experiment was laid out in micro-plots through a Randomized Complete Block Design (RCBD), with each

treatment replicated trice. Results revealed the incidence and infestation of fruit flies in all plants regardless of treatment. Two other insect species such as Leaf-footed Pine Seed Bug (*Leptoglossus corculus*), and Cotton Stainer (*Dysdercus suturellus*) were also present. Fruit fly damage on ampalaya fruits were observed in all treatments. However, plants in plots with 100% crude basil extract as trap/attractants were found to have the least fruit fly damage, compared to the 50% extract, and the non-treated plants where fruit fly damage was most severe. The study concludes that placing crude basil extracts as fruit fly trap/attractants can reduce damage on ampalaya fruits, but insufficient as a control measure.

Keywords: basil extract, fruit fly, insect pest incidence, attractants

Coral cover and fishes diversity in Bancal, Carles, Iloilo

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Abstract

Philippines has an estimated 27,000 km^2 of coral reef with only about 5 percent of this area still in excellent condition. The coral reefs provide high primary productivity and high fishery yields for food security, coastal protection, tourism, education, research and aesthetic value. Carles is the last northeastern town of Iloilo Province and it is approximately 146 kilometers from Iloilo City. High coral concentration was observed in the eastern part of Carles particularly off-shore of Barangay Bancal. The live hard coral reef cover in Bancal was in fair condition (48.59%). The reef fish's abundance, biomass and density were low and fishes belong to Pomacentridae family (damsel fish) dominated the fishes observed in the area. Line Intercept Transect (LIT) method was employed during the coral assessment while fish visual census (FVC) was done for the fishes dwelling in the reefs. This study will serve as baseline data to be used by the Northern Iloilo Polytechnic State College (NIPSC) as well as for the LGU – Carles in the formulation of comprehensive management plan to adequately protect and conserve this most precious resource.

Keywords: corals, coral cover, reef fishes, biomass and diversity

Growth and Yield of Okra (*Abelmoschus esculentus* (L.) Moench) Grown in the Marginal Upland Area of Sta. Rita, Samar as Influenced by Different Planting Densities and Mulching Materials

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Abstract

Okra or Lady's finger, botanically known as *Abelmoschus esculentus*, is a tropical and sub-tropical indigenous vegetable crop commonly grown for its fibrous, slimy, and nutritious fruits and consumed by all classes of the population. It has also several medicinal and economical values. Despite its many uses and potential value, its importance is under estimated, under-utilized, and considered a minor crop and no attention was paid to its improvement. The study was conducted to evaluate the effects of different planting densities and mulching materials on the growth and yield of okra grown in slightly slope soil in the marginal uplands in Sta. Rita, Samar, Philippines. A split-plot experiment was set-up with planting density of one, two, three plants per hill as main plot factor and the different mulching materials as the sub-plot which were: unmulched or bare soil, rice straw, rice hull, hagonoy and plastic mulch. Planting density did not significantly affected the yield of okra. Regardless of the mulching materials used, mulched plants yielded higher than unmulched plants. Moreover, the use of plastic mulch resulted to the highest total yield. The results indicate the potential of mulching in increasing yield and thus profitability of okra production under marginal conditions.

Keywords: okra, Abelmoschus esculentus, rice straw, rice hull, hagonoy, plastic mulch

Increasing productivity on upland Kangkong (*Ipomoea aquatica* Forssk.) grown in the marginal upland area of Sta. Rita, Samar through basal and different organic liquid fertilizer application

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Abstract

Kangkong (*Ipomoea aquatica* Forssk.) is known by many names including swamp cabbage, Chinese kangkong, water convolvulus and water spinach. It is an important vegetable in many Asian countries. It has a number of medicinal benefits however, its potential value and importance is under estimated. The study was conducted to evaluate the production of upland kangkong using different level of organic and inorganic fertilizer, and different organic liquid fertilizer application in the marginal upland area of Sta. Rita, Samar, Philippines. The experiment was laid out in split-plot design arranged in RCBD with 3 replications. The different level of basal fertilizer served as the main plot were: control (without fertilizer application), 5 g complete + 10

t.ha^{-1} chicken dung, 5 g complete + 7 t.ha^{-1} chicken dung and the different foliar fertilizer as the sub-plot with the treatments: Control (without foliar fertilizer application), IMO2, FAA, FPJ, and Algafer. The combined application of organic and inorganic fertilizer favored the growth of kangkong. Results showed that application of 5 g complete + 10 t.ha^{-1} chicken dung and 10 g complete + 7 t.ha^{-1}chicken dung significantly increased yield in terms of number and weight of kangkong shoots. However the different organic liquid fertilizers had comparable effects on the growth and yield of kangkong.

Keywords: chicken dung, fermented plant juice (FPJ), algafer, indigenous microorganism (IMO2), fish amino acid (FAA)

Growth Performance of Lettuce (*Lactuca sativa* L.) Grown Under Protected Cultivation as Influenced by the Types and Concentrations of Wood Vinegar

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Abstract

In temperate areas, lettuce is one of the leading commercial vegetables whereas in the tropics like the Philippines, it is a secondary vegetable of small but increasing commercial importance. The hazards to health and environment from the use of pesticides must be minimized and the dependence on chemical control needs to be reduced without compromising the growth of lettuce and its volume of production. This study was conducted to evaluate the effect on the growth and yield and on pest incidence of the two types of wood vinegar (kakawate and bamboo) at different concentrations. The experiment was laid out in split-plot design arranged in RCBD with 3 replications. The type of wood vinegar served as the main plot and the different concentrations as the sub-plot. Results showed that the types and concentrations of wood vinegar did not significantly affected lettuce performance while effect on insect pest incidence was not effectively assessed due to very minimal insect infestation during the growing period. However, the different concentrations significantly enhanced root characteristics, weight of wrapper leaves produced and suppressed weed growth. Moreover, the use of wood vinegar at higher concentrations had numerically better net return compared to lower concentrations and in the control as well.

Keywords: Gliricidia sepium, Bambusa sp., pyroligneous acid, methanol, acetic acid

Economically Empowering Women for Sustainable Development

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Abstract

The world's globalization in economy presents new challenges and opportunities for sustained income growth and development. There is growing inequality between the sexes and women today which still bear a disproportionate burden of poverty. Women's empowerment is obstructed by discriminating policies and women's contribution to society somehow is undervalued. Women today are aggressive and this is by helping their spouses in earning extra income for the financially challenged situations. Gone are those days that they stayed at home to take care of the children and confined to household chores. There are government, private, non-stock and non-profit Micro-financing organizations who are established towards the upliftment of the least prioritized constituents for poverty alleviation through the development of income generating projects and jobs creating small and micro-enterprises. It adheres closely to its role as catalyst by constantly providing jobs and increasing productivity through business development and holistic transformation. The study was conducted through a survey method and majority of the respondents were women micro-entrepreneurs. Majority of the beneficiaries are housewives and engaged in small business entrepreneurship like Sari-Sari Store, Bakery, Vegetable Vending and Carinderia. Survey showed positive impact on the livelihood of the beneficiaries because not only they were able to establish their own small businesses it follows through that they were able to send their children to school, acquired most basic house appliances and the influence to the family members to be entrepreneurs also through family cooperation and division of labor in the day to day business life. Micro-finance program not only give financial assistance with small interest but also conducted seminars and skills trainings on entrepreneurial knowledge to enhance capability of its clients to develop upon them their capacity to be responsive in their quest for self-sufficiency. While many women are trying their hand at entrepreneurship and succeeding, a lot still can be done to increase their ranks and to help those already in business make their operations more profitable. Given opportunity women empowerment can build a strong self-sufficient family. Women are great partners in economic development and sustainability in the family. With the intervention of different Micro-financing programs, reforming the lives of the marginalized entrepreneurs/clients particularly the women, their abilities were revolutionized in their respective businesses despite present difficulties in our country's economy.

Claims on Disaster: A Case Study of the Fisher Folks in BASECO

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Abstract

BASECO, an urban coastal slum in Manila, is exposed to various hazardous events such as fires, floods, and storm surges among others. This paper on selected locals in BASECO problematizes how disaster both natural and man-made is viewed and framed. Anchored on the concept of social construction of Hannigan (1995), the paper argues that claims on disaster could be analyzed from three elements: ground, warrants, and conclusion. Methods used are interview, community observation, and focus group discussion. Initial results illustrate that the fisherfolks are dependent on the Manila Bay as source of livelihood. Most of them are still using the traditional fishing gear as they cannot afford to own a fishing boat for a living. They consider natural hazardous events like typhoons and storm surges as threat but they continue to go out into the bay to catch fish. Aside from natural hazards, they also consider floating garbage and water hyacinth from the Pasig river as hazardous and detrimental to their livelihood. In conclusion, the locals claimed an event disastrous if it hinders the fishing activity of the coastal community as they are deprive of their food on the table and money for their daily survival.

Keywords: claims, disaster, BASECO, fisherfolks

Diversity and Ecological Niche of Earthworms (Oligochaeta) in Mount Parker, T'boli South Cotabato, Philippines

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Abstract

Earthworm diversity in Mt. Parker which is part of the Allah Valley Protected Landscape was described in terms of species richness, ecological niche, and habitat condition. Five habitats were selected as sampling sites: regenerating forest, grassland, agro-ecosystem, primary forest, and area beside the lake. A 10 x 10 m plot was established for each site for the earthworm sampling and in the collection of approximately 500g-1000g of soil for its physico-chemical profiling using Walkey-Black method (1994). Correlation between richness and habitat type and between species diversity and soil physicochemical parameters were determined using Pearson's test. Earthworms collected from five habitats revealed 3 earthworm species. Two species from family Megascolecidae namely*: Pheretima enormis* and *Pheretima hamiguitanensis* were identified as endogeic and are indigenous species while the *Pontoscolex corethrurus* from the family Glossoscolecidae which is native in South America and noted to be invasive was identified as endo-epigiec. Habitat beside the lake is the most diverse while grassland is the least diverse. Physico-chemical profiling of the soil samples revealed an average

soil pH of 8.1, 3.5% organic matter content, and 20.48% moisture content. Correlation between species diversity and physico-chemical parameters revealed significant negative correlation in soil pH suggesting earthworm diversity increases soil's alkalinity.

Keywords: diversity, earthworms, ecological niche, Mount Parker, Pontoscolex corethrurus

Fuzzy Goal Programming Approach for Vehicle Routing System in Nueva Ecija, Philippines

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Abstract

The province of Nueva Ecija is known to experience frequent disasters caused by natural calamities, as a result, many people are affected and the need to an efficient and effective way to distribute relief goods arise. A goal programming and fuzzy goal programming model for vehicle routing problem were formulated. Integration of goal programming and fuzzy set theory can capture the problem of vehicle routing in a more realistic way, by addressing conflicting objectives and ambiguous and vague information. Various values of parameters and weights for goals and constraints were considered in this study to determine the behavior of the solution.

Keywords: vehicle routing problem, Philippines, fuzzy goal programming, optimization

Health Risk Assessment of Lead and Cadmium in Cultured Oysters (C*rassostrea sp.*) in the waters of Cañacao Bay, Philippines

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Abstract

This study evaluates the potential noncarcinogenic health risks associated with exposure to lead (Pb) and cadmium (Cd) that have bioaccumulated in cultured oysters (*Crassostrea sp.*) in Cañacao Bay, Cavite. Oyster and water samples were collected from October to November 2016 (wet season) and December 2016 to January 2017 (dry season). Three sampling stations were established in the area and coordinates were obtained using Global Positioning System (GPS). The temperature, dissolved oxygen (DO), pH and turbidity were analyzed. Heavy metal analyses for Pb and Cd were conducted using Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES). Results showed an increasing trend in Pb concentrations in oysters, ranging from less than 0.1 mg/kg to 0.5 mg/kg while Cd concentrations ranged from 0.02 mg/kg to 0.09 mg/kg. Pb and Cd concentrations in the oysters are within the maximum limits set by Food Standards Australia New Zealand (FSANZ) and Food Safety Authority of Ireland (FSAI) for molluscs. Bioaccumulation factors for Pb and Cd in the oysters are all greater than 1.0, suggesting that oysters tend to accumulate these metals. The Target Hazard Quotients (THQ) are well below 1.0,

indicating that there is no appreciable risk to the general population for developing noncarcinogenic deleterious effects.

Keywords: lead, cadmium, Crassostrea, bioaccumulation, Cañacao Bay

A Goal Programming Approach to Water Supply Allocation Problem

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Abstract

Water allocation deals with problems such as water shortage in some areas while having water surplus in others. One solution to this is transferring the surpluses into the areas with water deficit. A goal programming model focusing on water supply allocation that minimizes the water deficit after transfers while minimizing the costs of transfers was formulated. Goal programming deals with multi-objective problems. Preemptive and non-preemptive goal programming were employed in the model formulation. These models were applied to specific water allocation problem wherein several scenarios were considered and analyzed.
Keywords: water allocation, optimization, goal programming

Local and Global Distribution of the Invasive Blow Fly *Chrysomya megacephala*

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Abstract

The oriental latrine fly, *Chrysomya megacephala* (Fabricius, 1794) is a medically, ecologically, and forensically important species of blow fly (Diptera: Calliphoridae). It is native to the Australasian and Pacific regions but is now distributed worldwide due to species introduction and its inherent invasive nature. This species is known to be the dominant primary colonizer, arriving first on the onset of carrion decay, in regions where it occurs. For this reason, the species is an important flagship species for forensic entomology in the Philippines. This study aimed to (1) map the distribution of the C. megacephala across the Philippines using localities from fieldwork data conducted in this study and those in the Key to the Philippine Calliphoridae by Kurahashi and Magpayo. Samples examined by Kurahashi and Magpayo were concentrated to Southern Luzon, Palawan, and in parts of Mindanao. Fieldwork done from 2013-2016 added representation to Southern Mindanao, Iloilo, and islands such as Marinduque and Tawitawi. C. megacephala was present from 10 m.a.s.l. (Boac, Marinduque) to 1200-1500 m.a.s.l. (Mayoyao, Ifugao). The authors suggests that C. megacephala is a cosmopolitan species spanning the entirety of the Philippines. Further studies on geographical and genetic variations of the species are needed for possible data to be used on quarantine regulations and studies in medicine and forensic entomology.

Keywords: Chrysomya megacephala, oriental latrine fly, distribution, invasive insects

Listening Comprehension Skills of PSU-Narra First Year College Students: Basis for an Intervention Program

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Master of Arts in Teaching major in Language Studies, Graduate Teacher Education Department, College of Teacher Education, Palawan State University, March 2015.

Abstract

Using a combination of quantitative and qualitative methods of research, the study sought to determine factors affecting listening comprehension skills of PSU-Narra first year students as basis for an intervention program. It employed researcher-made questionnaires and focused group discussion to determine the students' demographic profile, levels of listening comprehension, and self-assessment on language related factors. Data were tabulated, analyzed and interpreted using frequency, percent, mean, standard deviation, regression and Pearson Correlation. The data revealed that the levels of listening comprehension of the first year students were found to be average to high. In the attentive and interpretive levels, students posted average scores. While the students showed an average score in the critical level, it was also in this area where the lowest scores were found, thus pointing that it is the students' most difficult area of listening. Majority of the students had high scores in evaluative and appreciative levels. On the demographic profile, only sex was found to have a significant relationship and such relationship was only found in the interpretive and appreciative levels. In the language related factors, the attentive level was found to be affected only by the translation to Filipino, while the interpretive, critical and evaluative levels were affected by the contextual factor. None of the language related factors have been found to affect the appreciative level of listening. Therefore, an intervention program is brought forward with the main objective of enhancing students' contextual understanding and translation to Filipino to improve critical listening comprehension.

Marine Mollusc Collection In The UPLB Museum Of Natural History (UPLB-MNH)

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Abstract

UPLB Museum of Natural History (UPLB-MNH) is known as center of research and information of Philippine biodiversity. Currently, the zoological and wildlife museum section has 700 shell collection. Apparently, several boxes of marine shells were sent to the museum by an

anonymous shell collector. These marine shells were identified using different text books authored by Guido T. Poppe, Giorgio Gabbi, Simon Peter Dance, and R. Tucker Abbott. A database was also created for future reference for researchers and malacology students. Results showed that the shell collection is composed of gastropods and bivalves, with 41 families and 214 species. The species with the most numerous individuals are *Conus praecellens* (48) followed by *Apollo perca* (37) and *Conus lividus* (29). Among the families present, Conidae is the most numerous with 25 representative species. Moreover, Family Conidae is the only one assessed by the International Union for the Conservation of Nature (IUCN). The database as compared to museum in New Zealand showed two common genera namely *Haliotis* sp. and *Turbo* sp. The authors recommend future researchers to research more about conservation status of families. Also, database should always be updated and be accessible to other researchers through UPLB-MNH website.

Key words: marine shells, malacology, family, genera, species

San Jose del Monte, Bulacan on the Road to Resiliency

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Abstract

The study describes how the city of San Jose del Monte, Bulacan responded to traffic and flooding as emerging environmental problems. The major concerns of the city are efficient mobility and reduce the impact of leap frog development. It employed the Burohappold Resiliency Framework (Burohappold Engineering, 2016) as theoretical lens as it is designed to assist cities in assessing the current and future resilience demands making it measurable, comparable and manageable. The methods of research are interviews using purposive sampling, observations and review of secondary data. Initial results of the study show that the city is being challenged by population increase and expanding commercialization. However, the local government emphasizes its plans for an effective traffic management by redefining its traffic code, road widening and clearing obstructions on the road such as street vendors and debris. City disaster risk management is less concerned with flooding as of the city is elevated. However, the city as proactive set up the flooding management units known as Incidence Command System (ICS) to resolve large scale disasters and three alert response teams fully equipped with rubber boat attached with fiber boat engine, throw bag, helmet, throw can, rescue tube, life vest, and support rope for flooding. In conclusion, San Jose del Monte prioritized strengthening disaster infrastructures as response to the needs of the expanding city.

Keywords: resilient city, urban planning, flooding and traffic

The Sustainability of Water Ways Management: A Case Study of Estero De Paco Gerard Wincy

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Abstract

The paper aims to illustrate the physical transformation of The Estero de Paco, a waterway located in Paco. The paper seeks to understand how the residents managed the Estero de Paco's afters its rehabilitation that started in the year 2009. Anchored on the concept of sustainability and interlocal collaboration model, the study argues that barangays located along the waterway can collaborate to sustain the waterway and prevent it from further deteriorations such as garbage, waste, flooding, and other factors such as human behavior. The methods used are key informant interviews, field observation and the review of related literature aided by field notes, transcripts and guide questions. Initial results show that the selected barangays are very much satisfied with the progress and rehabilitation and are doing all they can to further clean and word together to sustain the waterway. Along the waterway, the easements are wider, the vegetation has improved, houses were built facing the estero, children playing and it became a social space for residents. In conclusion, Estero de Paco as a flowing waterway has improved reflecting the collaboraton of LGU, residents and other agencies. They have maintained to make it livable estero side by side with other communities.

Keywords: estero, interlocal collaboration, waterway, sustainability, estuary

Hydrographical Characteristics and Mercury Content of River Waters in Calmay River, Dagupan City

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Abstract

This study was conducted to determine the physico-chemical characteristics and mercury content of river waters in Calmay river, Dagupan City. Seven water quality parameters were analysed in-situ from the three (3) established sampling stations, namely Calmay Ilokano, Sentro and Sagur. Water samples were collected from the surface, mid and bottom of the water for heavy metal examination. Analysis of mercury concentration was done through Atomic Absorption Spectrometer (AAS). Results of the study showed that highest Total Alkalinity and Total Hardness of water were observed in Calmay Ilokano with 105 mg/l and 4901.96 mg/l, respectively. Dissolved oxygen ranges from 7.82 to 9.92 mg/l, pH ranges from 7.3 to 7.4 and water temperature ranges from 30 to 34°C. Observed water quality parameters in all sampling stations indicate the good condition of Calmay river. On the other hand, the mercury content of the water (<0.0002 mg/L) was below the detection limits of the flameless atomic absorption spectrophotometer (AAS).

Keywords: Calmay River, water quality, mercury concentration, Dagupan City

Influence of Mariculture on the Surface Sediment and Abundance of Meiofauna in Igang Marine Station, Igang, Guimaras

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Abstract

This study was conducted to determine the influence of mariculture on the surface sediments and abundance of meiofauna. Organic matter, redox potential, species composition, density and diversity were analysed in 18 sampling sites located in cages and non-cages area. Results showed that cage area have higher concentration of organic matter (OM) with 9.94% compared to non-cage area with 2.10%, likewise with the redox potential with 86 mV and -69mV respectively. Nine major taxa of meiofauna were identified which includes *Nematoda, Bivalvia, Ostracoda, Foraminefera, Turbellaria, Tardigrada, Gastrotricha, Heteropoda* and *Copepoda.* Nematodes outnumbered all the taxa in both stations, however there was an observed decreased in cage area. Moreover, for density the non-cage area has higher value that ranges from 0.75 to 1.05 ind/Cm^2 compared to cages area with a value that ranges from 0.43 to 0.69 ind/Cm^2. In contrast, the diversity index of meiofauna was observed to be higher in cages area with a mean value of 1.70 as compared to non-cages area with a mean value of 1.57. Based on the Pearson-R correlation analysis, revealed that there is a significant difference between OM and Density at ($p<0.05$).

Keywords: mariculture, organic matter, redox potential, density, diversity and meiofauna

The search for "safer aspirin": Bioactive hits for Cyclooxygenase 2 inhibition from fungal extracts

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Abstract

Nonsteroidal anti-inflammatory drugs (NSAIDs) are used to manage inflammation and pain. However, these drugs pose an increased risk of gastric or duodenal bleeding. NSAIDs inhibit cyclooxygenase enzymes (COX1 and COX2) that are needed to produce prostaglandins (compounds that mediate inflammation and pain). However, this compound also serves to protect the lining of the gastro-intestinal tract against acidity. One of the approaches toward the management of the risk of gastric or duodenal bleeding due to NSAIDs is the use of selective COX-2 inhibitors. Scientists have found that COX2 inhibitors are safer for clinical use as these have lower gastro-intestinal toxicity. In this research, fungi associated with plants indigenous to Benguet were screened for their selective inhibition for COX2. Three hundred thirteen (313) extracts were assayed for this bioactivity. The fungus that exhibited the highest COX2 inhibition

was *Trichoderma harzianum* UPB-Sp.210 at 67.78%. However, the isolate with the highest COX2/COX1 inhibition ratio was an unidentified Ustilaginomycetes UPB-Sp. Y238 at 1.167. Of the 313 extracts, 22 are considered to be bioactive hits (COX2 inhibition >50%). These 22 isolates are prime candidates for further studies for the isolation of possibly novel compounds that are selective for the inhibition of the COX2 enzyme.

Keywords: cyclooxygenase, fungi

Species Richness and Abundance of Odonota Across Vegetation Types In K'laja Karst, General Santos City

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Abstract

Odonata is considered as good biological indicator being sensitive to habitat quality hence suitable for use in assessing environmental health and as guide in formulating conservation management strategy. This study described the odonatological picture of K'laja Karst, Brgy. Conel, General Santos City across three major vegetation types: riparian, closed canopy forest, and grassland. Employing opportunistic sampling along established transect lines, sampling yielded a total of 13 species of which 7 species are members of Anisoptera and 6 from Zygoptera. A high endemism was recorded at 53.85% despite low species diversity in all three major vegetation types of the area (H'=0.8043%). The trend of abundance and species richness of vegetation types increasing from grassland, open canopy forest and to riparian ecosystem indicating preference of odonata to habitat with rich aquatic environment, and abundant vegetation with lesser disturbance. Presence of the Philippine endemic *Vestalis melania* and *Rhinocyphala colorata*, , in all three sites, and the high relative abundance of *Rhinocypha turconii* indicate good habitat quality for Klaja Karst Area.

Keywords: anisoptera, endemism, riparian, vegetation, zygoptera

Rabbitfish Production, Harvesting and Marketing Practices in Selected Coastal Towns of Pangasinan, Northern Philippines

RICARDO A. DE GUZMAN

Abstract

The study was conducted to determine the respondents aqua business profile, the management employed in rabbit fish production, harvesting practices, marketing practices, farm expenses. Respondents operated and managed mostly fishponds for growing siganids. Siganid growers prepared their ponds by draining and drying just after harvest. Most of them used fish seeds for grow out culture that were gathered from wild and fed them with "lumot" and commercial

feeds. Total harvest was implemented using seining method and draining method. The marketing practice was mostly delivering of the produce to consignees, and they run their aqua business using their personal savings. Natural calamities were the major problems observed.

Keywords: rabbit fish, assessment, production, Pangasinan

Dna Barcoding and Phylogenetic Analysis of Eonycteris Robusta (Class Chiroptera, Family Pteropodidae) using the Cytocrhome Oxidase Subunit I (Coi) Gene

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Abstract

Eonycteris robusta is an endemic fruit bat species of the Philippines. As a fruit bat, it is both economically and ecologically important because of its role as a pollinator and seed disperser. Currently, little is known about this species with few accessions in GenBank and no COI accessions available at all. We aimed to generate DNA barcodes of E. robusta using the cytochrome oxidase c subunit one (COI) gene and infer a phylogenetic tree of the E. robusta COI gene together with the other fruit bats within the subfamily Rousettinae. Wing biopsy samples from six individuals were obtained, the DNA extracted, and the 5' end of the COI gene sequenced. Additional sequences of bats within the subfamily Roussetinae were downloaded from GenBank along with the outgroup Scotonycteris zenkeri (subfamily Epomophorinae). JModelTest was used and the most optimal model for phylogenetic analyses selected was TIM2 + I. Sequences were also tested for oversaturation and was found to be unsaturated. A Maximum-Likelihood tree was generated with 1000 bootstrap replicates. In the tree, the clade containing all E. robusta COI sequences was separated from its closest relative, E. spelaea, with 98.4% bootstrap support. Intraspecific distances using TIM2 + I model ranged from 0.0000 - 0.0047 and the interspecific distance of E. robusta samples from E. spelaea and R. amplexicaudatus where 0.1656 - 0.1844 and 0.4465 – 0.4819, respectively. In the past, E. robusta was often misidentified as either E. spelaea or Rousettus amplexicaudatus. This study provides novel COI sequences for E. robusta, which could be used to aid in species delineation amongst E. robusta, E. spelaea and R. amplexicaudatus.

Evaluation of Food Safety Knowledge and Practices of Street Vendors and Microbiological Quality of Selected Street Food in Tacloban City, Leyte

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Abstract

In Tacloban City, street food is an important everyday commodity for commuters and urban dwellers. This study assessed the food safety knowledge, attitudes and food handling practices of street vendors in the city. Although none of the vendors, who were mostly male (92%), had food safety training, 16% had city permits or barangay health certificates. Additionally, 20%, 56%, and 24 % of the street vendors had poor, adequate and good levels of food safety knowledge respectively. Only 4% of the vendors had poor food safety attitude while 44% and 52% of the vendors had adequate and good food safety attitude. The microbial quality of selected street foods such as fried chicken intestines (*isaw*); fried pork internal organs and fats (*bopis*); and fried chicken crop (*botsi*) along with their sauces was determined. The aerobic plate counts (APC) of all street foods sampled ranged from <2500 EAPC-10^7cfu/g. The percentage of cooked samples (22%) that exceeded the APC limit (>10^5 cfu/g) was lower compared to pre-cooked samples (73%, >10^6 cfu/g). The APC of sweet and spicy sauces ranged from <2500 EAPC-10^5cfu/g while 47% (>10^4 cfu/g) of these sauce samples exceeded the acceptable limits for APC. Moreover, the presence of coliforms in majority of the food sampled may suggest presence of other harmful pathogens like *Salmonella* which was detected in 17% of the samples tested. These results suggest that consumption of street-vended foods may pose a risk of food borne disease and that good hygienic practices should be required for consumer's safety.

Keywords: aerobic plate count, microbial quality, coliform, Street food, food safety

Avifaunal Diversity and Ecological Status of Klaja Karst Area Southern Mindanao

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Abstract

Birds are good biological indicator of landscape degradation for their sensitivity to little change in an ecosystem and in performing important ecological functions in forests. Klaja Karst Area, one of the remaining forests in General Santos City and current focus of the City's economic development program, was classified into four habitats to assess avifaunal species diversity, endemism and current ecological condition. Findings revealed fifty-eight bird (58) species belonging to thirteen (13) orders and thirty-one families. Twenty five (25) species are endemic at 43.1% endemism. Areas of interest are Site 3 (Amsicong) for having recorded high species richness, abundance and endemism among sites, and site 4 (Nopol Hills) for its higher species

diversity. The worldwide migratorial bird species *Hirundo rustica* (Barn Swallow) was the dominant and most abundant species while the vulnerable species, *Ficedula basilanica* (Little Slaty Flycatcher) and the near threatened species *Irena cyanogastra* (Philippine Fairy Bluebird) were the threatened species existing in the area. Despite of the anthropogenic pressures present in the Klaja Karst Area due to conversion of forest into agricultural area, rampant small-scale quarrying and community encroachment avifaunal assemblage revealed a good ecological condition of the area which calls for appropriate management plan to continue protect and preserve avifaunal diversity.

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