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 of 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 17 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; Dumaguete City (2016) with Silliman University; and Los Baños with Palawan State University (2017). These conferences provided an important venue that attracts researchers, engineers, scientists, students, environmental advocates, and other professionals from many parts in the country.

ICoNSIE 2018 (International Conference on Nature Studies and Innovation for the Environment) 2018 is PSSN's 18th Annual Scientific Conference. The theme "*Connecting the Dots for the Environment and Humanity*" highlights the important role of the conference in consolidating fragmented information of the environment and humanity held by various disciplines. Nature studies cover the natural sciences including the social sciences as well as the arts and humanities. However, these information need to be exchanged to create a broader and deeper perspective on humanity and environment interactions. In the process, a better view of nature and its amenities could be provided to all stakeholders creating more sustainable strategies for consumption and development. Hence, ICoNSIE 2018 aims to: (a) create a venue for knowledge exchange of knowledge and experiences among scientists, researchers, and practitioners of nature studies; (b) provide opportunities to publish scientific papers in the Nature Studies Journal; and (c) strengthen environmental responsibility among the members.

This year's theme focuses on the role of nature studies in building knowledge base for environment and humanity. It was developed around the following sub- themes: (a) Green technology and development innovations; (b) Education and the environment; (c) Gender and the environment; (d) Environmental management strategies, initiative, and policies; and (e) Indigenous knowledge and communities.

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SOUVENIR PROGRAM MESSAGE

ICoNSIE 2018

The indiscriminate misuse of nature and the environment has been a major challenge for many decades now. The extreme pressure for societies to adapt to the demands of modernity, admittedly, has its benefits. But the road to modernity also has its downside. The Holy Bible informs us that God has made man the ultimate stewards of this planet, and as stewards we have a great responsibility to protect, conserve, and save it. In his Encyclical *Laudato Si*, Pope Francis calls for every human being to care for what he calls our "common home". This is his first encyclical that has an ecological turn which clearly points to the relationship between the promotion of justice and peace and care of God's creation. These two basically work on the same level since one cannot be without the other. Pope Francis proposes concrete lines of action in caring for our common home which involves engaging in a dialogue on various levels with different concerned sectors involving the Catholic Church, civil society, the government, community organizations, business establishments, and international counterparts which actually require complex preparations. Pope Francis likewise reiterates and emphasizes those important acts can be done right away. He stressed that our care and concern for God's creation is an expression of our fidelity to Christ who tells us to love our fellow human beings who with us co-exist in a common home.

On May 15-18, 2018, the Philippine Society for the Study of Nature (PSSN) will be holding the International Conference on Nature Studies and Innovations for the Environment (ICoNSIE) at the University of Santo Tomas. This event is done in partnership with the Research Center for Social Sciences and Education (RCSSED) and the Faculty of Arts and Letters. Aptly-themed ***Connecting the Dots Between the Environment and Humanity***, the conference will examine various avenues by which human activities can relate to and address significant matters concerning nature and the environment. I would like to commend the organizers of this conference since the scholarly and meaningful exchange among academics, scholars and environmentalists as well as their as their unified stance will help bring about practical and practicable changes in the way nature is utilized. Today, international and local agencies, both government and private, are initiating projects and programs that will serve as significant interventions to solve problems concerning our slowly dying planet. This conference comes at a most opportune time since the discussion about preserving our common home is not only a relevant issue but one that requires immediate attention and action and as brothers and sisters in Christ, we have to take necessary steps to look at every angle of this global crisis and find viable solutions to this pressing concern. May this conference yield a plethora of concepts and ideas that will allow us to work together for a common vision which is to have better and a more inhabitable Mother Earth.

FR. HERMINIO V. BAGOHOY, O.P.
Rector

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Message

On behalf of Mother Earth Foundation I congratulate the Philippine Society for the Study of Nature (PSSN), on its **International Conference on Nature Studies and Innovations for the Environment** with the very appropriate theme, "*Connecting the Dots Between the Environment and Humanity*".

As the saying goes, "no man is an island", and that we are all interconnected. Each one of us has the primal duty to take care of our Mother Earth, who gives us all what we need to survive in our earthly journey. We need to follow our indigenous brothers and sisters in their way of life, taking only what is needed from nature for their daily needs. A story goes that on their way to a project, a group with a guide from the indigenous community came to a tree with plenty of fruits. The group gathered many fruits and put them in their bags. Their guide took only one or two pieces. When they asked him why, he told them, that the fruits left will be for the other hungry passers by.

Extraction and improper solid waste management will deplete our finite resources and eventually, nothing will be left for the future generation.
I wish PSSN the best of luck in serving as a platform for knowledge exchange to counter unsustainable utilization of nature and its amenities. Let me end with a quote from Chief Seattle, "We do not inherit the earth from our ancestors; we borrow it from our children".

(SGD) Sonia S. Mendoza
Chairman at Mother Earth Foundation
NCR - National Capital Region, Philippines

Message

Societal evolution has brought us to the peak of technology and pollution. As a consequence, its rippling effect can now be felt through global warming, forest devastations, extinction of species and health problems. As we continue to disturb the earth's natural ecosystem, the role of humanity to counteract these effects becomes more obligatory.

With this initiative of the Philippine Society for the Study of Nature (PSSN), I hope that this international conference will help us gather more points for reflection on our responsibility to ensure that the world we pass on to the next generation is as healthy as when we found it, if not healthier. May it serve as a wake-up callfor all of us that we cannot wait for others to care for the environment; we need to take action ourselves. We hope that we will be more vigilant in creating a clear and shared vision for a better worldto live in. Remember, our actions, however simple, will always matter to the betterment of the environment.

Warmest greetings and Congratulations to everyone!

Prof. Belinda V. de Castro, Ph.D.
Director, RCSSEd

Message

The PSSN Scientific Conference is one of the platforms that provide articulation of unheard voices in the field of environmental management. As an enabler of environmental protection, PSSN adheres to varied approaches in exploring the natural environment from various cultural, political, social and religious dimensions.

The theme ***Connecting the Dots for the Humanity and Environment*** is timely as we are experiencing the disastrous effects of climate change, deforestation or land use change. These vulnerabilities are manifestations that man is disconnected with the natural environment, thus, has to reflect on how he can sustain the remaining natural environment for the benefit of the future generations.

The 18th PSSN Scientific Conference, a driver in research development, brings together researchers, faculty, the private sector, NGOs and students in addressing environmental challenges realizing that collaboration, partnership or co-management would facilitate connectivity between man and the environment.

Congratulations PSSN!

Dr. Arlen A. Ancheta
PSSN President
University of Sto. Tomas

Message

With the exponential increase and expansion of urban development brought about by economic growth, which produces pressure and stress on the environment, the holding of an International Conference on Nature Studies and Innovations for the Environment, (ICONSIE 2018), organized by the Philippine Society for the Study of Nature and co-hosted by the Faculty of Arts and Letters, University of Santo Tomas, Manila to be held on 15 -18, May 2018, is but a timely and significant event that would provide pathways and opportunities to articulate and address concerns on the impact of growth and development to environment and nature. While we welcome the fruits of economic development, evidenced by the growing number of large communities such as a metropolis, and the metamorphosis of rural landscapes into urban centers and transformation of municipalities into large cities, we need to strike a balance between growth and expansion on the one hand, and preservation and conservation of the environment on the other. The synergy and symbiotic relationship between these two loggerheads can best be achieved through innovations in preserving natural habitats, promoting balanced forms of development that safeguards ecological balance and protection of natural resources. As stewards of God's creation, it is the responsibility and obligation of every global citizen to contribute to the protection of our natural resources and environment and provide sustainable solutions and innovations to the impact of economic, political and social pressures, to ensure that the interests of future generations are likewise guaranteed and protected.

(SGD) Prof. Michael Anthony C. Vasco, Ph.D.
Dean, Faculty of Arts and Letters
University of Santo Tomas, Manila

Massage of the Chairman

Schedule of Activities

Day 1: 16 May 2018 (Wednesday)

Time	Activity
Morning	
7:00-8.30	Registration
8:30-8:45	Processional of PSSN Officers and BOT Members Awardees Plenary Speakers Keynote Speaker Opening Prayer National Anthem
8:45-9:00	Opening Remarks Dr. Arlen A. Ancheta (University of Santo Tomas) President, PSSN 2017-2019
9:00-9:15	Welcome Address Dr. Cheryl R. Peralta (University of Santo Tomas) Vice-Rector for Academic Affairs, University of Santo Tomas
9:15-9:50	Recognition of Participants Mr. Steve Obanan (University of the East) Treasurer, PSSN 2017-2019 Conference Overview Dr. Ricardo T. Bagarinao (University of the Philippines Open University) Chair, Conference Secretariat
9:50-10:00	Introduction of the Keynote Speaker
10:0-11:00	Keynote Speech Dr. Bas Bouman Director, CGIAR Research Program on Rice Agri-Food

Time	Activity
	Systems (RICE) at the International Rice Research institute (IRRI) in the Philippines Awarding of Plaque of Appreciation and Token
11: 00-11:10	Awarding of PSSN Achievement Award to: Dr. HonorioM.Soriano President, Pampanga State Agricultural University Dr. Shirley C. Agrupis President, Mariano Marcos State University
11:10-11:15	Introduction of the First Plenary Speaker Dr. Edwin C. Cubelo (Silliman University) Board of Trustees Member, PSSN 2017-2019
11:15-11:45	First Plenary Speech Dr. Surangsri Wapet Senior Officer, Department of Agriculture Extension Bangkok, Thailand
11:45-12:00	Open Forum and Awarding
12:00-1:00	Lunch Break
Afternoon	
1:00-1:05	Inspirational Talk Dr. Maribel G. Nonato Vice Rector for Research and Innovation, University of Santo Tomas
1:05-1:10	Introduction of the Second Plenary Speaker Dr. Ma. Ana T. Quimbo University of the Philippines, Los Banos Auditor, PSSN 2017-2019
1:10-1:40	Second Plenary Speech Dr. Gopalasamy Reuben Clements Associate Professor Sunway University, Malaysia

Time	Activity
1:40-1:45	Open Forum and Awarding
1:45-5:30	Best Paper Competition
1:45-2:00	Biological Sciences Studies Finalists Presentation
2:30-2:45	Open Forum
2:45-3:30	Integrative Studies Finalists Presentation
3:30-3:45	Open Forum
3:45-4:45	Social Sciences Studies Finalists Presentation
4:45-5:00	Open Forum
5:00-5:45	Undergraduate Thesis Finalists Presentation
5:45-6:00	Open Forum
6:00-6:30	Ribbon-Cutting of the Poster Exhibit **Dr. Michael Anthony V. Vasco** (University of Sto. Tomas) Dean, Faculty of Arts and Letters **Dr. Belinda V. de Castro** (University of Sto. Tomas) Director, Research Center for Social Sciences and Education
6:30-8:00	Welcome Dinner and Socialization (AB Bldg)

Day 2: 17 May 2018 (Thursday)

Time	Activity
8:00-8:20	Registration
8:20-8:30	Introduction of the Third Plenary Speaker **Dr. Jesusa Ortuoste** (Sultan Kudarat State University)
8:30-9:30	Third Plenary Speech **Mr. Nelson Salangsang** Manager, International Projects, Division of Research and Commercialisation Queensland University of Technology, Australia
9:30-9:45	Open Forum and Awarding
9:45-10:00	Snacks and Preparation for the Parallel Sessions

Parallel Sessions 1 (TARC BDLG)

Time	Session Room A	Session Room B	Session Room C	Session Room D	Session Room E	Session Room F
10:00 - 10:15	Communication Strategies in Disaster Risk Reduction in Infanta, Quezon ***Renzo Ramil A. Almario, Maria Cielo L.***	Awareness and Attitude Towards Climate Change of Selected Senior High Students of Lyceum of The Philippines University-Cavite	Students' Level of Awareness on Climate Change: The Case of Partido State University,Camarines Sur, Philippines ***Ariel B. Barreda***	Sustainable Livelihood Approach in Analyzing the Factors Affecting School Adaptation to Floods in Two Municipalities 0f Laguna, Philippines	Assessment of Land Use at Laguna State Polytechnic University - San Pablo City Campus ***Ariaga, Jainiel H., Ledda, Jaymark***	Rainfall - Based Index for Corn Crop Insurance in Isabela, Philippines ***Kristine Dale R. Alcaide, Mark Joseph J. Buncag, Rizza Eve S.***

Time	Session Room A	Session Room B	Session Room C	Session Room D	Session Room E	Session Room F
	Quizon, Angeline S. Mangaoang, and Lynlei L. Pintor	***Amparo, J., Barias, A., Casabar, A., Docto, J., Fortus, V., Lopez, J., Magno, D., Nagrampa, V., Pastor, M., Lopena, L. and Malay, C.***		***Gregorio Y. Ardales, Jr. and Maria Ana T. Quimbo***	***L., Verana, Alliya Mariz G., Luis, Krisan M.***	***Mendoza and Louis Balbino S. Santos***
10:15 - 10:30	Effects of Phosphate Solubilizing Bacteria Isolated from the Mine Tailing in Mogpog, Marinduque on the Growth of Narra (*Pterocarpus indicus* Willd.) - a Potential Phytoremediator	An Exploration of the Experiences of Codependency in the Families of Residents of Healing Path Foundation: A Case Study ***Jo Leah Asinas [1] Ron Airah Carado Analiza A. Yanga***	Floral Phenology Assessment of Isu-Cabagan Wildlife Santuary as Potential for Apiculture Production ***Hercules Q. Baccay, Research Specialist I, ISU Cabagan, Isabela***	Population Dynamics of Insect Pests and Other Arthropods in Conventionally and Organically Managed Rice ***Daisy S. Capon***	Status of Oyster and Mussel Assemblage on Selected Rivers in Dagupan, Pangasinan, Philippines ***Kevin H. Ojos, Hannah Jocel I. Suarez, and Zenaida***	Taxonomic Classification, Population Density and Distribution of Macro Basidiomycetes at Csu Lal-Lo ***Zarina Kate C. Laggui***

Time	Session Room A	Session Room B	Session Room C	Session Room D	Session Room E	Session Room F
	Berna Lou L. Aba, Nelly S. Aggangan, Asuncion K. Raymundo				***G. Baoanan***	
10:30 - 10:45	GIS-Based Environmental Management: Conceptual Framework and Applications ***Ricardo T. Bagarinao***	Ecological Sustainable Management of Invasive Alien Species in Rice Ecosystems for Environment, Food and Nutrition Security ***Zenaida G. Baoanan and Ravindra Joshi***	Distribution Pattern and Multivariate Analyses for Anthropogenic Apportionment of Coastal Water in Macajalar Bay, Philippines ***Jhane Rose P. Encarguez , Ma. Judith B. Felisilda, Shaira Julienne C. Asequia, and Van Ryan Kristopher R. Galarpe***	A Look into Sinulog Festival Sustainability: Triple Bottom Line Approach ***Kafferine D. Yamagishi***	Measurement of Carbon Dioxide Release in Corn Cob Biochar-Amended Red Acidic Soil Added with Different Fertilizers ***Arsenio D. Bulfa, Jr., Gina Villegas-Pangga***	Cave and Karst Resource Mapping as Tool in Cave Resource Utilization and Management ***Maria Luisa Non Cabrera***
10:45 -	Open Forum					

Time	Session Room A	Session Room B	Session Room C	Session Room D	Session Room E	Session Room F
11:00						
11:00 - 11:15	Building Community Resiliency through Environmental - Education module: A case study of Pamarawan Island in Malolos, Bulacan ***Christopher Jeorg G. Benta, Razel Anne D. Banal, Chelsea Mae M. Gajito, Aljenica V. Ocampo, Kevin Philippe C. Santos, Patricia C. Tan, and John Christian***	Collection and Identification of Indigenous Upland Rice Cultivars Planted By the Pala'wan Tribe in Mount Mantalingahan Protected Landscape (MMPL) Area, Southern Palawan, Philippines ***Celestino N. Bernadas, Jr.***	Ang Tanging Ina: Study on the Work-Life Balance of Selected Working Single Mothers in the Coastal Community of La Huerta, Parañaque ***Idette Sheirina Biyo, Rhodora Lynn C. Lintag***	Performance Of Severely Wasted Pupils Of Malire Elementary School ***[1]Romel V. Tabuada, [1]Joylyn G. Talaman and [2]Ahsan D. Esrael***	Effectiveness of Locally Manufactured Ceramic Water Filter using Different Water Samples ***Mary Jane J. Bulusan, Nariza Deane G. Bulusan***	Extent of Soil Erosion Under Three Tillage Systems in Forestry Ecological Garden ***Casan, Johiver C., R.C. Paray, M. C. Remollo, E.D. Tumindog***

Time	Session Room A	Session Room B	Session Room C	Session Room D	Session Room E	Session Room F
	C. Valeroso					
11:15 - 11:30	Potential Cell-Mediated Inhibitors of Gut Pathogens Isolated from Excreta of Free-Range Native Chickens ***Ryan N. Castro and Michael Angelo C. Nicdao***	Upland Rice Production Through Various Agro-Ecosystems in Arakan Valley Complex ***Onofre S. Corpuz, Ph.D Samson L. Molao, Ed.D Zainudin M. Adam, Ph.D Pendatun E. Dalam, Ph.D Abddul S. Sangcupan[5]***	Training Needs of Agricultural Technologists on Climate Change Adaptation Strategies ***Jose Edwin C. Cubelo, PhD***	Physico-Chemical Analysis of Tilapia (*Oreochromis niloticus*) Twist Crackers Enriched with Horse Radish (Moringa Oleifera) **Jonita V. Literatus, Serapion N. Tanduyan**	Integrating Science-Based Biodiversity Conservation in Sustainable Development of Magsaysay Municipality in Palawan Province[1] ***Hermenegildo P. Dela Peña, Marjorie A. Española, Ma. Rosario Aynon A. Gonzales, Michael D. Pido, Rosario del Rosario,***	Premium-Pricing of Crop Revenue Insurance in Laguna ***John Rain Heart M. Lopez, Neil Spencer P. Manalo, Don Michael Pabilonia, Diane Carmeliza N. Cuaresma***

Time	Session Room A	Session Room B	Session Room C	Session Room D	Session Room E	Session Room F
					Arlan P. Belen, Bernardo P. Sabenacio, Jr., Agnes A. Factor, Ruchel A. Navarro, and Joylyn D. Joguilon	
11:30 - 11:45	Prevalent Disease Symptoms Affecting the Tree Flora in Forestry Ecological Garden ***Dorado, Jonas H, R.C. Paray, M. C. Remollo***	Plant Diversity Assessment in Laguna State Polytechnic University, San Pablo Campus, San Pablo City, Laguna ***Z.V. Ducay, H.P. Gatdula, M.A. Salvador, K.M. Luis***	Pineapple (*Ananas Comusus)* Value Chain Analysis in Bataraza, Palawan, Philippines ***Ramil Abuan Eliazar***	Kakayahan ni Nanay: Women's Concepts of Well-being in their Choices of Prenatal Healthcare Service ***Allana Rachelle R. Faustino, Rhodora Lynn C. Lintag[1]***	Milkfish *Chanos chanos* Bone Meal Topping ***Alerica B. Frias and Renissa S. Quinones***	Folkloric Utilization, Knowledge and Management of Medicinal Plants of an Aeta Community in Sitio Parapal, Hermosa Bataan ***Pablo, Carol Geraldine C., Agcaoili, John Alsandair W., Cinconiegue,***

Time	Session Room A	Session Room B	Session Room C	Session Room D	Session Room E	Session Room F
						Maryrose C.
11:45 - 12:00	Open Forum					
12:00 -1:00	Lunch Break					
1:00-1:15	The Open and Distance e-Learning: A Framework for Environmental Education ***Rhonna Vereña and Ricardo Bagarinao***	Biophysicochemical Analysis of Water Sources in Camotes Islands ***Martha Joyce G. Garciano and Maximino R. Abejo***	Mango Pesticide Spraying Practices In Negros Oriental: Implications to Sprayers' Health and the Environment ***Teodora A. Cubelo* and *Jose Edwin C. Cubelo***	Biocultural Perspectives on Living Systems: An interdisciplinary learning module on history and philosophy of the Biosciences. ***Marie-Sol P. Hidalgo***	Study of Radiation and Night-Break on Growth and Results of Chrysanthemum (Chrisanthemum *Sp.*) ***Ramdan Hidayat and Dwi Septi Ristiana***	Innovative Organic Starter Solutions for High Value Vegetable Seedlings ***Felix M. Salas, Helen Mae Mejia, Genevive Villamor, Leonarda Londina, Othello B. Capuno Elvira Torres, and Rosario A. Salas***
1:15-1:30	Supporting Course Material Development in an ODeL	Selected Narratives Of Women In An Urban Coastal	Nutrient Content of Tropical Almond (*Terminalia Catappa*) Seeds	Species composition and length-weight relationsh	Performance and Quality of Aquaponically Grown	Formulation of Endophytic Bacteria As Elicitor Plant

Time	Session Room A	Session Room B	Session Room C	Session Room D	Session Room E	Session Room F
	Institution: "The What and How" ***Rhonna Vereña, Rubielita Parcon, and Pauline Grace Milante***	Community Of Manila Bay On Disaster And Disaster Preparedness ***Rhodora Lynn C. Lintag***	Flour, in Different Methods of Preparations. ***Jonita V. Literatus, Lourdes M. Garciano, Cecilia G. Sicadsicad, Martha Joyce G. Garciano***	ip of fishes in the two lakes of Esperanza, Agusan del Sur, Philippines ***Jerry T. Cuadrad, Danah Sofia Lim, Rydyll Mae S. Alcontin, Jan Lloyd L. Calang, Joycelyn C. Jumawan***	Kale (*Brassica Oleracea* Var. Alboglabra) Supplemented with Different Nutrient Solutions ***Wilson U. Llegunas, Jr. and Rosario A. Salas***	Resistance to Wilt Disease on Solanaceae ***Arika Purnawati, Wiwik Sri Harjani, Herry Nirwanto***
1:30-1:45	Student Support in an Online Learning Mode: Practices and Issues ***Rubielita Parcon and Rhonna Vereña***	Utilization Of Water Hyacinth As A Source Of Livelihood Of Women In The Water Hyacinth Weaving Enterprise Of The Villar SIPAG Foundatio	Food Safety Implementation of Boneless Siganids (Siganus Puellus) Technology ***Corazon P. Macachor, Jesson T. Tamundoc, Charena J. Castro, Cherrylene G. Macachor, and***	Acceptability of Kangkong Cookies Enhanced with Peanut *Arachis Hypogaea* ***Cherrylene G. Macachor and Coraon P. Macachor***	The Implementation of the Management Processes of Mobile Hospital Health Services in the Province of Maguindanao	Molluscicidal Properties of Wild Sunflower (Tithonia diversifolia) Leaf Extract Fractions against Invasive Golden Apple Snail (Pomacea

Time	Session Room A	Session Room B	Session Room C	Session Room D	Session Room E	Session Room F
		n In Las Piñas ***Lopez, Ma. Cassandra Castro, Ana Carmela***	***Renissa S. Quiñones***		***Mocamad Macasayon, PhD***	canaliculata) ***Karen A. Ballada and Zenaida G. Baoanan***
1:45-2:00	ODeL Administrative Support: Linking the Academics and Administrative Functions of Faculty Members ***Lorelee Mones and Eden Salon***	Hypoglycemic Effects of Sea Hare, *Dolabella Auricularia* Ethanol Crude Extracts on Alloxan - Induced Albino Mice ***Richard M. Magsino, Darylle Cesar G. Hilapo, Roncesvalle J. Caipang, and Cristina C. Salibay***	Population Density Assessment and Habitat Characterization of Mangrove Blue Flycatcher Cyornis Rufigastra in Nug-As Forest Key Biodiversity Area in Cebu ***Malaki, A.B.B., R.U. Nuevo, S.M. Alcazar, and E.P. Lillo***	Comparative Study on Reflection among Medical Technology Students using the Failure Mode and Effect Analysis (Fmea) to Assess the Health-Care Waste Management in Southwestern University, Cebu City ***Dr. Julius P. Mario***	Customary Laws in Natural Resources Management: Practices of Conner, Apayao ***Hannie T. Martin***	Indigenous Plants as Alternative Food After a Disaster: Resource sharing through ODeL ***Consuelo Dl. Habito[1]***
2:00-	Putting	Role of	Gender Role	Discourse	The	Strengthe

Time	Session Room A	Session Room B	Session Room C	Session Room D	Session Room E	Session Room F
2:15	Environmental Education in the Web: A Reflexive Analysis ***Ricardo Bagarinao***	Teachers in Post-disaster Response as Basis for a DRRM Plan: The Case of Antipolo City, Philippines ***Noel C. Merino and Maria Ana T. Quimbo***	and Climate Change Impact and Adaptation Strategies on Upland Rice Production ***Dr. Onofre S. Corpuz Dr. Samson L. Molao Dr. Zainudin M. Adam***	Analysis of Indigenous Women's Construction Biodiversity and Sustainable Development ***Joane V. Serrano PhD , Luisa A. Gelisan, Aurora Lacaste, Paula Grace Muyco, Noreen Dianne Alazada, and Sherry B. Marasigan***	Biodiversity Assessment in the SACK Watersheds of Bislig City, Surigao del Sur ***Jessril A. Oval***	ning Environmental Education for Development: The Mindoro Experience ***Afuang, Leticia, Cielo, Kathy Lene, Makiputin, Roderick, Tan, Elyza, Garcia, Jezryl***
2:15-2:30	Open Forum/Snacks					
2:30-2:45	The Antibiosis of Biological Agents	Attitude and Coping Mechanisms	Growth, Yield and Postharvest Quality of Cauliflower	Farmers' Knowledge on the Role of Shade	Growth and Yield Response of Broccoli (*Brassica*	Identifying the Possible Breeding Grounds

Time	Session Room A	Session Room B	Session Room C	Session Room D	Session Room E	Session Room F
	Streptomyces Sp. , *Gliocladium* Sp., and *Trichoderma Harzianum* from East Java Indonesia to *Fusarium Oxysporum* ***Suryaminarsih Penta, Kusriningrum, Ni'matuzahroh, Tini Surtiningsih,Tri Mujoko***	Towards Natural Disasters of Fishermen in Mulanay, Quezon ***Lynlei L. Pintor, Patricia Colleen P. Arroyo, Lazhianna Louise Gelisanga, and Angelica P. Ramos***	(*Brassica oleracea* var. botrytis L.) Supplemented with Liquid Nutrient Solutions Under Aggregate Hydroponic System ***Darlyn B. Posas and Rosario A. Salas***	Trees in Coffee Based Agroforestry Systems in Provision Ecosystem Services ***Rossyda Priyadarshiní Kurniatun Hairiah, Didik Suprayogo, John Bako Baon***	*oleracea* var. *itallica*) on the Different Concentrations of Horseradish Tree *Moringa oleifera* L.) Leaf Extract ***Merlyn Guzman-Buscato***	of Mosquito in Laguna State Polytechnic University – San Pablo City Campus ***Princess N. Castro, Maynard T. Cornista and Jonell B. Domogma, Krisan M. Luis***
2:45-3:00	Enhancing the Resilience of Indigenous Peoples through a Climate-Smart Ancestral	From the University to the Community: An Examination of Community Leaders Disaster	State of Mangroves , Seagrasses and Coral Reefs of De Carmen, Siargao Island Philippines ***Carlos H. Donoso Ed. D.***	Geo-tracking of *Collybia reinakeana* in the Philippines ***Renato G.***	Phytochemicals and Antioxidant Activity of Some Gymnosperms in UPLB Campus ***Marlon P.***	Geochemical Composition of Deep and Highly Weathered Soils Leyte and Samar Islands

Time	Session Room A	Session Room B	Session Room C	Session Room D	Session Room E	Session Room F
	Domain Sustainable Development and Protection Plan ***Margaret M. Calderon, Cristino L. Tiburan Jr., Maria Ana T. Quimbo, Dulce D. Elazegui, Flordeliza A. Sanchez, and Samantha Geraldine G. De Los Santos***	Management Practice ***Marielyn C. Quintana***		***Reyes, Ariel Joseph J. Barza, Ryo Sumi, Nobuo Mori, Noriko Miyazawa and Fumio Eguchi***	***Rivera, Kahlil Gibran C. Balais, Eubrene V. Bautista, Christian Paul P. Calderon, Eufrocinio C. Marfori***	Philippines ***Snowie Jane C. Galgo and Victor B. Asio***
3:00-3:15	Floristic Composition and Vegetation analysis in Homonhon Island, Philippines	Temporal Analysis of Carbon Storage in the Region of Palawan Using Remote Sensing Technique	Agronomic Performance and Shelf Life of Pole Sitao Under Regional Field Trials ***Rosario A. Salas[1], Reyna Mae C. Caintic[2]***	Green Marketing Strategies of Restaurants in Zamboanga City, Philippines	The effect of brand quality and brand affect on attitudinal and behavioral loyalty (Study on One of	A Simulation Modeling of the Parasitic Behavior of Small Hive Beetles and European

Time	Session Room A	Session Room B	Session Room C	Session Room D	Session Room E	Session Room F
	Roanne B. Romeroso, Ian A. Navarrete Danilo N. Tandang Cecilia I. Banag	***Caabay, Jessa Marie S.***		***Dolores Olaso-San Juan***	Smartphone Brands) ***Teguh Soedarto, Gigih Aryo Septian Putra and Rifan Jefri Sunarsono***	Honey Bees inside a Beehive ***Allen L. Nazareno, Jerrold M. Tubay, Yancee H. Olave, Maica Krizna A. Gavina, Jomar F. Rabajant, Editha C. Jose, Mark Jayson V. Cortez, Aimee Lynn B. Dupo, Eduardo O. Jatulan, Ardee C. Manalo, Christian Alvin Buhat***
3:15-3:30	Seed Yield and Quality of Chili Pepper (*Capsicum Anuum* L.)	Environmental literacy and Network Reinforcement of Secondary	Growth, Yield and Postharvest Qualities of Ampalaya (*Momordica Charantia L.*) as Influenced by	Biogenic Sediment Production of the Calcareous Green Alga (*Halimeda*	Free Radical Scavenging Activity of Three Varieties of Chili	Plants and Algae as Potential Phytoremediators in an Abandoned Mine

Time	Session Room A	Session Room B	Session Room C	Session Room D	Session Room E	Session Room F
	Applied with Organic and Inorganic Fertilizer and their Combination ***Rosario A. Salas, Genevive Villamor Leonarda Londina, Othello B. Capuno, and Elvira Torres***	Science Teachers: Basis for Developing Environmental Science Enriched Extension Program ***Van Ryan Kristopher R. Galarpe***	Different Nutrient Solutions and their Combination Under Aggregate Hydroponics System ***Reyna Mae C. Caintic, Rosario A. Salas***	*macrolob a*) in the Intertidal Shore as Potential Control for Coastal Erosion ***Winfild E. Buscato***	Peppers (Capsicum Spp.) at Varying Fruit Maturity Stages ***Yssakhar A. Salas and Edgardo E. Tulin***	Tailings Pond at Bgy. Mogpog, Marinduque, Philippines ***Marjorie D. delos Angeles, Ma. Lourdes D. Merilles, and Benji Brayan Silva***
3:30-3:45	Open Forum					

Day 3: 18 May 2018 (Friday)

Time	Activity
8:30-8:45	Introduction of the Fourth Plenary Speaker **Dr. Zenaida Baoanan** (University of the Philippines Baguio) Secretary, PSSN 2017-2019
8:45-9:15	Fourth Plenary Speech **Dr. Leah Abayao** Associate Professor of History and Director of the Cordillera Studies Center University of the Philippines Baguio

Time	Activity
9:15-9:30	Open Forum and Awarding
9:30-9:45	Snacks and Preparation for the Parallel Sessions

Parallel Sessions 2 (TARC BDLG)

Time	Session Room A	Session Room B	Session Room C	Session Room D	Session Room E
9:45-10:00	Strengthening Community Engaged Resilience in an Island Community: Case of Fisherfolks in Pamarawan Island, Malolos, Bulacan, Philippines ***Zosimo O. Membrebe, Jr, Alain Jomarie G. Santos, John Christian C. Valeroso, and Dr. Arlen A. Ancheta***	Detection of Pesticide Residues in a Community Farm in Atok, Benguet: Potentials for Bioremediation ***Romeo A. Gomez Jr., Louisa P. Pladio, Joyce T. Paing and Mark S. Damaguen***	You're thinking it right: native plants are affected by invasive alien plant species in the campus of De La Salle University-Dasmarinas ***Richard M. Magsino, Darylle Cesar G. Hilapo, Roncesvalle J. Caipang, and Edwin R. Tadiosa***	Prelude to Successful Cultivation of Hericium in the Philippines: Understanding its Mycelial Growth Response on Different Culture Media and its Antibacterial Activity ***Arianne V. Julian1, Christopher A. Wright and Renato G. Reyes***	Analytical Hierarchy Process Analysis of the Communication Strategies in Disaster Risk Reduction in Infanta, Quezon ***Maria Cielo L. Quizon, Renzo Ramil A. Almario, Angeline S. Mangaoang, and Lynlei L. Pintor***
10:00-10:15	Vegetative Morphological Characteristics of Tree Flora in Mt. Sinaka ***Paray***	Allelopathic Effects of *Chromolaena Odorata* (L.) R. King & H. Robinson on	Vermicomposting using Three Invasive Aqua Terrestial Plant Species ***Rogelio P.***	Development of Community-Based Ecotourism Index in Pamitinan	Kopyor Coconut Research Overview: From Laboratory Work to

Time	Session Room A	Session Room B	Session Room C	Session Room D	Session Room E
	,Reynalen C./Prof. Pedro Crisologo B. Ylagan	Germination and Seedling Growth of *Brassica Rapa* L. ***Clarice P. Magbuo and Mark Anthony F. Rabena***	***Pascua, Yolina T. Castañeto, Elmer T. Castañeto & Juanita B. Pascua***	Protected Landscape in Rodriguez, Rizal ***Hazel S. Castillo, Hannah Angele A. Hernandez, Alex Danice Francia, and Lynlei L. Pintor***	Publishing, Community Extension and Industry ***Sukendah***
10:15-10:30	Pechay Applied with Kinds and Levels of Organic Fertilizers ***Mosib M. Tagotong, P.E. Dalam, O.S. Corpuz, R.B. Kusin***	Antibacterial activity of Epiphytic Fungi isolated from Liverwort, Pine Tree and Sunflower against *Klebsiella pneumoniae* ***Regina Lourdes Hipol, PhD***	Physico-Chemical Properties of Rice Wine As Influenced By the Formulation of Indigenous Yeast (bubod) in Rice Wine Fermentation in CAR. ***Cecilia B. Samonte***	Women's in Upland Rice Farming ***Onofre S. Corpuz, and Cabilo, Lumina D.***	Localizing Education for Sustainable Development in Selected Public Elementary Schools: A Case of Camanava ***Carmina S. Vicente and Arlen A. Ancheta***
10:30-10:45	Open Forum				
10:45-11:00	Preparation for the Closing Activity				
11:00-12:00	Awarding of Winners Announcement Closing				

Time	Session Room A	Session Room B	Session Room C	Session Room D	Session Room E
	Remarks				
12:00	Lunch Break and Homeward Bound				

Invited Speakers

Keynote Speaker

DR. BAS BOUMAN

Director
CGIAR Research Program on Rice Agri-Food Systems (RICE)
International Rice Research institute (IRRI)
Philippines

Dr. Bas Bouman is an agricultural engineer and agro-ecologist with more than 25 years of experience working in Asia, Latin America, and Europe. He is an internationally-recognized expert on sustainable agricultural development and food security, with specific expertise on water management and rice. He has authored and co-authored over 250 scientific papers and wrote and/or edited 5 books. His H-score (using Web of Science) is 32. He held/holds positions on various international advisory bodies (e.g. the Sustainable Rice Platform, the Comprehensive assessment of Water and Food) and is a member of the prestigious Royal Holland Society of Sciences and Humanities (established in 1752). He has skills in the following areas:

- Management: Program and project management, division management: human resources and capital assets.
- Research: Rice, (tropical) agriculture, agro-ecology, systems analysis, water management, land use analysis, simulation modeling (crop growth, soil water balance), remote sensing

Plenary Speakers

NELSON SALANGSANG

Manager
International Projects
Division of Research and Commercialisation
Queensland University of Technology
Queensland, Australia

Nelson Salangsang was born in General Santos City, Philippines, and a son of a retired public school teacher. He his Bachelor of Arts in Development Studies at the Australian National University in Canberra in 1998. He is heavily engaged in international development. Before his current role, Nelson worked at the Australian Trade Commission in Manila, as Australia's liaison officer to the Asian Development Bank for two years. He also worked with the Queensland Government, as Senior Trade Officer for the International Aid and Development Business Unit. He also briefly served as an intern for a parliamentarian at the Australia's Federal Parliament, and the United Nations in New York. Nelson is currently the Manager of International Projects at Queensland University of Technology (QUT). He has been heading a multi-awarded unit, and industry leader, since 2004 (over 13 years). His unit has managed over $50 million worth of development projects over the last ten years. By profession, he is an international development practitioner, specialising in capacity building, learning and development, and engagement. His special areas of interest in development include: community engagement, international business, social inclusion, innovations promotion, gender equity and women's empowerment, inclusive education, leadership and organisational development. He has undertaken development work in over 30 countries (in Asia, the Pacific, Africa, and South America), and has managed over 100 international projects. QUT is a world class university, with strong emphasis on innovations, industry engagement, and community engagement. This university is a recognised leader in international development in Australia.

Nelson has been permanently living in Queensland, Australia since 2001, for about 17 years now. He is married to Roselle Manliguez, who is a former Mutya ng Heneral Santos (1995) and is now also a successful professional administrator at QUT. Nelson and Roselle are proud parents of three children – Liam (14), Nicolas (8) and Savanna (5). Nelson is an Australian by citizenship, but a Filipino by heart.

DR. LEAH ABAYAO

Associate Professor of History
Director
Cordillera Studies Center, University of the Philippines Baguio

Dr. Leah Abayao received her B.A (Social Sciences major in Anthropology and Studies) from the University of the Philippines Baguio (U.P Baguio), and her Ph.D. (History) from the University of the Philippines Diliman. Born and raised in Ifugao, she is involved in the promotion and development of cultural heritage programs including community archives- museum and indigenous people's education in the Philippine Cordilleras. She writes on ethnohistory, culture history, indigenous people education, and religious traditions. She was granted postdoctoral research fellowships at the Katholieke Universiteit Leuven, Belguim and at the Center of Southeast Asia (CSEAS)- University of Michigan at Ann Arbor, USA. Recently, she studied the Ifugao and Bontoc Collection (materials and archival documents) at the Linden Museum- Stuttgart, Germany. These fellowships deepen her knowledge on the culture and history of the people of the Cordillera region. She teaches indigenous management of resources in UP Baguio's MS Conservation Restoration Ecology Program.

DR. GOPALASAMY REUBEN CLEMENTS

Associate Professor
Sunway University
Malaysia

Dr. Gopalasamy Reuben Clements is a prolific conservation scientist who has engaged in various conservation and research endeavours in Malaysia and Southeast Asia. As a conservation scientist, his goal is to deliver tangible conservation outputs for the benefit of threatened species in Malaysia. He has been involved in over 10 years of conservation research in rainforest, freshwater, limestone karst and peat swamp ecosystems in Southeast Asia, and research in animal behaviour, biogeography, ecology and taxonomy of mammals and molluscs. He is a well-published scientist who has produced over 50 peer-reviewed papers in leading ISI journals such as Nature, books, and several book chapters. he can work well with other national and international scientists. Together with his wife, he co-founded a non-profit

research group known as Rimba (rimbresearch.org), which conducts research that contributes to the conservation of Malaysian biodiversity. His most important conservation achievements include improvements to several Federal and State government policies and improved protection for species and habitats on-the-ground in Perak and Terengganu. He has a current project in Rimba, Harimau Selamanya, which include a research to safeguard Terengganu's wildlife and forests and to assist the Terengganu State government in gazetting its first state park in Kenyir.

DR. SURANGSRI WAPET

Chief
Local Wisdom and Agricultural Innovation Group
Department of Agricultural Extension
Ministry of Agriculture and Cooperative
Thailand

Dr. Surangsri Wapet is a professional development extensionists of the Department of Agricultural Extension (DOAE) of the Ministry of Agriculture and Cooperatives (MOAC) in the Kingdom of Thailand. She is presently the Chief of the Local Wisdom and Agricultural Innovation Group of the Agricultural Extension Research and Development Division of DOAE-MOAC. Prior to her present position, she was an active agricultural extension in senior professional level, researcher, planning and policy analyst, professional level of the Department of Agricultural Extension, respectively. She served as the senior executive assistant of the Director General of the DOAE providing technical services in research, planning and policy advocacy. Also, she was a university lecturer, researcher and analyst in one of the top Thailand Brewery Companies. She has worked with international organizations like the Food and Agriculture Organization of the United Nation (UN-FAO) on Thailand's Initiatives for Strengthening Family towards Food Security, Farmer Well-being and Sustainable Development and the Documentation of Thailand Rural and Agricultural Finance Best Practices under the Asia-Pacific Rural Finance and Agricultural Credit Association (APRACA) Rural Finance Best Practices (RuFBeP) Project funded by the International Fund on Agricultural Development of the United Nation (UN-IFAD). She is a graduate of Doctor of Philosophy in Extension Education from the University of the Philippines Los Baños in 2003 and Master of Science of Agriculture-Agronomy and Bachelor of Science of Agriculture-Agronomy at Chiangmai University, Chiangmai, Thailand.

Invited Speeches

Harnessing the power of science to fight poverty and contribute to food security – the international RICE program

Bas Bouman
Director CGIAR Research Program on Rice (RICE), International Rice Research Institute, Los Baños, Philippines.

Abstract

By 2050, the global population is predicted to be 9 billion people, and the world needs to produce 60% more food than it currently does to feed them. But still in 2018, around 800 million people are hungry while over a billion people live in extreme poverty. The majority of these people live in Asia: 750 million poor and 520 million hungry people – most of them depending on rice for their food and livelihoods. In Asia, 'Rice is Life', and new research needs to be harnessed to address these very pressing development challenges.

RICE is a large international research-for-development program led by the International Rice Research Institute (IRRI; the lead institute in Los Baños, Philippines), Africa Rice Center (Africa Rice), International Center for Tropical Agriculture (CIAT), Centre de Cooperation Internationale en Recherche Agronomique pour le Développement (Cirad), L'Institut de Recherche pour le Développement (IRD), and the Japan International Research Center for Agricultural Sciences (JIRCAS). Together, these six Centers align and bring to the table consortia, networks, platforms, programs, and collaborative projects with over 900 partners from the governmental, nongovernmental, public, private, and civil society sectors. The goals of RICE are to:

- reduce poverty and hunger,
- improve human health and nutrition,
- adapt to climate change and reduce greenhouse gas emissions,
- promote women's empowerment and youth mobilization,
- reduce rice's environmental footprint, and
- enhance the climate resilience of rice-based farming systems.

It aims to achieve these goals through fostering high-quality, impact-oriented research and development activities on rice value chains in a global context. Through its work, RICE addresses 9 of the 17 United Nations Sustainable Development Goals (SDG), and 26 of their 169 targets. Figure 1 summarizes main RICE contributions to the 9 SDGs, whereas the sections below outline RICE's specific contributions to ending poverty (Goal #1) and ending hunger (Goal #2).

RICE mobilizes novel and modern tools, such as biotechnology, GIS, simulation modelling, satellite remote sensing, weather forecasting, and smart phones – just to name a few. But even more importantly, it connects scientists across the globe and stimulates the development of ideas through large-scale international collaboration. In this presentation, examples will be given of how RICE scientists harness the power of research to develop new solutions to make sure that 'Rice continues to be Life'.

The Sufficiency Economy Philosophy: Lessons Learned towards Food Security and Ensuring the Agriculture and Fishery Sustainable Development of the Kingdom of Thailand

Surangsri Wapet
Chief, Local Wisdom and Agricultural Innovation Group
Agricultural Extension Research and Development Division, Department of Agricultural Extension, Ministry of Agriculture and Cooperatives, Kingdom of Thailand

Abstract

The paper discusses the Sufficiency Economy Philosophy developed by the late King Bhumibol Adulyadej of Thailand through his royal remarks over the past three decades. The Sufficiency Economy is a happiness development approach, which emphasizes the middle path as an overriding principle for appropriate conduct by people at all levels. The middle path is a way of thinking in which no one lives too extravagantly or too thriftily. It encourages people to live in a way where they consume only what they really need, choose products carefully, and consider their impact on others and the planet.

The sufficiency economy enhances the nation's ability to modernize without defying globalization – it provides a means to respond to negative outcomes caused by rapid economic transitions. This philosophy is a guide to making decisions that will generate outcomes that are beneficial to the development of the country.

Lessons from the different agriculture and fisheries production areas support the development of communities through proper agricultural services like extension education support, rural financing, cooperative development and management. All these efforts enhance the sustainable development of the economy of the country.

New biodiversity monitoring techniques: Where is technology taking us?

Dr. Gopalasamy Reuben Clements
Associate Professor, Sunway University
Malaysia

Abstract

Managing and conserving biodiversity in Southeast Asia is dependent on having accurate qualitative and quantitative information on biodiversity. Information gathered with classical survey techniques can now be complemented with information obtained with new techniques that show great promise in delivering cost-effective, qualitative and quantitative information. In this talk, I will cover new DNA-based techniques, passive acoustic monitoring and camera trapping. The prospects and challenges for all techniques are similar. Data collection and analysis requires careful planning and all techniques could benefit from better standardization. However, all techniques have the potential to significantly improve our ability to monitor biodiversity and help the protection of threatened species in this region.

Keywords: DNA, camera trapping, acoustics, conservation, cost-effective

Celebrating Women's Role: Fostering Collaboration and Participation

Nelson Salangsang
Manager, International Projects, Division of Research and Commercialisation
Queensland University of Technology, Queensland, Australia

Abstract

How can we celebrate and leverage on women's contribution towards sustainable development? What are the practical policy approaches to achieve real gender equity.

Using a creative-thinking and collaborative approach, Nelson Salangsang will engage with the conference participants on exploring the various dimensions of the gender equity and women's empowerment challenge. This session is anchored on a premise that gender equity and women's empowerment must consider the contextual realities. It is critical to listen to grassroot stories, and foster sharing, collaboration and engagement in developing solutions. At the end of the session, the participants will have contributed to a rich tapestry of stories and strategies for a way forward.

Indigenous Knowledge and the Ethnoecological approach to Nature studies

Leah Abayao
Cordillera Studies Center, University of the Philippines Baguio
Baguio City, Philippines

Abstract

Indigenous and Local knowledge is recognized in biodiversity conservation and yet overlooked or often understudied. This body of knowledge is largely bounded in moral values and ethical principles. In this talk, I will reflect on key researches on Indigenous knowledge (IK) in the Philippines and illustrate why Indigenous knowledge is not constructed on the basis of dichotomies (e.g. nature-people) nor divisions. The discussion will highlight the interdependent and contiguous character of IK, and other important dimensions that fall outside the realm of scientific knowledge. Using Harold Conklin's *Ethnoecological approach*, a serious attempt toward deep understanding of local or native's view about nature and experiences, I will discuss perspectives and techniques in Ethnoecology that may inform Nature studies and advance our understanding of Environment and Humanity.

Keywords: Indigenous Knowledge, Ethnoecology, Philippines

Best Paper Competition
Abstract of Entries

Enhancing Growth Characteristics and Accumulation Potential Of Beach Morning Glory (*Ipomoea pes-caprae*) Using *Bacillus subtilis*

Naegil P. Acinas, Jr.*, Leo Gabriel V. Bautista, Wency Vience L. Tagsip
Bayugan National Comprehensive High School – Science, Technology, Engineering and Mathematics, Bayugan City, 8502 CARAGA, Philippines
*Corresponding Author: acinasken@gmail.com

Abstract: This study was carried out in order to determine the effect of *Bacillus subtilis* to the physical growth characteristics of *Ipomoea pes-caprae* under different nickel concentration (25, 50, 100 ppm) using pot experimentation. Results of the study revealed that plants grown in nickel-contaminated soil with *Bacillus subtilis* significantly increases its shoot length (48±2, 42.87±0.81, 39±1.73) and root length (36.53±1.53, 33.33±1.15, 26.17±0.76) compared to the plants grown in nickel-contaminated soil without *Bacillus subtilis;* shoot length (27±1.73, 25.67±0.58, 21±1) and root length (16.67±0.58, 15±3, 11.67±1.53). Results of the study also revealed that the nickel concentration in the leaf tissues of *I. pes-caprae* were higher in plants with *B. subtilis* (84ppm, 58ppm, 70ppm) compared to the plants without *B.* subtilis (48ppm, 54ppm, 82ppm). On the other hand *Bacillus subtilis* helps the plant grow physically even with the presence of nickel. This work suggest that *Ipomoea pes-caprae* is a potential bio-accumulator and *Bacillus subtilis* is one of the most auspicious plant growth promoter rhizobacteria. Further investigation concerning the capability of *I. pes-caprae* as bio-accumulator using different heavy metals is highly recommended.

Keywords: Bio-accumulator, Heavy metal contamination, Phytoremediation, Rhizobacteria

Molluscicidal Properties of Wild Sunflower (Tithonia Diversifolia) Leaf Extract Fractions Against Invasive Golden Apple Snail (Pomacea Canaliculata)

Karen A. Ballada[1,2*] and Zenaida G. Baoanan[1]
1Department of Biology, College of Science, University of The Philippines, Baguio City, Philippines 2600 2Department of Biological and Physical Sciences, College of Arts And Sciences, Don Mariano Marcos Memorial State University, La Union, Philippines 2515

Abstract: Pomacea canaliculata is a serious invasive pest in the rice farms of the Philippines. Using botanical molluscicide is much favored for human health and environmental reasons. Crude leaf extracts of *Tithonia diversifolia*, also an invasive plant, was observed to have molluscicidal properties. This study aimed to fractionate the different bioactive compounds in the *T. diversifolia* crude leaf extract using solvent extraction and test these fractions for molluscicidal properties. Results showed that the alkaloid and saponin fractions exhibited an lc50 of 6,000ppm and 3,000ppm, respectively at 24h. Histological analyses of tissues from the test organisms showed deteriorated epidermal and subepidermal layers of the foot, highly vacuolated and deciliated epithelium of the gill filaments and osphradial leaflets, and deteriorated lining of the primary ducts of the digestive glands. These results are attributed to the presence of alkaloids and saponins in the different extracts, which are reported from

literatures to have detergent properties that can disrupt cell membranes and inhibit acetylcholinesterase activities in animals.

Keywords: Botanical Molluscicide, Bioactive Compounds, Pomaceae Canaliculata, Tithonia Diversifolia

Students' Level of Awareness on Climate Change: The Case of Partido State University,Camarines Sur, Philippines

Ariel B. Barreda[1]*
Program Director Criminology Department
Partido State University, San Jose Campus
Del Carmen, San Jose, Camarines Sur
Philippines

Abstract: The participation of youth in any disaster risk reduction activities could be enhanced when they have high levels of awareness on climate change. But there seems to be scanty information about their level of awareness. The study was conducted to investigate the level of awareness of youth studying in a state university in the Philippines, and to determine the factors that influenced their awareness. The respondents (n = 247) were selected randomly from the undergraduate student population, and were stratified by their year levels and by program the program. Although there was no qualitative difference observed among the respondents, the computed weighted mean for all variables under investigated differ across year levels and by program. First year students perceived personal experience while second and third year students as well as fourth year students perceived education and government actions, respectively as much important factors that could influence their level of awareness. Overall, the differences could be utilized as bases in developing academic as well as extracurricular activities that are sensitive to the sex and year level of the involved students to improve their cognitive adaptive capacity.

Keywords: level of awareness, climate change, empiricist perspective, descriptive research method, Partido State University, Camarines Sur

Temporal Analysis of Carbon Storage in the Region of Palawan Using Remote Sensing Technique

Caabay, Jessa Marie S.
Palawan State University

Abstract: Quantifying the carbon storage in a specific area and its changes through time is vital in understanding the role of vegetation as sources and sink. At present, this evaluation is conducted through field and ground study. This paper presents a different method utilizing satellite image time series, which can be used to speed up the process of urban carbon storage mapping. Carbon storage in Palawan was computed using the gross and net primary production from a time sequence (2003-2014) of Landsat image data. It was found out that it has significantly declined from 2003 to 2014 with the majority of loss concentrated on Southern Palawan. Results demonstrated the cost-effective and rapid capability of remote sensing-based quantitative change detection in monitoring carbon storage.

Keywords: Carbon storage, Productivity, NPP, GPP

Population Dynamics of Insect Pests and Other Arthropods in Conventionally and Organically Managed Rice

Daisy S. Capon
Department of Agricultural Science, Visayas State University-Villaba, Villaba, Leyte
Correspondence Author: dscapon@vsu.edu.ph

Abstract: Knowledge in insect population dynamic is essential for developing sustainable crop protection strategies, and for safeguarding the health of agricultural environment. The field experiment was conducted to determine the population dynamics of insect pests and other arthropods in conventionally and organically managed rice. Experiment was laid out in RCBD with four replications. Recommended management practices except plant protection measures were followed for raising the crop.

Results revealed that there was a significant difference in the number of natural enemies and insect pests in terms of pest management practices. Farmers' practice has the highest population of beneficial insects followed by the best bet practice, however conventional management has the lowest number. In terms of ratio between beneficial and insect pests, best bet and farmers' practice both have 1:3 while the conventional has 1:4 respectively.

Among the natural enemies collected and identified dragonfly (Odonata) is significantly the most abundant in T_1 (best bet) at vegetative and reproductive phases. This implies that the presence of dragonflies signify that the surrounding environment is not yet extremely contaminated.

Development of Community-Based Ecotourism Index in Pamitinan Protected Landscape in Rodriguez, Rizal

Hazel S. Castillo, Hannah Angele A. Hernandez, Alex Danice Francia, and Lynlei L. Pintor
Colegio de San Juan de Letran

Abstract: The study focused on the Development of Community-Based Ecotourism Index in Pamitinan Protected Landscape in Rodriguez, Rizal. The objectives of the study include to characterize the Pamitinan Protected Landscape, describe the implementation of community-based ecotourism, and develop Community-Based Ecotourism Index. Research methods used include survey, key informant interview, and focus group discussion. Data was analyzed through descriptive and inferential statistics, normalization of data, and Analytical Hierarchy Process.

Findings revealed that the land in PPL have an elevation of 100-200 meters above sea level (masl) which accounts to almost 40 percent of the total land area. There are six (6) types of land cover in PPL such as shrubs, wooded grassland, open/barren, grassland, built-up and inland water. There are 19 species of birds and 13 species of mammals that are found throughout the year in the area. There are 18 tree species found. A total of 30 plant species can be found in the area. In terms of implementation of the CBET include conduct of research, development of tourists guide manual, orientation among tourist guide and tourists, and conduct of regular meeting.
The result of CBET Index in Pamitinan Protected landscape unveiled that Community Participation obtained the highest value which is 0.2364. Implementation obtained 0.2116 while 0.1533 for Environmental Conservation while the Tourism Activities obtained the lowest dimension which is 0.1269.

Keywords: community-based ecotourism, index, protected landscape

Strengthening Environmental Education for Development: The Mindoro Experience

Afuang, Leticia[1, 2]; Cielo, Kathy Lene[1]; Makiputin, Roderick[1]; Tan, Elyza[1]; Garcia, Jezryl[1]
[1] Mindoro Biodiversity Conservation Foundation Incorporated
[2] University of the Philippines Los Baños

Abstract: Environmental education requires deep participation of stakeholders by making them own every programs and activities. MBCFI under its SEED Program trained above 400 teachers across Mindoro since 2012. To ensure the effectivity of the program, a proper evaluation on its overall impact on teachers was conducted for its improvement and continuity. This is to assess the training impact on teachers by comparing the level of knowledge, skills, attitudes, practices of trained and untrained teachers in Mindoro towards biodiversity and conservation. Results showed that there is a significant difference between trained and untrained teachers in terms of the skills. It is concluded that the teachers' training is effective in increasing the capacity of teachers in integrating biodiversity conservation in their lessons by providing them different strategies regardless of grade level and subject. On the other components, however, there are no significant differences between groups, which were attributed to lack of recall of participants and lack of regular and effective monitoring from the program managers. It is recommended to review the course of the program, from its strategies up to its monitoring process. A workshop can be organized to address the problem issues, and develop new training strategies.

Revisiting Manila's Comprehensive Land Use Plan (Clup) in Preparation for Climate Change and a More Sustainable Development Growth Pattern

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Abstract The problem of climate-induced natural disasters in Metro Manila has been evident in recent years with such damage to the ecological environment, public infrastructure, private properties, loss of lives, negative impact on economic growth and development, with Manila being the most vulnerable and at risk. Other issues related to planning such as gentrification, destruction of historic structures, informal settlements and reclamation continue to pose major challenges to Manila. The "climate/disaster proofing" planning processes as approach to land use planning can mitigate its negative impacts. International best practices related to this method and other planning models such as sustainable design, transit-oriented development can also be applied. The proposed policy recommendations through proper zoning, identification of protected areas and conservation easements, revitalization of historic districts, and identification of priority programs/projects can serve as inputs to Manila's Comprehensive Land Use Plan and Zoning Ordinance towards a more disaster-resilient and sustainable city development.

Keywords: City of Manila, comprehensive land use planning (CLUP), zoning ordinance, climate-change adaptation and disaster risk reduction management (CCA-DRRM), policy recommendations

Species composition and length-weight relationship of fishes in the two lakes of Esperanza, Agusan del Sur, Philippines

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Abstract: Species composition and length-weight relationship of fish fauna collected using different fishing gears in the two lakes (Lake Oro and Lake Dakong Napo) of Esperanza, Agusan del Sur, Philippines were assessed. There were 12 species from nine families mostly were introduced in the Philippines freshwater bodies were collected in the two areas. Family Osphronemidae has the most number of species collected (25%) followed by Gobiidae (17%). *Cyprinus carpio* from family Cyprinidae has the most number of individuals collected (n=124) which is abundant in Lake Oro (d=9.8/10m^2). Most number of species were collected from Lake Oro (S=10) however, diversity index was highest in Lake Dakong Napo (H=1.501). The "b" value of LWR in the equation $W=aL^b$ shows that *Oreochromis niloticus* (b=3.1382) and *Cyprinus Carpio* (b=2.9196) has an isometric growth while *Anabas testudineus, Osphronemus goramy* and *Trichopodus trichopterus* have negative allometric growth (b < 3), which means that these fishes do not grow symmetrically or these fish becomes thinner with increase in length. Moreover, there was strong correlation between the length and weight of the abovementioned species (r^2= 0.8029-9545). Further studies on fish population biology for better understanding on factors influencing fish growth in these two lakes of Esperanza is highly suggested.

Keywords: *Ichthyofauna, introduced, Lake Dakong Napo, Lake Oro, native*

State Of Mangroves , Seagrasses And Coral Reefs Of Del Carmen, Siargao Island Philippines

CARLOS H. DONOSO
ABSTRACT

Del Carmen , a group of islands in Siargao Island , is dependent on coastal resources as fishing and tourism are dominant contributors to the local economy. However, there is limited information on the level of these resources. Thus an assessment was made to determine the state of ecologically important coastal

resources in the area. Mangrove community structure analysis was done using transect plot method, sea grass was assessed using Braun-Blanquette method and coral cover was determined using line intercept method. There are 6 mangrove species with *Sonneratia alba* having the highest importance value (113.8) dominated the fringing vegetation. Further, in the three sites surveyed for sea grass, seven species were recorded with a mean cover of 35.55%.Overall, low diversity (H') was noted for both mangroves (1.09) and sea grasses (5.2-16.18). For coral cover, only one out of five sites assessed showed coral cover in good condition (60%) while the rest have fair coral cover (25-40%). The state of mangroves, seagrass and coral reef in the area are subjected to unregulated human activities such as destructive fishing, overlapping uses and extractive activities. So, there is a need to regulate human activities and rehabilitate the resources. Thus protection of the island must be taken into consideration by municipal government of Del Carmen to ensure continual regeneration of coastal resources if these are to sustainably support fishing and tourism.

Keywords: State, Assessment, Coral cover, Mangroves, Seagrass, Del Carmen Siargao Island

Distribution Pattern and Multivariate Analyses for Anthropogenic Apportionment of Coastal Water in Macajalar bay, Philippines

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ABSTRACT

Macajalar bay, Philippines has become an attractive thoroughfare with investment developments recently, rendering anthropogenic input to the coastal waters. Expediting coastal resource management strategies necessitates the present study on coastal water characteristics aided with distribution pattern and multi-statistical analyses to apportion the influence of anthropogenic inputs. A total of fifteen biophysicochemical characteristics were studied covering two municipalities (Opol and Jasaan) with six coastal communities on 2017. Data were all processed for Q-test to eliminate outliers prior to distribution analysis using univariate (descriptive), inferential (T-test, One-way ANOVA, Pearson correlation), and multivariate statistics (HCA and PCA). Overall, higher concentrations were determined in Opol (ecotourism site) than Jasaan (industrial site) as sampling months progressed except for oil and grease. Results

for total coliform, fecal coliform, HPC, TSS, COD, and oil and grease regardless of spatial-temporal variations exceeded the standards. Distribution pattern revealed spatial-temporal variations selectively for pH, temperature, DO, and oil and grease, indicating site specific distribution. HCA and PCA results corroborated correlation matrices showing elevated concentrations in Opol apportioning anthropogenic input mainly due to rural development and ecotourism, whereas in Jasaan mainly due to rural development and industries. Overall, anthropogenic apportionment in the bay was influenced by rural development, ecotourism, and industries.

Keywords: anthropogenic; apportionment; coastal water; distribution pattern; Macajalar bay; multivariate

Efficacy Trial Of Innovative Liquid Nutrient Formulations For Kale (*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, chlorophyll content, total carotenoids, free radical scavenging activity, and oxidation-reduction potential of kale under aggregate hydroponic production system. The efficacy of seven nutrient solutions were evaluated using kale as test plants in a split plot randomized complete block design with the different nutrient solutions as main plot and the two varieties of kale (Kailan and Toscana) as sub-plot. The seven treatments were composed of T1 = Visayas State University-Liquid Nutrient Formulation (VSU-LNF), T2 = Fermented Acacia (FAC), T3 = Fermented Malunggay (FMY), T4 = (T1 + T2), T5 = (T1 + T3), T6 = T4 + Effective Microorganism (EM), and T7 = (T5 + EM) replicated four times. 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 while vitamin C content was analyzed using titrimetric analysis. Results have indicated that kale grown on VSU-LNF produced the best horticultural characteristics, yield performance, and chlorophyll A and B. The total carotenoids and free radical scavenging activity of kale were enhanced by the

application of FAC and FMY. The combined application of VSU-LNF with FMY significantly influenced vitamin C content and free radical scavenging activity of kale. The incorporation of EM in VSU-LNF with either FAC or FMY has significantly improved oxidation-reduction potential of kale. Nevertheless, Kailan variety of kale exhibited better horticultural and yield characteristics while Toscana indicated better postharvest qualities in an aggregate hydroponic system under Visca agro-climatic condition. These results indicate the potential of these nutrient solutions for innovative nutrient management strategy for productive and quality kale production under an aggregate hydroponic system which can be helpful in community resilience and preparedness program.

Keywords: *Aggregate hydroponics, Free radical scavenging activity, Kale, Liquid nutrient formulations, Oxidation-reduction potential, Pigment composition, Yield*

Environmental literacy and Network Reinforcement of Secondary Science Teachers: Basis for Developing Environmental Science Enriched Extension Program

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ABSTRACT

Tropical typhoon, earthquake, pollution, and potentially climate change have threatened the Philippines ecological systems expediting adaptation geared towards disaster risk reduction transcending policies, institutions, and social systems. This is relevant among academic institutions like secondary schools being one of the information sources of local communities. This study particularly focused on environmental literacy and network reinforcement of secondary science teachers in Cagayan de Oro, Philippines. Survey questionnaire was administered prior to extension program enriching earth and environmental science content. Both quantitative and qualitative assessments were employed to elicit teachers' response and available networks promoting environmental conservation. Overall, good level of knowledge-awareness do not guarantee best level of practices, requiring complementary actions between environmental literacy and network reinforcement for extension programs. The marginalized responses on practices rendered inability to participate in conservation efforts. Similarly, proactive expressions and activities showed mainly energy dependent solutions to mitigate global-local environmental issues with low level of voluntarism. As a result, the extension program focused on relevant environmental issues like biodiversity, climate change, pollution, and disaster risk reduction requiring

engagement to solution efforts. Several networks reinforced the extension program encompassing local environmental initiatives in schools, policies and mandates, and institutional arrangements.

Keywords: environmental literacy; network reinforcement; science teachers; extension program

Geochemical Composition Of Deep And Highly Weathered Soils Leyte And Samar Islands Philippines

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ABSTRACT

Highly weathered soils are widespread in the islands of Leyte and Samar but limited data have been published in terms of their nature, characteristics and nutrient status. This study evaluated the total elemental composition and nutrient status of eight (8) deep and highly weathered soils in various parts of Leyte and Samar. Sampling was done down to 3 to 4 meters deep.

Total amounts of Al_2O_3, As_2O_3, CaO, CdO, Cr_2O_3, CuO, Fe_2O_3, K_2O, MgO, MnO, Na_2O, NiO, P_2O_5, PbO, SO_3, SiO_2, TiO_2, ZnO and ZrO_2 were analyzed using an X-ray analytical microscope for eight soil profiles. Two deep and highly weathered soils have probably developed from homogenous parent materials based on the regular distribution with depth of TiO_2 and ZrO_2. Most soils have K_2O and CaO values below those of MgO and Na_2O. This means more losses of K_2O and CaO have occurred since they are more mobile in the weathering environment. Other elements such as CuO, ZnO, PbO, NiO, CrO and SO_2 also show small amounts in all soil profiles. Thus, this study is very useful for sustainable crop production and environmental conservation in the study area specifically for highly weathered soils which is widespread in the Philippines.

Keywords— Geochemical composition, highly weathered soils, depth function, total elemental composition.

Improving Biodiversity Knowledge using a Contextualized Street Theatre Information Education and Communication Material

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ABSTRACT

Analysis of published and unpublished biodiversity works on Klaja Karst Park, considered the last frontier of rich terrestrial biological resources in General Santos City, were used to develop a contextualized street theatre production to improve biodiversity knowledge among local secondary school learners. Following Research and Development Design, the developed IEC material was pilot tested to purposively selected 4th year Junior students. Pre and post-test were administered to evaluate the effectiveness of the IEC material among target audience. Validation by group of experts composed of street theatre experts, content experts and teachers to evaluate the appropriateness, adequacy and usability, and a focus group discussion to identify strengths and weaknesses of the street theatre production. Results of the study revealed content of the IEC material is *highly appropriate* and *highly adequate* and found to be *highly usable*. The t-test result also showed respondents generated *high extent* of biodiversity knowledge after exposure to the contextualized street theatre production. It is concluded that exposing students to a contextualized street theatre production is an effective means of improving biodiversity knowledge and in raising awareness of secondary school learners. Technical aspect of street theatre production is however recommended to be further enhanced to maximize its usability.

Key words: Biodiversity, Street Theatre, Information Education and Communication Material, Karst, K'laja

Detection of Pesticide Residues in a Community Farm in Atok, Benguet: Potentials for Bioremediation

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ABSTRACT

The study was conducted in a known high-input agro-ecosystem in Cattubo, Atok, Benguet to establish the link among pesticide applications, vegetation in the farms and soil resources. Specifically, the study aimed to: (1) conduct a survey of pesticides applied in the farm areas devoted to semi-temperate crops; (2) perform a vegetational (ecological) analysis of a farm undergoing fallow period; and, (3) perform diagnostic pesticide residue analysis (PRA) on two (2) most dominant herbaceous weed species and soil in the farm area. A total of 30 farmer-respondents with history of using

pesticide as a major farm input were interviewed. It was revealed that fungicides and insecticides top the list of pesticides being used in the farms. In the ecological succession study, researchers have documented the plant species thriving in the farm during fallow through vegetation sampling. The two (2) most dominant weed species, *Galinsoga parviflora* and *Stellaria media* showed traces of pesticide residues (PR). The two being the most abundant in the area during the fallow period indicates that they can grow and bioaccumulate PR, thus, is a potential indication of their capacity to absorb and clean up persistent toxic chemicals in the soil. Moreover, the soil samples also showed the following PR: cypermethrin, d,d-ddt, fenvalerate and chlorpyrifos.

Key Words: Pesticide residues, bioremediation, ecological succession

Larvicidal Potential Of Mango (*Mangifera Indica* L.) Seed Endosperm Extracts On Mosquito (Family Culicidae) Larvae

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ABSTRACT

Mosquito-borne diseases remain a major cause of human mortality worldwide, with over 1 billion cases and 1 million deaths every year. Philippines is one of the countries where most mosquito-borne diseases are endemic, having a large number of positive cases being reported year-round. Control methods, such as the use of larvicide, are being practiced to reduce overall mosquito population, and consequently reduce the transmission of diseases that they transmit. In this study, the potential of M*angifera indica* L. (mango) seed endosperm methanolic extracts was tested as a botanical larvicide alternative to synthetic ones. Based on the results, 100% larval mortality was observed in both concentrations 1% and 0.5% after 48 hours of larvicidal bioassay, while concentration of 0.1% only had 89% larval mortality. The commercial larvicide had 23% larval mortality after 48 hours of larvicidal bioassay. One-way ANOVA revealed that there is a significant difference with the mango seed endosperm extracts and commercial larvicide. *Mangifera indica* seed endosperm extracts, therefore, confirm their potential as a larvicide against mosquito larvae. The result of this study may be useful in controlling mosquito populations and may be used as alternative larvicide.

Keywords: larvicide, *Mangifera indica* L., Culicidae, experimental, Davao City

Prelude to Successful Cultivation of *Hericium* in the Philippines: Understanding its Mycelial Growth Response on Different Culture Media and its Antibacterial Activity

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Abstract

Hericium mushrooms are edible fungi belonging to the Hericiaceae family with a long history of usage in traditional medicine in China. In the Philippines, however, information on its production, cultivation or nutraceutical properties is relatively unknown. In this study, four strains of *Hericium* spp. including *H. americanum, H. erinaceus, H. coralloides* and *Hericium* sp. were evaluated for their nutritional requirements using various commercially available culture media and their antibacterial activity against *Escherichia coli* and *Staphylococcus aureus* in two dilutions (60 ml and 80 ml sterile distilled water + 12 hour culture - bacterial suspension) on Muller Hilton Agar. Highest mycelial growth response of *H. americanum* and *H. coralloides* was observed on Sabouraud Dextrose Agar while *H. erinaceus* and *Hericium* sp. grew best on Potato Dextrose Agar. The ability of *H. americanum* mycelia to inhibit bacterial growth at 12 and 24 hours after inoculation against *E. coli* was reported. Meanwhile, both *H. americanum* and *H. erinaceus* demonstrated antibacterial activity against *S. aureus* in both dilutions.

Keywords: *Hericium* spp., antibacterial activity, mycelial growth

Taxonomic Classification, Population Density and Distribution of Macro - Basidiomycetes at Csu Lal-Lo

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A four – month study on macrofungi was conducted at Cagayan State University at Lal –lo. Specifically, the study aimed to characterize the macrofungi morphologically, classify taxonomically the species, document their density and distribution, and their relationship to ecological niche parameters. 25 sampling plots were made each measuring 100m^2. Opportunistic sampling method was used during the survey on the months of July to October 2017.

Field sampling of macrobasidiomycetes resulted to the identification of five orders, 17 genera and 20 species with a total of 34 individuals. Majority of the basidiomycetes belonged to *Order Polyporales*. One individual, a wood decay species, remains unidentified.

Results showed that *Schizophyllum commune* (Fr.) (a) has the highest population density, while *Ganoderma pfeifferi* (Bres) has the lowest. In terms of population distribution, only six species were most distributed, and five species, including the unknown species, were least distributed.

Correlation analysis showed that amount of rainfall, soil moisture and air moisture had positive effects on the density and distribution of some

macrobasidiomycetes, while elevated soil and air temperature reduced the density and distribution of these species. In contrast, an increased in air and soil temperatures made the population of *Volvariella volvacea* to be more abundant and more dispersed.

Keywords: *macro – basidiomycetes, taxonomic classification, ecological niche parameters, population density, population distribution*

Pharmacologic Screening of Indigenous Philippine Plants for Potential Treatment of Hypertension, Hypercholesterolemia, Diabetes and Hyperuricemia

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ABSTRACT

The biochemical basis for treatment of hypertension, hypercholesterolemia, diabetes, and hyperuricemia is the inhibition of the regulatory enzymes angiotensin-converting enzyme (ACE), 3-hydroxy-3-methylglutaryl-CoA (3-HMG-CoA) reductase, α-glucosidase and xanthine oxidase (XO) respectively. Many commercial drugs are available for treatment of such non-communicable diseases. However, their high cost limits the access of many patients to these medications especially in developing countries. Another concern is the deleterious side effects upon long term use of these maintenance drugs. Many promising alternative medicines can be derived from plants. The Philippines, being one of the 17 megadiverse countries in the world, has many understudied and underutilized indigenous plants. This study involves the comprehensive pharmacologic screening of twenty indigenous Philippine plants. The results show that the extracts from seven plant species (*Koordersiodendron pinnatum, Lepisanthes fruticosa, Ficus pseudoplama, Antidesma ghaemsembilia, Ardisia whitfordii, Planchonia spectabilis* and *Syzygium affine*) have strong potential for alleviating hypertension by inhibition of ACE. Meanwhile, four samples (*Diospyros maritima, Intsia bijuga, Ficus pseudopalma* and *Uvaria rufa*) show moderate potential in lowering blood cholesterol level by inhibiting 3-HMG-CoA reductase. One sample (*Madhuca betis*) and three others (*Dillenia philippinensis, Artocarpus cumingiana and Uvaria rufa)* show strong and moderate potential respectively, for lowering blood glucose level by inhibiting α-glucosidase. Lastly, extracts from six plant species (*Alstonia scholaris, Kibatalia gitingensis, Voacanga globosa, Sterculia rubiginosa, Ficus pseudopalma* and *Intsia bijuga*) show strong potential for relieving gout by inhibiting XO. These indigenous plants can be tapped as sources of alternative medicine for the treatment of

such non-communicable diseases which may prove more cost-effective and potentially with less side effects.

Keywords: Pharmacologic screening, angiotensin-converting enzyme inhibition, 3-hydroxy-3-methylglutaryl-CoA reductase inhibition, α-glucosidase inhibition, xanthine oxidase inhibition

Premium-Pricing of Crop Revenue Insurance in Laguna

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ABSTRACT

Traditional crop insurance provides protection against loss in crop yield. This insurance pays the benefit, which is the farmer's capital or cost of production, whenever the expected yield is not met. However, this insurance does not cover losses in expected revenue whenever the palay price drops. Thus, this study developed a pricing model for a revenue insurance product for rice. This insurance provides protection against losses in both yield and revenue. This was done by combining a traditional crop insurance and a European put option. This new insurance gives the benefit whenever the yield is below 4, 000 kg/ha, or a price lower than a chosen strike price from PhP 14 to PhP 20. The traditional crop insurance was priced using the Expected Value Principle, while the European put option was priced using the Black Scholes model. Results showed that traditional insurance has a premium price of PhP 1, 051.15 per hectare for a PhP 25, 000 benefit, while the European put option has a price of PhP 1.08 to Php 4.09 per cavan of palay depending on the strike price. The results of this study could be used by the government and the insurance providers in offering crop insurance.

Keywords: crop insurance, revenue insurance, put option, European option

Carbon Stock Assessment and Valuation of Pine Tree *(Pinuskesiya)* in the Golf Course at Sapid as an Urbanizing Community an Mankayan, Benguet

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ABSTRACT

The study was conducted to assess the capacity of Pine trees in the Golf Course in Sapid Mankayan, Benguet to store carbon. It is also aimed to quantify its economic value as an ecosystem service. It's important role in an urbanizing community and its functional benefits for mitigating global warming and climate change is highlighted, The study involves methodological comparison in the estimation ofaboveground biomass (ABG), belowground biomass(BGB), total biomass (TB), carbon (C) and carbon dioxide (CO_2) using three methods/models: (1) allometric equation by Brown (1997); (2) using actual wood density measurement in this study (Onio and Gomez, 2018); (3) using wood density based on Tamolang et al. (study 1995). The findings in this study showed no significant difference with the standard allometric equation by Brown (1997) for tropical coniferous tree; however, both methods have a significant difference to the results using wood density from the study of Tamolang et al., (1995) results. Also the study shows that pine trees in the 300 m^2 has a total biomass of 16,497.33 kg (= 550 tons/ ha with approximate carbon density of 271.45 tons/$ha^{-1}$with a CO_2 equivalent of 995.39 tons/ha^{-1}. The estimated cost of carbon per ha is about $3,504.45 or 179,869.85 Php using California Carbon Dashboard as of 2017.

Keywords: carbon stock, valuation, ecological services

Land Use Conversion and On-Site Costs of Soil Erosion at Mount Data-Sawmill, Bauko, Mountain Province

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ABSTRACT

The study focused on the on-site cost of soil erosion due to land use conversion at Mount Data-Sawmill, Bauko, Mountain Province. Specifically, the study aimed to estimate the rate of soil erosion in both agricultural and forest areas as well as quantify the amount and present monetary value of the lost NPK.

Results of the study shows that agricultural land has a high erosion rate with 4.10 tons/ha/mo and an approximated NPK content of 5.08 kg N, 0.22 kg P, and 2.02 kg K. On the other hand, forest land has a rate of 0.11 tons/ha/mo with a corresponding

NPK loss of 0.40 kg N, 0.01 kg P, and 0.37 kg K/ha/mo. Calculations revealed that the total cost of nutrient losses from the agricultural land use was Php 648.43/ha/mo while Php 36.78/ha/mo for the forest area. The difference, which is Php 611.69/ha/mo is therefore the on-site cost of soil erosion due to land use change. Therefore, the conversion of the forested area to cultivated land has incurred a cost of Php 611.69/ha/mo which was wasted because of the occurrence of soil erosion.

Keywords: Land use, costs, soil erosion

Preliminary Survey on the Diversity and Community Assembly of Macroinvertebrates Along the Small Streams Of Up Laguna Land Grant, Paete, Laguna, Philippines

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ABSTRACT – Macroinvertebrates are distributed in varied habitats wherein one of their highest diversity is concentrated in tropical forest streams. Despite their many ecosystem services, few data are available regarding their biology and ecology in the Philippines. This study aimed to determine the diversity and community assembly patterns of macroinvertebrates in the Dakil River of Laguna Land Grant, Paete, Laguna, Philippines. A total of 25 3x5 m (15 m^2) quadrats were randomly set along the four tributaries and the main Dakil River. The streams' physico-chemical and habitat features were measured. Standardized sampling was performed via direct handpick, kick and sweep technique, and cascade sieving of substrates. A total of 572 individuals (7 classes, 15 orders, and 29 families) were collected from the five stations. Hexapods (16 families) constituted 55% of total abundance, followed by gastropods (21%) with five families. DW1 had the highest diversity index (H'=2.59) while DW2 had the lowest (H'= 1.69). MR had the high taxon evenness (E=0.78) while DW2 had the lowest (E=0.41). Taxon accumulation curve exhibited ß-dominated diversity with MR having the highest completeness ratio (0.66). Macroinvertebrates in the Dakil River, UP Laguna Land Grant have preferred microhabitat within the site as supported by Canonical Coresponce Analysis (CCA). The Global Linear Mixed Model (GLMM) revealed that species richness was highly affected by pH while the abundance, was inversely affected by river velocity, canopy cover, and conductivity. The Akaike information criterion (AIC) revealed the combination of canopy cover + conductivity + pH + river velocity is the most essential to

the abundance of macroinvertebrates while null for species richness. The present study suggested a complex macroinvertebrate diversity across the Dakil River in the UP Laguna Land Grant, Paete, Laguna reflecting its importance as an important biological refugia.

Keywords: Keywords: Dakil River, diversity, Taxon Accumulation Curve, Canonical Correspondence Analysis (CCA), Global Linear Mixed Model (GLMM)

Development of Interactive Exhibit as Information Education and Communication Materials on Cave and Karst Resources

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Abstract

Local conservation initiative through the strengthening of awareness on the importance of cave and karst resources is seen as an important strategy in safeguarding these highly fragile but essential resources, hence an Interactive Exhibit as an IEC material to increase awareness on cave and karst resources targeting young learners was developed and validated. A Research and Development Design utilizing FGD, personal correspondence and interviews with cave and karst experts and secondary data compilation were employed for the development of the IEC material with validation done by a group of cave experts, and teachers using the adapted validation tool. Developed material was pilot tested to 120 learners following a single-experimental case method with pre-test and post-test to measure its effectiveness. The result of the expert validation revealed the content of the IEC material to be *very highly appropriate* and *highly adequate* while its usability was *very high*. Learners exposed to the fun and interactive learning experience in the Cave and Karst Interactive Exhibit showed significant improvement in their awareness of cave and karst resources, an initial step towards karst conservation.

Keywords: Information Education and Communication Material, Caves, Karst, Interactive Exhibit, Conservation Initiative

Productivity and Postharvest Qualities of Eggplant (*Solanum Melongena* L.) Cultivated with Different Levels of Nitrogen

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ABSTRACT

This study was conducted at Farmville Experimental Station located at the Visayas State University in Baybay City, Leyte to evaluate the effects of the different levels of nitrogen on the growth, yield, and postharvest qualities of two genotypes of eggplant. The field experiment was laid-out in a split plot randomized complete block design with nitrogen levels as the main plot and eggplant genotypes (Casino & Morena) as subplot. The levels of nitrogen were divided into 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) which were replicated four times.

Results showed significant differences in growth, yield and postharvest qualities of test vegetable. Eggplants applied with 50 kg N/ha flowered and harvested the earliest though comparable to those plants supplied with 100-150 kg N/ha. The application of 150 kg N/ha (T4) produced the highest number of fruits, heaviest fruits, and consequently gave the highest yield in both genotypes. Lowest yield was observed on control plants, which received no N-fertilizer application. Morena variety was harvested earlier, taller in height and heavier marketable fruits and produced higher yield than Casino variety under Visca agro-climatic condition. On the other hand, Casino eggplant has significantly higher free radical scavenging activity than the Morena genotype. This means that Casino has better potential to neutralize free radicals in the body system when consumed. Highest chlorophyll and total carotenoids were observed with the application of 250 kg N/ha particularly on Morena genotype. The best oxidation-reduction potential was found on eggplants applied with 50 kg N/ha to indicate longer shelf-life and storability of the harvested fruit vegetables. This also points out that the food quality of eggplant is diminished with higher application rate of nitrogenous fertilizer. Total dissolved solids were also significantly higher in Morena genotype but these were not significantly influenced by the different levels of nitrogen application. The overall result of the study simply implied that cost-effective application of 150 kg N per hectare is worth recommending for optimum eggplant production with quality.

Key Words: Eggplant genotypes, Free radical scavenging activity, Nitrogen levels, Oxidation- Reduction potential, Postharvest quality, Total dissolved solids, Yield characteristics

Innovative Organic Starter Solutions for High Value Vegetable Seedlings

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ABSTRACT

This study was conducted to find innovative sources of organic starter solutions for high value vegetable seedlings. Specifically, it aimed to determine the nutrient profile of the ferments derived from acacia, golden kuhol and malunggay, and investigate the efficacy of the three nutrient solutions on the seedling growth of lettuce, squash, sweet pepper, and tomato in terms of plant height, number of leaves, root length, root weight, and herbage weight. The experiment was conducted following a randomized complete block design with five treatments replicated three times. Results of the chemical analysis revealed that the nutrient solutions derived from the ferments of acacia (FAC), golden kuhol (FGK), and malunggay (FMY) were generally good sources of macronutrients such as nitrogen, phosphorus, potassium, calcium, magnesium except for sulfur in FGK. The application of FAC significantly promoted plant height of squash and tomato, number of leaves and root weight of tomato, and root length and weight of lettuce seedlings. The application of fermented FGK significantly increased the root weight of lettuce and root length of squash seedlings. The application of FMY enhanced the plant height, root length, and root weight of lettuce seedlings; number of leaves, root length and root weight of squash seedlings; and root weight of sweet pepper seedlings. The best herbage yield was exhibited by the seedlings of lettuce and squash applied with FAC and seedlings of sweet pepper and tomato applied with commercial nutrient solution. The overall results of the study simply imply the potential of acacia and malunggay ferments as valuable sources of organic nutrient solutions which can be formulated as an innovative approach in organic agriculture for community resilience, resource conservation, and environmental protection.

Keywords: *acacia, golden kuhol, malunggay, organic starter solution, vegetable seedlings*

Love Affair with Nature: Significance and Impact of Mangrove Planting Among Newly Wed Couples in Puerto Princesa City

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Abstract

Man's exploitation of mangrove resources draws the attention from the environmentalists, the government and the community as well. Mangrove exploitation includes cutting them as a source of materials for constructing low-cost houses, fence, fishpond, charcoal making and conversion of the area to housing subdivision. The City Government of Puerto Princesa in its effort to protect mangroves introduced a unique way of involving the community in mangrove rehabilitation conservation and protection by introducing love affair with nature which featured mass wedding and mangrove planting every February 14. This descriptive research aimed at determining the significance, impact and reasons of 34couples in joining the activity using survey questionnaire. The research found out that the couples realized that married life like mangrove should be preserved and protected and doing small things like mangrove planting contributes a lot to the protection of the environment. It is one way to help Mother Nature gain its glory again.

Keywords: Love Affair with Nature, mangrove planting, mass wedding, mangrove protection.

Physico-Chemical Properties of Rice Wine As Influenced By the Formulation of Indigenous Yeast (bubod) in Rice Wine Fermentation in CAR.

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Abstract

This study determined the physico-chemical properties of rice wine as influenced by the formulation of indigenous yeast (bubod) in Cordillera Administrative Region (CAR). The main raw materials in the formulation of indigenous yeast were old bubod and ground glutinous rice. As to the influence of the formulation on the characteristics; B_K showed a yellowish color probably because of the addition of sugar cane juice, molasses and ginger juice. B_B and B_K samples are rough because they are made up of coarse grains. The best pH media for the yeast to thrive is in slightly acidic to a neutral

environment. Finally, B_B sample has the highest yeast count at 1.4 x 10^8 CFU/g, the more yeast in the solid cake fermenter, the faster is the fermentation process.

B_A from the white rice wine has the highest volume of wine recovered, pH of the white rice wine from Bauko (B_B) registered the best quality because of the viability of the old bubod, rituals during the making and has the highest yeast count. The control, BO of the white rice wine has the least specific gravity. B_A, B_H, and B_K from the red rice wine have lesser sugar contents due to the viability of the old bubod used, rituals performed during the making, and the addition of onwad seeds and leaves, molasses and sugar cane juice. Lastly, alcohol and ethanol contents are higher in the white rice wine than in the red rice wine. The used indigenous yeast is more effective in the red rice wine only in sugar content.

The indigenous yeast was most effective on the desired pH and volume of wine obtained when the fermentation is at 8 weeks and on white rice while the indigenous yeast was most effective on sugar content, specific gravity, and volume of rice wine obtained when the fermentation was at 10 weeks.

Key words: Physico-chemical Properties, Indigenous yeast (bubod), Formulation, Rice wine, Fermentation.

Production Practices and Diversity of Heirloom Rice Landraces in an Ethno-farming Community of Benguet, Philippines

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ABSTRACT

Rice landraces or heirloom rice, the principal crop planted in the rice terraces of Benguet is now gaining momentum in the local and international market. The municipality of Kibungan, an ethno society depicts an heirloom rice farming community which has preserved its rice landraces as demonstrated by its large production area. Data on production practices were generated through one on one interview with 150 heirloom rice farmers using a semi-structured questionnaire. Fourteen rice landraces were characterized based on morphological and genetic characters. Likewise their relationships, diversity and growth and yield performance were evaluated in the locality (1,012 meters above sea level). Single nucleotide polymorphism (SNP) genotyping was done at the International Rice Research Institute (IRRI).

Production practices for heirloom rice are still traditional. There are 22 landraces currently planted. Seed selection is done by sorting of filled grains through winnowing. Rice birds are controlled using locally made scare crows. Harvesting is done by cutting the panicles using a sharp implement then bundled. The bundled rice panicles are sundried or placed above

the cooking area. Morphological diversity among the rice landraces was moderate. SNP markers grouped the rice landraces into three clusters. The *Lamadya* and *Camporo* group which showed similarities in morpho-agronomic characters in the field was confirmed at the molecular level. *Oklan* cluster has a unique profile compared with the other landraces. *Oklan, Makabsog, Balatinaw* and *Lamadya* are promising rice landraces due to their high grain yield and number of productive tillers.

Keywords: *ethno-farming community; genetic characters; morphological characters; rice landraces; single nucleotide polymorphism*

Poultry Farming in Magalang, Pampanga: Its Contribution to the Emergence of Antibiotic-Resistant *Enterobacteriaceae*

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ABSTRACT

Poultry farming is one of the Philippines' largest industries in the agriculture sector. In Magalang, Pampanga, there are fifty-nine registered poultry farms in the Municipal Agricultural Office. Among these, nineteen were visited to conduct a survey regarding their health management practice and study their contribution to the rising problem on antibiotic resistance. The survey revealed that majority of the poultry farms use sub-therapeutic dosage of antibiotics to prevent poultry diseases. Fecal samples were also collected from three farms which use different antibiotics in varying frequencies. Gram negative enteric bacteria (*Enterobacteriaceae*) were isolated and determined resistance to the respective antibiotics used in the farms. Amoxicillin and gentamicin were used in the first farm while tetracycline was used in the second. Norfloxacin and amoxicillin were used in the third farm. Antibiotic-sensitivity test revealed high percentage of the isolates are resistant to amoxicillin or tetracycline, fifteen out of fifty isolates are both resistant to amoxicillin and gentamycin and few colonies are resistant to both amoxicillin and norfloxacin. The results suggest that the health management practice of these farms may support the growth of antibiotic-resistant enteric bacteria which may be passed on to humans and cause more serious gut infections. This complication is a major health concern that should be addressed.

Keywords: antibiotic-resistance, enteric bacteria, sub-therapeutic dose, microflora, poultry farm health management practice

Oral Paper Abstracts

Effects of Phosphate Solubilizing Bacteria Isolated from the Mine Tailing in Mogpog, Marinduque on the Growth of Narra (*Pterocarpus indicus* Willd.) - a Potential Phytoremediator

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Rhizosphere bacteria support plant growth through its ability to fix atmospheric nitrogen, solubilize phosphorus, produce secondary metabolites to increase plant's resilience against pathogens. The aims of this study were to isolate phosphate solubilizing bacteria (PSB) from a copper mine tailing area in Mogpog, Marinduque where bioremediation activities were conducted and to determine effect of PSB on plant growth. Among the PSBs, three fast growing

Mogpog phosphate solubilizing bacteria (coded as MPSB1, MPSB2 and MPSB4) were inoculated on narra (*Pterocarpus indicus*) seedlings with or without Mykovam (a commercial mycorrhizal inoculant) and grown in oven sterilized acidic (pH 4.3-5.0 in H_2O) red soil from Caliraya, Laguna. Generally, PSB and Mykovam treatments increased significantly height, stem diameter and plant biomass than the non-inoculated counterpart. Based on plant dry weight, MPSB2 plus Mykovam plants gave 2.91 and 2.22 times greater root and total dry weights, respectively, relative to the negative control (no MPSB and No Mykovam; 0.268 and 0.854 g $plant^{-1}$, respectively) counterpart. Moreover, this treatment promoted higher height (3.28x) and diameter (1.32x) increments than the negative control (1.36 cm and 0.568 cm). It can be concluded that combined MPSB and Mykovam shows significant interaction which is useful in rehabilitation of mine tailing areas.

Keywords:Phosphate solubilizing bacteria, bioremediation, heterotrophic bacteria, Mykovam®

Communication Strategies in Disaster Risk Reduction in Infanta, Quezon

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Abstract

The study focused on the communication strategies in disaster risk reduction in Dinahican, Infanta, Quezon. The objectives of the study include to describe the socio-demographic and economic characteristics of the households, determine the communication strategies in disaster risk reduction, and asses the relationship between communication strategies and the socio-demographic and economic characteristics of the households. Research methods include conduct of survey using a validated questionnaire, focus group discussion, key informant interview, and review of documents. Data were analyzed through descriptive and inferential statistics.

There were 60 randomly selected local residents that served as respondents consisting an equal of 30 males and 30 females. Most of the respondents are High School Graduates, the primary occupation are fishing and small-scale business, and majority are earning not more than Php 10,000 per month.

With regard to communication strategies in disaster risk reduction, majority of the respondents understand the key message of the DRR programs. The use of cellular phone, watching television, the neighborhood, and the local officials are considered as the most successful communication channels as source of information. The most

successful communication approach is through capacity development and by helping one another to develop and improve the community.

Result of inferential statistics revealed that each socio-demographic and economic characteristic were found to have relationship with at least one communication strategy, whereas civil status is related to multiple communication strategies. Evacuation programs were commonly communicated by the local barangay while network and alliance building information dissemination are both dependent but is not caused by age.

Key words: communication strategies, message, channel, approaches

Awareness and Attitude Towards Climate Change of Selected Senior High Students of Lyceum of The Philippines University-Cavite

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Abstract

In this paper, the researchers aimed to assess the awareness level and attitude of senior high school students of LPU-Cavite towards climate change. The research was made to raise awareness and establish positive attitude among the students toward climate change.

The research surveyed 276 senior high school students, age 16-19 years old, from different strand under academic track. Majority of the respondents are 18-19 years old (n=175) with almost equal ratio of male to female.

Results showed moderate to high awareness on issues concerning climate change while students moderately to strongly agree on their role in addressing problems about climate change.

Students became aware of climate change through television (n=253), internet (n=245), and school (n=204). Majority of the students look for information about climate change through internet (n=245), television (n=199) and books (136).

The high awareness level and strong positive attitude of senior high school students of LPU-Cavite towards issues and concerns about climate change is a good indication that they are more likely to express willingness to act. Raising awareness and promoting positive attitude about this global problem, climate change, should be one of the basic courses during early education.

Keywords: climate change, awareness, attitude, senior high school

Plants and Algae as Potential Phytoremediators in an Abandoned Mine Tailings Pond at Bgy. Mogpog, Marinduque, Philippines

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ABSTRACT

Copper contamination by mining activities of CMI in soils and waters of Bgy. Mogpog, Marinduque should be addressed. There is a need to assess the area to identify organisms that have potential to rehabilitate copper contaminated waters and soils. This study aims to assess potential phytoremediators present in the Ino-Capayang Mine-made pond at Bgy. Mogpog, Marinduque. Three (3) stations were established at the site. Copper concentrations in soil and water were determined, as well as other water parameters such as pH, DO, COD, TSS and temperature. Microalgal samples were collected using plankton net and were identified. Importance Values (IV) of dominating plant species at the stations were determined. The study revealed 12 identified taxa of microalgae in water. Diatoms dominated the microalgal community, accounting for 70% of the overall total cell abundance. Station 3 had the most number of algal taxa. However, the microalgal diversity is low, which can be attributed to the presence of copper (mean of 0.097 ppm) and high TSS in the water. On the other hand, there is an immediate need to remediate the soil in the area since copper concentration in the sites were significantly higher in soil (663.78 ppm) than in water (0.097 ppm). The pH concentrations were also relatively acidic in soil than in water. A total of 27 species belonging to 19 genera from 11 families were recorded under the division Ancerophyta. Under division Pteridophyta, a total of 3 species belonging to 3 genera from 3 families were recorded from the sampling site. Among the angiosperm families observed, the most represented families were Poaceae (5 spp.), Compositae (4 spp.), Leguminosae (4 spp.), Convulvulaceae (4 spp.) and Cyperaceae (3 spp.). Among the identified grass species that are capable of dominating the site are: Bamboo (IV=0.40), followed by *Synedrella nodiflora* (IV=0.36), *Axonopus compressus* (IV=0.36), *Mimosa pudica* (IV=0.35), and the 5th in rank is Poaceae sp. 1. The high Importance Values of these plant species revealed its capability to tolerate soils with high copper concentration, hence can be potential phytoremediators in the area.

Keywords: Mine tailings pond, Marinduque, Diatoms, Phytoremediation, and Copper contamination

Sustainable Livelihood Approach in Analyzing the Factors Affecting School Adaptation to Floods in Two Municipalites of Laguna, Philippines

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The study was done to examine the adaptation strategies employed in all public elementary and high schools in the municipalities of Bay and Los Banos, Laguna that were affected by floods at varying levels; and to analyze the enabling and limiting factors to adaptation using the Sustainable Livelihood Framework. Data gathering was done through survey with teachers and key informant interviews with school heads.

Results revealed that most teachers preferred strategies that were proven effective over any other criteria. Most of the strategies employed were behavioral and institutional and depended on the capabilities of the teachers and available resources of the school. Social assets and school management generally enabled school adaptation while financial, physical and natural assets limited school adaptation to floods. Human assets either facilitated or inhibited adaptation. Existing and structures and processes that either enhanced or limited adaptation of schools to floods were also identified.

Keywords: floods; school adaptation; sustainable livelihood framework

Assessment of Land Use at Laguna State Polytechnic University- San Pablo City Campus

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Abstract

Laguna State Polytechnic University- San Pablo City Campus (LSPU-SPCC), since gaininng the university status, had been undergoing considerable changes recently, particularly in terms of infrastractures and student population. This study was conducted to assess the land use at LSPU-SPCC. The data gathered were from year 2010 until the 2017, where noticeable physical changes were observed. The following information were collected during the said period: the total area of the campus, number of infrastractures, the rate of construction or reconstruction and deconstruction of infrastructures and also the student population increase. Based from the data 17.19% of the total land was used for infrastracture and 78.30% are free spaces that may or may not have plant species and 0.55% are trees. Student population was increasing throughout the years and this is driving force of developments. Despite this, no noticeable change in the number of infrastructures were observed because it was found out that the original buildings were demolished and were replaced by new taller buildings. Also with the increase of student

population so did the number of reconstructed buildings. Over all the land use at the LSPU-SPCC is mainly for infrastratures and the number of new buildings being constructed is slowly increasing. Although at a minimum these changes will affect the biodiversity within the LSPU-SPCC.

Keywords: land use, urbanization, vegetation, built-up

An Exploration of the Experiences of Codependency in the Families of Residents of Healing Path Foundation: A Case Study

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ABSTRACT

This research study explores the nature of codependency among families whose relatives are under rehabilitation and treatment program. The study was based on interviews with selected families/ codependents in Healing Path Foundation who had been attending Narcotics Anonymous (NA). The codependents provided data on their experiences as recovering families, the commonality among the codependents, the response to codependency, the relationship between codependent and chemical-dependent, the response to Naranon session , consequences of codependency within the family, the codependents' needs and fulfilment of recovery. Families of chemically dependents suffered the same, hence, treatment program to recover behaviorally is needed. It is through this research that families with similar situation would be able to learn strategies and ways on how to recover from this malaise brought about by addiction in the family.

Key words: Empowerment, Recovery, Manipulative, Codependent

Floral Phenology Assessment of Isu-Cabagan Wildlife Santuary as Potential for Apiculture Production

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ABSTRACT

This paper discusses the phenology of plant species as potential for apiculture production thereby providing information as potential source of livelihood for low income households. The assessment was focused on the identification and classification of different plants which arc sources of nectar and/or pollen for bees. Correspondingly, a blooming calendar for the phenology of different plant species was developed

Floristic inventory was done in an area of about 10,000 square meters which is divided into *four* equal subplots to ensure detailed and accurate identification of plant species. Species richness and relative abundance were computed using Shanon-Wcincr Diversity Index. Results of the study show that a total of 58 species consisting of 36 trees and shrubs, seven herbs, two vines, and two lianas with 1,589 individuals dominated by the trees and shrubs of the family Fabaceae. Forty-one (41) species (or 71 percent) were blooming from October to early February while others did not flower. Among these, seven species have pollen only, one species having both pollen and nectar, plants have different flowering schedule. Four species namely, *(Chromolaena odorata, Leucaena leocucephala, Tabernamontana pandakaki, Psydium guajava were* observed to bloom continuously for five months while 16 species for two months and all others bloom only for duration of one month. Vegetation analysis of the study area revealed a high diversity index which means that it is rich with variety of plan species. The differences in time and duration of flowering period of different species can provide *the* food and protein needs of Insects, especially bees, that are visiting pollinator. Even if the plants continuously bloom all year round however, the potential of establishing n apiary depends on how' much pollen and nectar these plants could provide for the Insects.

A further study is recommended to determine the amount of nectar produce by each species and the number of pollen produce per flower. Likewise, a study on the effect of climate change on flowering periods of plants is also recommended

Keywords: phenology, pollen, dominance, diversity index

Putting Environmental Education in the Web: A Reflexive Analysis

Ricardo Bagarinao

The paper discusses the author's reflexive analysis of the offering of an online environmental education program in an open and distance e-learning university in the Philippines. Putting environmental education in the web brings in advantages as well as challenges that need to be addressed to be able to create an environmentally literate citizenry. With learners spreading across the globe, an online environmental education could promote a discussion on environmental issues with intergenerational perspectives and multicultural views. It also encourages immediate application of learning to impact areas since students do not need to wait to complete their program before they can return to their work posts. Meanwhile, online modality requires strong connectivity, and necessitates the implementation of learning activities that enhances learners' motivation to learn. With physical separation, learners experience an isolation effect that most of the time reduces their motivation and persistence. Therefore, when environmental education is put in the web, the offering institution should be able to

offer a variety of support to learners to maintain their interest and motivation to complete their program.

Keywords: reflexive analysis, open and distance e-learning, environmental education

GIS-Based Environmental Management: Conceptual Framework and Applications

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Abstract

The issue of environmental management has received considerable political as well as media and scientific attention in these recent decades due to its role in disaster risk reduction and management and sustainability. Effective and sustainable environmental management sustains the quality of life we aspire because it sustains the life support services provided by the environment. With good quality life environmental life support system, the risks brought about by a disaster are minimized, if not, regulated.

Environmental management, however, requires analysis of both spatial and temporal data structures as it is an inherently spatial endeavour, which is affected by time. The task and process flows related to environmental management are influenced by the wide range of spatial and temporal information. Such information could provide the current and future directions of the management endeavour if handled effectively.

The rapid advances in information technology could support the effective and efficient management of environmental and natural resources. One of these advances is the geographic information system or GIS. GIS capacity to collect, store, retrieve, transform, and display spatial data from the real world will make it a powerful set of tools in environmental management. For instance, environmental impacts of a development could be identified, analyzed and modelled by integrating environmental information with spatial geographic information, and in the process, valuable knowledge that could support sustainable management and development plan could be discovered.

This paper aims to elucidate the important roles of GIS in environmental management. It also discusses a framework for a GIS-based environmental management. It ends with a discussion on sample cases where GIS-based environmental management is being applied to address specific environmental issues or problems.

Keywords: geographic information system, environmental management, spatial analysis, sustainability

Status of Oyster and Mussel Assemblage on Selected Rivers in Dagupan, Pangasinan, Philippines

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ABSTRACT

Oyster farming is an important source of livelihood for the locals of Pangasinan, Philippines. However, it is threatened by the invasion of mussels since 2012. Hence, this study was conducted to determine the status of oyster and mussel assemblage in the two oyster farms found at Carael and Salapingao, Dagupan, Pangasinan. Four oyster species (*Crassostrea iredalei, Saccostrea cucullata, S. malabonensis* and *S. palmipes)* and three mussel species (*Perna viridis, Modiolus philippinarum* and *Mytella charruana*) were identified through morphological characteristics in both farms. Physico-chemical factors were measured to determine their effect on the population growth of oysters and mussels in the farms. Results show that salinity and dissolved oxygen are significantly lower in Carael farm, at p=0.003 and p=0.004, respectively. Whereas the water temperature and pH were found to have insignificant difference between the two sites, at p=0.226 and p=0.932, respectively. Moreover, turbidity of the freshwater environment also adds to the factors affecting oyster and mussel population ratio. The mussels are found to be dominating in Carael indicating that low salinity, DO and turbidity are the factors favoring invasiveness and are therefore factors that need to be addressed for future management strategies.

Keywords: Population ratio, mussels, oysters, Physico-chemical factors, farming, invasive species

Ecological Sustainable Management of Invasive Alien Species in Rice Ecosystems for Environment, Food and Nutrition Security

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Abstract

With the current global population of more than 7.5 billion, the key challenge is how to increase production to meet the growing demand for food and nutrition while conserving biodiversity and reducing the pressure on natural resources and ecosystems. Rice is the most important human food, consumed daily by more than half of the world's population according to the International Rice Research Institute. Furthermore, food security is recognized as being more than just providing people with enough calories to live on, but ensuring people have enough nutrients for optimal health too. Rice production, and therefore food and nutrition security is threatened by Invasive Alien Species (AIS), requiring control and mitigation efforts. Invasive Alien Species are introduced or exotic species that has established and spread, and which causes, or has the potential to cause harm to the environment, economies, or human health. Known IAS in rice ecosystems include rats, Golden Apple Snails (GAS), brown plant hoppers, rice black bug, rice stem borers, and eel. Basically, the following concepts/ideas will be reviewed in this paper including the history of introduction of IAS in rice producing countries, reported impacts brought about by the invasion, documented strategies for prevention and control of Invasive Alien Species, and ecological sustainable management of IAS in rice.

Keywords: Invasive Alien Species, biodiversity, rice, sustainability, food security

Physico-chemical quality of minimally processed potatoes (Solanum tuberosum L.) as affected by different anti-browning agents

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Abstract

The shelf life of minimally potatoes is strongly limited by enzymatic browning that leads to a decrease in food quality. This study was conducted to determine the efficacy of enzymatic browning control agents in minimizing browning of minimally processed

potatoes; determine the physico-chemical qualities of the different treatments; and determine the best enzymatic browning control agents. Product samples were collected from market of Ormoc City, Philippines. The experiment was arranged in simple Completely Randomized Design (CRD). Enzymatic browning control agents were used as 10% solution for ascorbic acid; pineapple and citrus juice, the processed potatoes were dipped in the solution for 1-2 mins, while hot water treatments, minimally processed potatoes were dipped at 45^{0}C, 1-2 minutes. After dipping, the treatments were stored at ambient (25^{0}C) and at refrigerated (2-5^{o}C) conditions. Dipping in anti-browning agents for 1-2 min totally inhibited browning after treatment and during storage based on browning index. Tap water, ascorbic acid, pineapple and citrus juice reduced the intensity of browning but were less effective than hot water dip treatment. Objective lightness (L*) measurement produced the highest values for hot water dip treatments-treated minimally processed potatoes before, during and at the end of the 24 hours storage period coinciding with the browning scores. Objective a*value (green-red) and b* value (blue to yellow) had statistical significance among the different anti-browning agents after 30 minutes, 16 hours and 24 hours of treatment both stored under ambient and refrigerated conditions. Physicochemical analysis (TSS, TA and pH) of minimally processed potatoes treated with anti-browning agents (tap water, hot water, ascorbic acid, pineapple juice and citrus juice) had no significant differences on total soluble solids and pH (ionic acidity) ranging from 3.63-3.86 and 5.96-6.30, respectively. The differences were more attributed to titratable acidity; heat-treated minimally processed potatoes and pineapple juice dip were significantly lower titratable acidity than the remaining treatments after 30 minutes of treatment. Hot water treatment at 45^{o}C, 2 minutes, and a non-chemical treatment and as anti-browning agent proved in minimally processed potatoes.

Keywords: anti-browning agents, hot water, minimally processed potato

Nutritional quality of stevia leaves (*Stevia rebaudiana*) in response to inorganic fertilizer and organic amendments

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Abstract

Stevia is a well-known alternative sweetener with steviol glycoside extracts having up to 300 times the sweetness of commercial sugar and had versatile medicinal uses without any side effects. The study evaluated the effects of organic soil amendments and

inorganic fertilizer application on nutritional qualities of stevia (*Stevia rebaudiana* Bertoni). The study was conducted in a Randomized Complete Block Design with 3 replications**.** Soil organic amendments including goat manure and 3 kinds of vermicompost (having different raw materials and methods of preparation) and inorganic fertilizer at the recommended rate were applied in a per plant basis under field condition. The treatments were as follows: T1- Control (without fertilizer); T2- 45:18:18 kg. NPK/ha (recommended dose); T3- 10tons/ha Goat manure (60g/plant); T4- Vermicompost application (grass clippings, leaf litter, cow manure) VSU site; T5- Vermicompost application (mudpress, fly ash, chicken dung) and T6- Vermicompost application (mudpress, fly ash, chicken dung, Vermi tea, IMO). The plants were harvested 8 weeks from transplanting and the data on nutritional quality parameters (antioxidant content, vitamin C, chlorophyll a content and total carbohydrate contents) were evaluated. Stevia responded favorably to application of different soil organic amendments. A higher antioxidant content of stevia leaves was observed from plants applied with organic soil amendments than those with inorganic fertilizer. A higher vitamin C content was observed on plants with organic amendments (except vermicompost 1) compared to those applied with inorganic fertilizer. Organic soil amendments and inorganic fertilizer application did not influence the chlorophyll a and total carbohydrate contents of stevia leaves.

Keywords: stevia, organic amendments, inorganic fertilizer, nutritional quality

Postharvest quality of organic eggplant (*Solanum melongena* L.) in modified atmosphere packaging

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Abstract

Proper packaging and storage are good measures to increase monetary returns by preventing market glut, sharp drop in market prices and reduce losses for it serve as a good barrier of highly perishable commodities like eggplant for preservation. The study evaluated the effects of three types of packaging materials on the postharvest characteristics of organically produced eggplant. The experiment was conducted

arranged in Completely Randomized Design (CRD) with three replications per treatment. Harvested eggplant fruits were individually packed in 0.002 mm thick low density polyethylene (PE), polypropylene (PP) with six diffusion holes, zipbag and unpacked fruits as control. All packed and unpacked eggplant fruits were stored in refrigerated condition at 10-12^{o}C. Postharvest characteristics (weight loss, shriveling, visual quality rating, decay incidence, browning, total soluble solids, titratable acidity and respiration rate) were evaluated throughout the duration of the experiment. Results revealed that significant differences were observed among different packaging materials stored at refrigerated condition (10-12^{o}C) on weight loss, shriveling, visual quality rating, decay incidence and total soluble solid. Results further revealed that PE, PP and zipbag effectively delayed the shriveling, reduced weight loss and had higher visual quality rating of eggplant fruits relative to the open-stored fruits. Browning incidence, titratable acidity and respiration rate were not affected among all packed and unpacked eggplant fruits stored in refrigerated condition. Different packaging materials tested in this study [polyethylene (PE), polypropylene (PP) and zipbag] was able to save eggplant fruits for sale or consumption and can be tested in larger scale and establish commercial viability and solid recommendation for the industry.

Keywords: *Solanum lycopersicum*, hot water treatment, postharvest quality, protected cultivation

Building Community Resiliency through Environmental - Education module: A case study of Pamarawan Island in Malolos, Bulacan

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Abstract

Resiliency in an island community is often challenged by naturally occurring disasters as well as dangerous levels of water pollution. Efforts in ameliorating such problems often involve considerable degrees of maintenance efforts as well as participation coming from the involved stakeholders. This study aims to characterize the impacts of an

environmental education module as used to sustain the environment of the island and promote resiliency among the locals since they are the first to experience the effects of the perennial problem of pollution. With problems ranging from daily floodings to inadequate education facilities, this paper will discuss how environmental education modules will help the community to recover from such problems.

Capitalizing on the unique power of the case study design, this paper sheds light on the different problems of the locals especially the fisher folks during disaster and how an environmental education module could respond to these issues. Modules are crucial in aiding and teaching the island's inhabitants on the problems they constantly face (Sinha, Jangira, & Das, 1985). Data were gathered through in-depth interviews with a select group of fisher folks and locals. Field texts were subjected through vertical and horizontal analyses to identify recurring themes and patterns. The condensed meaning units and themes were subjected to member-checking procedures to ensure data trustworthiness. Through this study, local government and other educational agencies are invited to formulate practical and sound approaches toward further improvement of the island community.

Keywords: Island community, Environmental Educational module, resilience, Pamarawan Island

Collection and Identification of Indigenous Upland Rice Cultivars Planted By the Pala'wan Tribe in Mount Mantalingahan Protected Landscape (MMPL) Area, Southern Palawan, Philippines

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ABSTRACT - Eight out 10 Filipinos eat rice as their staple food. Shortage of rice in the country is alarming pushing the government to import this commodity. Couple with growing population, lack of irrigation facilities and high cost of production limit lowland rice production. Indigenous upland rice which requires minimal cost of production and is resistant to drought, pests and diseases is a practical solution and best alternative in alleviating rice shortage. Collecting and identifying them for possible reproduction and on-farm trials necessitate consideration. Hence, this descriptive study was conducted in the municipalities of Quezon and Rizal in southern Palawan. Key-informants and tribal members served as the sources of information.

The study noted 158 indigenous cultivars planted by the tribe members; 29 of which are sticky. The cultivars mature from 90 to 120 days after seeding. Colors of grains

are either white, purple ("black"), red or their variations. The major criteria considered in selecting planting materials for the next cropping season are aroma, eating quality, yield and easy to thresh. Considering the identified cultivars, there is a promise of reducing food shortage especially in the upland communities.

Keywords – indigenous upland rice, types of cultivars, maturity after seeding, colors of grains

Ang Tanging Ina: Study on the Work-Life Balance of Selected Working Single Mothers in the Coastal Community of La Huerta, Parañaque

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Abstract

This paper explores how the work-life balance of selected working single mothers situated in a coastal community are affecting their well-being. Working single mothers carry the responsibility of earning for their family while simultaneously exercising their motherhood. This study utilized a purposeful qualitative research through semi-structured face-to-face interviews among ten working single mothers living in the coastal community of La Huerta, Parañaque in order to identify the following: a.) experiences of the working single mothers, b.) problems usually encountered, and c.) how these problems are affecting their well-being. Dorothy Smith's Feminist Standpoint Theory is used as a theoretical lens in order to explain their work-life balance. Results have shown that despite their dual roles as the main income earners and heads of the households, they are not neglecting caring for their well-being. They consider getting sufficient rest, eating well, and going to church as forms of caring for their well-being. Other factors that affect their work-life balance include: living arrangements, work hours, type of work, and income.

Keywords:
Working single mother, women, coastal community, work-life balance, well-being

Measurement of Carbon Dioxide Release in Corn Cob Biochar-Amended Red Acidic Soil Added with Different Fertilizers

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ABSTRACT

Biochar is a carbon (C) rich material produced by thermal decomposition of organic material under limited oxygen. Properties of biochar are highly affected by its thermochemical conversion and raw feedstock characteristics. It can persist in soils for hundreds of years for C sequestration. The slow release of carbon dioxide from the soil is related to carbon sequestration which is a long-term storage of CO_2 or other forms of C that helps lessen CO_2 concentration in the atmosphere.A laboratory experiment was conducted to determine the effect of corn cob biochar application on C release from red acidic soil by measuring the carbon dioxide (CO_2) evolution in the biochar-amended soil. Biochar was applied at the rate of 10 t/ha. Ten treatments were added in Luisiana clay soil as follows: T1-soil only (control), T2-soil + biochar, T3-soil + *Gliricidia sepium* leaves, T4-soil + biochar + *Gliricidia sepium* leaves, T5-soil + rice straw, T6-soil + biochar + rice straw, T7-soil + inorganic fertilizer, T8-soil + biochar + inorganic fertilizer, T9-soil + organic fertilizer (5t/ha) and T10-soil + biochar + organic fertilizer. Results showed that there was slow release of CO_2 on the first two weeks with peak at Day 2 and reduced thereafter in all treatments during the 12 weeks incubation period. The T3 had the highest amount of CO_2 evolved followed by T5, while T3 had its lowest. The biochar with inorganic and organic mixtures showed constant decrease in the CO_2 evolution. Results such as these suggested that biochar addition can sequester more C into the soil if added with organic fertilizer.

Keywords: corn cob, biochar, CO_2 evolution, carbon sequestration.

Effectiveness of Locally Manufactured Ceramic Water Filter Using Different Water Samples

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Keywords: microbiological, effectiveness, ceramic water filter, contaminants.

ABSTRACT

The research study on the effectiveness of the locally manufactured ceramic water filter using different water samples was conducted at DOST Region 02 Tuguegarao City, Cagayan. This study generally aimed to determine the effectiveness of the locally manufactured ceramic water filter using different water samples. The research examined the microbiological effectiveness of the locally produced ceramic water filter against bacterial and viral surrogates.

The study made used of the Descriptive design. Results revealed that the locally manufactured ceramic water filter was effective in reducing microbes.

It concluded that the locally manufactured ceramic water filter developed by DOST thru ITDI is effective in reducing contaminants of water. The pH of the raw and filtered water is the same since there is no chemical reaction applied. Final result of the bacteriological test shows an excellent effectiveness of the ceramic water filter in reducing contaminants.

Rainfall -Based Index For Corn Crop Insurance in Isabela, Philippines

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ABSTRACT

Corn (Maize) is one of the most important agricultural products produced worldwide. Its production is highly affected by climate change, especially if water demand is not reached. Rainfall-based index for crop insurance is an instrument to help farmers lower their risks in planting.

The main objective of this study was to develop a rainfall-based index for corn crop insurance. Specific objectives were to identify the threshold values for the index, and to estimate the probability of corn crop failure in the province of Isabela, Philippines. This study utilized Kolmogorov-Smirnov Test, Chi-Square Goodness of Fit Test, and Anderson-Darling Goodness of Fit Test to determine the probability

distribution that best fit the data through Easyfit software and StatAssist to evaluate the probability of corn crop failure.

The probability of crop failure for each stage of corn growth was obtained and based from the results. Low-risk planting periods were found be: May to November for early crop growth stage, April and June to September for rapid crop growth stage, May to August for reproductive stage, and April to July for maturity stage. High-risk planting periods were found to be: January to March for early crop growth stage, January to March, May, November and December for rapid crop growth stage, January, February and October to December for reproductive stage, and January, September to December for maturity stage.

Keywords: corn crop failure, probability distribution, planting periods and crop failure

Growth and Yield Response of Broccoli (*Brassica oleracea* var. *itallica*) on the Different Concentrations of Horseradish Tree *Moringa oleifera* L.) Leaf Extract

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Abstract

The study on the effect of different concentrations of leaf extract of *Moringa oleifera* L. on the morphological profile and yield response of *Brassica oleracea* var. *italica* was done under screenhouse condition. The experimental plant was treated with different concentrations (i.e. 0, 40, 60, 80, and 100%) of the leaf extract where 0% as the control. The leaf extract concentration levels of *M. oleifera* had a pronounced negative response on the mean plant height and mean stem circcumference by 82.4% and 86.2% respectively, while 29.3% on the mean leaf production, 47.3% on mean herbage yield, and 1.7% on the mean root weight. Likewise, mean curd circumference showed negative response by 24.5%. Positive responses on the varying level of concentrations of the extract were observed on the mean curd weight and mean leaf area by 0.6% and 32.4%, respectively. The results from this study shows that the different levels of the extract concentrations from the Moringa leaves have vital positive and negative effect on the growth and yield profile of Brocoli except for the root and curd weight. The positive response of the cultured vegetable on the tested leaf extract can be used as growth enhancer, and those showing negative effects can be used to slow down the growth of the specific part of the plant having similar characteristics with

the Broccoli particularly the non-target part for human consumption, while taking minimal to no effect at all on curd circumference, curd weight, and root weight.

Keywords: Agriculture, yield, response, extract, regression, *Brassica oleracea, Moringa oleifera*

Cave and Karst Resource Mapping as Tool in Cave Resource Utilization and Management

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Abstract

Caves are ecologically fragile ecosystem. To ensure protection and conservation of caves from possible human impact associated with cave utilization the subterranean resources, vegetation cover, surface activity and other attributes must be defined. Herein presented is the process of combining speleomapping , biological resource inventory following various sampling techniques, as well as documentation of cultural and anthropogenic features to generate a geomorphological map reflecting the spatial distribution of cave resources. Using quantitative indices considering geomorphological, biological and anthropogenic features sensitive ecological areas can be identified. The identification, description and map generation of surface vegetation and the anthropogenic disturbances existing directly above cave generated using Geographic Information System (GIS) further enhances the understanding and identification of threats to a cave system. Applied on various caves of tourism interest, this process was incorporated in the existing standard assessment of caves which can contribute in the development of sustainable cave management plan.

Key words: geomorphologic map, GIS, resource mapping, sensitive ecological areas, spatial distribution

Extent of Soil Erosion Under Three Tillage Systems in Forestry Ecological Garden

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Abstract

This study aimed to assess the extent of soil erosion in the Forestry Ecological garden as affected by three-tillage systems and climatic condition. Specifically, it aimed to determine any significant differences in the rate of erosion as influenced by climatic condition and the three tillage systems. On the collection of daily erosion rate, the result in R1 (with rain) revealed that T3 (conventional tillage) got the highest mean rate of 632 kg/day/ha on fresh weight condition and 566 kg/day/ha on air dry weight condition, followed by T2 (conservation tillage) which obtained the mean rate of 124.8 kg/day/ha on fresh weight and 118.8 kg/day/ha on air dry weight while T1 (no-till) with no erosion recorded. In R2 (without rain), T3 only obtained 135.6 kg/day/ha both on fresh weight and air dry weight, followed with T2(conservation tillage) which only obtained 21 kg/day/ha on both fresh weight and air dry weight conditions while T1 has still no erosion recorded.

Based from the results, Analysis of Variance (ANOVA) revealed that though T1 (conventional tillage) got the highest mean rate of erosion both on fresh weight and air dry weight conditions under two climatic conditions, it had no significant difference with the other tillage systems. It was concluded that the amount of rainfall from January to February was not enough to erode massive weight of soil from the area. It was also postulated that time and duration of the study were the limiting factors since it did not cover the whole year period wherein the wet and dry season is evenly distributed.

It is recommended that there will be a further study to be conducted with a longer duration. Sufficient number of stations should also be established to represent the entire experimental area.

Keywords: *Soil erosion, tillage systems, conventional tillage, conservation tillage, rainfall factor*

Identifying the Possible Breeding Grounds of Mosquito in Laguna State Polytechnic University – San Pablo City Campus

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ABSTRACT: Mosquito infestation in any establishment generally is a health risk, since these insects are disease carriers. The Laguna State Polytechnic University - San Pablo City campus is no exception to the infestation of mosquitos due to unused spaces and other free spaces that are possible breeding grounds. The study identified the possible breeding grounds of mosquitoes within the campus using the trap of the Department of

Science and Technology, the DOST Ovicidal/Larvicidal Traps (OL Traps). Surveys were conducted in an attempt to locate the breeding grounds. This information was the basis for the distribution of the traps to suspected location. The larva collected were counted on each suspected locations. During data collection, the weather was recorded as it may affect the number of larva collected in the traps. Based from the survey, the LSPU-SPCC is generally mosquito infested whether inside or outside buildings and other structures. Several locations were identified to be breeding grounds, which were usually areas where there is less disturbances such as human activities.

KEYWORDS: mosquitoinfestation, breeding ground, disease carriers, health risk

Potential Cell-Mediated Inhibitors of Gut Pathogens Isolated from Excreta of Free-Range Native Chickens

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ABSTRACT

Probiotics are live cultures of microbes, often lactic acid bacteria, but also some other species, which when fed to animals, improve their health and growth through altering the intestinal microbial balance. In this research, healthy free-range chickens were utilized to screen for the presence of lactic acid bacteria in their fecal samples with probiotic properties. Initial experiment of one hundred isolates determined ten bacterial isolates with the pronounced antibacterial activity. These were further examined for cell-mediated inhibitory effects through coculture method and resazurin assay. Interestingly, all the isolates were found to contain the potential to completely inhibit *Salmonella.* Finally, three isolates were selected for animal experiment which were administered to native chickens prior to infection of *Salmonella* Typhimurium. Afterwhich, fecal samples were collected to enumerate the number of *Salmonella.* The three isolates were found to significantly reduce the bacterial load of *Salmonella* revealing further that these bacteria are good candidates for treatment of common chicken gastrointestinal infectious diseases. These isolates have the potential to become antibiotic alternatives which may be used as phrophylactics and growth promotants for poultry animals while mitigating emergence of antibiotic resistance. It will be a game changer if antibiotic alternatives will become the new standard in poultry health management and enhance sustainability of the poultry industry.

Keywords: Probiotics, free-range native chickens, antibiotic alternatives, *Salmonella* Typhimurium, poultry health management

Rice Production Through Various Agro-Ecosystems in Arakan Valley Complex

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Abstract

The study aimed to determine the potentials of various agro-ecosystem in producing favorable growth and yield of upland rice including biomass production and carbon storage.

Results of the study revealed that hinumay and dinorado were performed significantly better in plant height, yield, biomass and carbon content as compared to other varieties. However, in terms of panicle length and number of tillers, it was found out that kawilan variety perform better but it is not significantly different with hinumay and dinorado.

With the current findings, hinumay and dinorado were the best upland rice varieties to be cultivated under oil palm, coconut and rubber tree but not to banana agro-ecosystem .

On the other side, for early flowering and maturity, it was found out that the 90 days variety significantly bear flower and matured earlier as compared with the other upland rice varieties.

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keywords; Agro-ecosystem, coconut, rubber, oil palm, banana, upland rice

Gender Role and Climate Change Impact and Adaptation Strategies on Upland Rice Production

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Abstract:

The study was conducted to determine gender role and climate change impact and adaptation strategies on upland rice production systems in Arakan Valley Complex. Descriptive analysis and evaluation method using structured questionnaires, focus group discussion and interview of 500 upland rice farmers in the 5 Municipalities of Arakan Valley Complex namely Arakan, Antipas, Magpet, Matalam, and Pres. Roxas Cotabato.

Results revealed that the role of women in upland rice farming is highest in planting operation (22%), harvesting (13.9%) and the least is in farm maintenance (6%).

On climate change mitigation and adaptation strategies; intercropping of upland rice in plantation crops, cash crops and pasture crops is at most. Early preparation of farms and adjustment of planting calendar from March or April to February or March is evident (70.8%). Planting of multiple crops, utilization of animal manure/farm residues, making of water edges around the farm, tree planting and seed storage for coming planting season is being practiced by the farmers.

The effect of climate change to upland rice as revealed in the survey includes; damaged to farm areas, presents of harmful insects, occurrence of bird eating rice resulting to reduction of farm income. Its environmental effects includes; occurrence of longer droughts, landslide, soil erosion, flash floods, sudden heavy rains, and destruction of houses and farm to market roads as well.

Therefore, women are an essential work force in farming system that cannot be denied.

Keywords: Gender role, climate change, impact, adaptation strategies, upland rice

Manobo Women's in Upland Rice Farming

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ABSTRACT

The study was conducted to determine the participation of manobo women in upland rice farming in Arakan Cotabato particularly in Brgy. Katipunan, Kabalantian, Gambodes, Napalico, and Datu Mantangkil using descriptive correlational methods in determining the relationship between the socio-economic factors and the extent of Manobo women's role in upland rice farming.
Results indicated an 86% involvement of Manobo women in pre-farm activities, 56% in farm establishment particularly slashing, 86% in planting operation, 84% in farm maintenance, 98% in harvesting, and about 76% participation in post- production particularly, seed storage and drying.
On household activities, it was found out that only about 20% involvement in nursery establishment, 16% for water collection, 84% in health and economic activities, and 72% participation in food security of the family. These household activities were significantly related to women's participation in farm activities such as in pre-production, production and post-production with correlation interpretation from moderate to very strong relationship.
The findings concluded that manobo women participated in all phases of upland rice farming, showing gender equality in this phase of activity.

Keywords: Manobo, women, gender role, upland rice farming

Training Needs of Agricultural Technologists on Climate Change Adaptation Strategies

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Abstract

The public agricultural extension system plays a key role in enhancing the adaptation strategies of small hold farmers to deal with climate change-related risks. This study sought to ascertain the perceptions of agricultural technologists (ATs) on climate change, and their in-service training needs on climate change and adaptation strategies. Data were collected from 210 ATs from the provinces of Siquijor and Negros Oriental, Philippines using cluster sampling strategies. To assess the training needs, the study

developed an instrument using the Borich (1980) Needs Assessment Model which determined the mean weighted discrepancy score (MWDS) between the ATs' perceived level of importance and perceived level of competence regarding 22 climate change-related professional competencies. Results indicate widespread agreement among ATs on the occurrence of climate change in the country with most (94%) categorizing it to be a "serious problem". Despite their participation in climate change-related seminars, and involvement in the implementation of related projects, the study revealed significant gaps in competencies, indicating training needs in all 22 climate change-related parameters. The top three competencies identified as having a greater need for in-service education are as follows: understanding and communicating climate-weather forecasts, altering production environments to reduce the impact of climate-change-related risks, and planning climate-resilient farming practices. The study recommends the implementation of advanced training programs for ATs on climate change, its causes, effects, and adaptation strategies in order to enhance their competencies in helping small-scale farmers cope with climate-related risks.

Key words: Agricultural technologists, climate change, adaptation strategies, training needs.

Mango Pesticide Spraying Practices in Negros Oriental: Implications to Sprayers' Health and the Environment

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ABSTRACT

This study sought to determine the pesticide application practices of mango sprayers and their implications to human health and the environment. Using purposive sampling, data from 100 respondents obtained through an interview schedule showed high frequencies of pesticide application using a variety of chemicals on fruit-bearing mango trees. The majority did not follow proper procedures for handling and applying chemicals, wore inadequate protective clothing and equipment, and practiced improper post application hygiene. The respondents were exposed to pesticides through direct contact from drift, airborne spills, or through direct contact during pesticide application. Among the observed symptoms encountered after pesticide application were burning or stinging eyes (75%), dry sore throat (57%), skin itching, blurring of vision, stomach pain, excessive salivation, nausea, shortness of breath, muscles numbness, chest pain,

and fatigue or tiredness. Medical signs of pesticide exposure included cough (78%), runny nose (65%), skin redness (33%), dizziness (30%) and a lesser extent convulsion, skin scaling, wheezing, tremors and excessive sweating. Majority of the sprayers did not observe proper health-maintaining practices. Among the reported adverse environmental effects were killing of beneficial organisms, and soil and air contamination with pesticides. It is concluded that current pesticide application practices on mangos have produced adverse impacts on farmers' health and the environment.

Keywords: Environmental contamination**,** Health-maintaining practices, Personal protective practices, pesticide application.

Integrating Science-Based Biodiversity Conservation in Sustainable Development of Magsaysay Municipality in Palawan Province[2]

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ABSTRACT

Science-based information about species and habitats are needed to effectively promote biodiversity conservation, which in turn must be linked with sustainable development of a given locality. This paper describes the 2017 resource and ecological assessment undertaken in the Island Municipality of Magsaysay, Palawan Province. The transect and quadrat methods were used in forest, mangrove, and seagrass while manta tow was used in coral assessment. Results indicated that at least 27 species of trees were found in Maringit-Ringit Watershed, four of which are vulnerable. Four mangrove species were newly identified. *Cymodocea serrulata*, a new finding was recorded along with the other five seagrass species. Of the 8 coral survey sites, 37.5% were having good coral cover, 25% were having fair, and 37.5% were having poor coral condition. These biodiversity information are being utilized to promote the sustainable development of several livelihood activities related to cashew, *Caulerpa* sp. *(lato)*, and salt. Based on our findings, the Municipal Council accepted our recommendations about these

management measures: (1) Canipo-Putic-Tagbolo marine ecotourism reserve; (2) Siparay-Tagawayan-Cocoro protected seascape and historical remains; and (3) Indagamy twin-islet core zone for coral regeneration. These would promote then improved community "mainstreamed" management within 7,597-hectare production landscapes and seascapes.

Keywords: Science-based information, mainstreamed management, watershed

Prevalent Disease Symptoms Affecting the Tree Flora in Forestry Ecological Garden

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Abstract

A study on "Prevalent Disease Symptoms Affecting Tree Flora at Forestry Ecological Garden was conducted from December 2013 to February 2014. The study was aimed to provide a benchmark data on the existing common disease symptoms affecting tree flora at the CFCST Forestry Ecological Garden in terms of parts affected, growth stage. Upon identifying the prevalent disease symptoms affecting tree Flora at CFCST Ecological garden, results revealed that there were twenty eight (28) species belonging to twenty (20) families identified affected with disease symptoms.

Family Fabaceae, species Flemengia and family Rubiaceae, species Kahoi dalaga got the highest number of parts affected by disease symptoms with three (3) parts followed by family Anacardiaceae, species Dao with (2) two affected parts and the rest of the species got (1) one part affected by disease symptoms

Based on the presented data, it can be concluded that the most prevalent cause of disease symptoms were insect pests and the most affected part were the leaves. Furthermore, mature trees were dominantly affected with the disease while tunneling and decay cavity were the dominant disease symptoms. Based on the data, the researcher further recommends that upon identification of disease symptoms relevant control measures are necessary so as to prevent further damage caused by Fungi, Virus and Bacteria. Based from the conclusion of the study, the following recommendations are formulated:(1) further study considering the incorporation of Koch's Postulate in identifying the true casual agent is strongly recommended; and (2) Formulation of appropriate control measures through research is also recommended.

Keywords:*Disease Symptoms, Diseases, Causal Agent*

Plant Diversity Assessment in Laguna State Polytechnic University, San Pablo Campus, San Pablo City, Laguna

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Abstract

Laguna State Polytechnic University (LSPU) in San Pablo City, Laguna covers six hectares of land. Although spaces in the campus are used as school buildings, it can still boast rich biodiversity that has a good carbon sequestration capacity. Thus, this study was conducted in order to assess the tree biomass and carbon sequestered per tree and per year. An inventory of all woody plants were done to be able to gain knowledge of the biodiversity of the LSPU - San Pablo City Campus. The following were calculated to determine the current biodiversity status of LSPU - San Pablo City Campus: Relative Abundance, Margalef's Index and Menhinick's Index, Shanon Diversity Index, and Simpson's Diversity Index. Results of Plant Diversity analysis reveals that Coconut Tree (*Cocus nucifera*) was previously abundant but at present the Mahogany Tree (*Swietenia macrophylla*) is more abundant compared to other tree species within the campus. Carbon sequestration capacity of the trees were also determined based from their diameter at breast height. It was found out that Acacia Trees has the highest amount of carbon sequestered per number of individual trees, but when it comes to carbon sequestered per tree, Pili Trees sequestered the highest amount. The information given will allow proper selection of tree specie to be planted within the campus since these trees can either be a primary source or sinks of atmospheric CO_2, (ENFOR, 2003), as it managed to assimilate carbon dioxide via photosynthesis and store carbon in biomass, (Gevaña, Pulhin, and Pampolina, 2008).

Keywords: Biomass; Carbon sequestration; Basal area; DBH; Biodiversity; Land use

Pineapple (*Ananas Comusus*) Value Chain Analysis in Bataraza, Palawan, Philippines

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ABSTRACT- Pineapple *(Ananas comusus)* in Bataraza, Palawan was mainly cultivated by Indigenous People from the tribe of Palaw'an and they played as the main actor of the industry.

The aim of this study was to analyze the value chain of pineapple; the role of different actors and the value addition of produces in sequent processes. The study was conducted in the mountainous part Mount Mantalingahan Protected Landscape of Barangays Bulalacao and Tarusan in Bataraza, Palawan were municipality named as pineapple capital of the province. Data gathered using mixed method through personal interview using structured questionnaire, production site visit and observation and solicit of secondary data from government agencies. The study found that pineapple produces were manually harvested and hauled per '*kantuwang'* from site to '*lakuan'* which added their burden. Selling of produces in unregulated price cannot create high marketing margin. Farmer's lean season production used calcium carbide to force fruit induction to sustain the supply but during peak season almost 30 percent of harvest got rotten due to surplus. The researcher recommends that players needs to improve market access, price regulation, postharvest management, financial literacy, enhance value addition through processing (i.e. wine, vinegar, jam, candy, dried and fiber) to minimize the loss, maximize the consumers satisfaction and increase their profits. Establish smallholders cooperative to reduce intermediaries and will execute marketing activities.

Key word: Pineapple, value chain, value addition, Bataraza, Palawan, Palaw'an tribe

Kakayahan ni Nanay: Women's Concepts of Well-being in their Choices of Prenatal Healthcare Service

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Abstract

This case study explores how young women's concepts of well-being and healthcare facilities and services influence their health capabilities in accessing prenatal care. This paper aims to (a) discover their concept of well-being in relation to prenatal healthcare, (b) identify the availability of prenatal healthcare facilities and services influencing the selected young women's choice and (c) examine the factors that affect the young

women's health capability in accessing prenatal healthcare. This research utilized a qualitative approach and case study method. The questions used in the interview were semi-structured and were encoded using field notes and Atlas.ti. In order to have an in-depth lense, Capability Approach by Amartya Sen was used to analyze the results. It has been discovered that despite belonging in a city, Brgy. Sta. Monica's depressed areas are prone to face environmental challenges upon accessing prenatal care. More so, from the 10 narratives of the informants of the study, the result of this research show that (1) their understanding of health is the foundation of their well-being concepts associated with their prenatal practices, (2) the facilities and services for prenatal healthcare are known by most of them through self-knowledge and from social and political interventions that is accompanied by the opportunities and constraints for prenatal healthcare and (3) the factors that affect the young women's health capability in accessing prenatal healthcare are the availability, accessibility, geographical accessibility and adequacy healthcare facilities and services, and the internal and external factors. This paper concludes that even though securing their health is vital in their situation, the informants' concepts of well-being, prenatal healthcare literacy and the availability, accessibility, geographical accessibility and adequacy of healthcare facilities and services are crucial determinant of their access on prenatal health care.

Keywords: *Prenatal, Health, Access, Young Adult, Urban, Slum Settlement*

Milkfish *Chanos chanos* Bone Meal Topping

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Abstract

Milkfish bone meal topping is a value-added product from boneless bangus, which were abundant in the locality. The study aimed to determine the acceptability of milkfish bone meal topping based on sensory evaluation using preference and descriptive testing. The study utilized the experimental method of research using different levels of bone meal, namely: Treatment 0 with 0 gram bone meal; Treatment 1 with 50 grams bone meal; Treatment 2 with 100 grams bone meal and Treatment 3 with 150 grams bone meal. Based on the Analysis of Variance at 5% level of significance, the milkfish bone meal topping with 50 grams got the highest rating of 8.22

in color, 7.83 in flavor, 7.85 for odor and 8.04 for texture which means "Like Very Much" with a descriptive rating of red orange color, very meaty flavor, very pleasant odor and gritty texture. The proximate composition was 71.6% moisture, 11.3% protein, 8.41% fats and 2.16% ash with 2843 mg/kg calcium. The product is high in calcium content. Hence, food toppings with 50 grams milkfish bone meal is recommended.

Keywords: **bone meal. milkfish toppings, food preservation**

Biophysicochemical Analysis of Water Sources in Camotes Islands

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ABSTRACT

Keywords: Water; Physical, Microbiological and Chemical Analysis; Descriptive Research; Camotes Islands

Water is utilized by the body for it is very impressive in human body consumption to proceed with its life processes. It should be clean, safe to drink and free from contaminant to avoid diseases associated with water intake. The importance of checking the water quality for analysis is very essential to ensure safe drinking water quantitative analysis of data of the alternative sources of water in each municipality in camotes, Islands. Water sample were examined through observation with the use of senses and common laboratory operation such us filtration and evaporation to determine the quality of water through physical analysis. It showed no evidence of deviation from the normal quality in terms of odor, color, taste and turbidity. Furthermore, water samples are gathered and tasted by the DOST water laboratory for microbiological and chemical analysis. Result revealed that all the water samples were high in the presence of coliforms which may indicate waste product from animals including human waste contaminating the water. Moreover, result showed high level of total hardness. It was revealed that salt especially Calcium carbonate showed high in value. Much content of this salt in the water may affect the health of the consumer to the condition of the water, rehabilitation plan is then recomended.

Indigenous Plants as Alternative Food After a Disaster: Resource sharing through ODeL

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Abstract

In the aftermath of typhoons, floods, landslides, earthquakes and volcanic eruptions in the Philippines, families lose life and limb, homes and livelihoods, are displaced into evacuation centers and succumb to disease, infections and psychological problems. In the distribution of disasters recorded from 1970-2009 in the Philippines (UNISDR, 2010), 58% were from storms, 23% from floods, 6% landslides and 4% each from volcanoes and earthquakes. Storms cause big losses in agricultural production, infrastructure losses, damaged buildings, uprooted trees, and felled electric poles, rendering arterial roads impassable, and leaving many homes without power for several days. Supply of food, basic goods and medicine also became limited. As a result, many people experienced hunger, especially in the weeks after the disaster. Since the usual foods eaten by local people become scarce or expensive after a calamity, this can be mitigated with the use of alternative Philippine native plants that are edible but are not usually eaten as part of the usual diet of Filipinos. This study presents a range of edible plant resources that can be sourced locally but are never (or rarely) utilized by people for food diversification, or in the event of a disaster. A survey was done to identify available Philippine native plants within the proximity of Los Baños. A seminar with Los Baños barangay disaster risk reduction and management councils was then conducted to introduce the identified food plant species together with suggested food preparation recipes. The survey found that some of the native plants growing in Los Baños included traditional species such as *kamansi* (*Artocarpus camansi*), *rimas*/breadfruit (*Artocarpus altilis*) and *langka*/jackfruit (*Artocarpus heterophyllus*). Meanwhile, some were lesser known and used species, such as the indigenous *bago* (*Gnetum gnemon*), *lumbang* (*Aleurites moluccana*) or *himbabao/alocon* (*Broussonetia luzonica*). Others plants could be found along the wayside, such as the Philippine endemic *niyog-niyugan* or *lubi-lubi* (*Ficus pseudopalma*), and the cosmopolitan *alugbati* (*Basella rubra*) and *talinum* (*Talinum paniculatum*). Local communities can start learning to cultivate and use locally-available plant resources in preparation for and during times of disaster. Concerted action towards promoting food diversification using local plant resources can also help prevent gene erosion and reduce importation of processed food.

Keywords: Philippine native plants, alternative foods, disaster adaptation

Biocultural Perspectives on Living Systems: An interdisciplinary learning module on history and philosophy of the Biosciences.

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This presentation is on a stand alone, blended module that traces the development of biocultural perspectives on living systems over time from the traditional and indigenous knowledge systems towards the more codified knowledges of the ancient Babylonian and Greek civilizations. The module then discusses historical developments and the resulting changing philosophies of science. The philosophies are discussed with regards to their impact on biological research and growth of knowledge on living systems, leading to the current state of biological knowledge and technologies, and the current state of environmental crisis. It argues for epistemic justice that allows for the validity of positivist science, indigenous knowledges, and the current complex systems paradigm.

The module then proposes the view of the diverse organizational actors in the environmental movement as an environmental continuum of ethics, ideologies, and political engagements. Like different organisms in a community, the different environmental activist organizations occupy relevant niches in the environmental movement.

This stand alone module uses multimedia open educational resources and sample activities to enhance the learning experience. It can serve as a resource for senior high school or undergraduate level general education courses on Biology, General Science, and Science Education.

Study of Radiation and Night-Break on Growth and Results of Chrysanthemum (Chrisanthemum *Sp*.)

By:
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Abstract

Chrysanthemum sp. Is one of the most popular and growing species as an ornamental plant, as well as a cut flower for several purposes. The need for chrysanthemum flowers increase from year to year. One of the efforts to increase the production and quality of chrysanthemum plants is to plant superior varieties and perform good and proper cultivation techniques from plant preparation, planting, plant maintenance and long day arrangements, harvesting and post harvest handling.

Chrysanthemum plants are short-day plants, so it is necessary to add light to get the expected quality of flowers. The addition of light aims to meet the needs of plants for sunlight, to stimulate the growth of vegetative organs and delay the generative phase. To cultivate chrysanthemum flowers in Indonesia for high quality flowers required the addition of 70 lux light or 18 - 23 watt essential lamp for 3 - 4 hours at night, for one month.

The induction of chrysanthemum flowering and the quality of chrysanthemum flowers is strongly influenced by the length of light addition and the night-break method. The addition of 3 to 4 hours of irradiation per day resulted in the best chrysanthemum growth. While the best night-break lighting method to save energy is 7.5-22,5x8 with 40 lamp light intensity.

This research is a factorial research consisting of two factors and arranged in split-plot design. The first factor as the main plot is the length of the addition of light (C) consisting of 3 levels: C0 (without added light at all or according to the natural conditions of the surrounding environment (as control), C1 (irradiated for 2 hours / day) and C2 (Disinari 4 hours / day) While the second factor as a subplot is the night-break lighting (N) method which consists of 3 levels: N0 (without night-break treatment), N1 (5 minutes lights turn on followed by 1 minute lights off in one cycle (5-1), N2 (10 minutes lights on, followed by 2 minutes of lights off in one cycle (10-2) and N3 (15 minutes lights on, followed by 3 minutes of lights off in one cycle (15-3).

The results showed that 1). there is a noticeable interaction between radiation exposure and night-break method of flowering initiation or age at the time of flowers appear. The combination of 4 hours / day light and (15-3) night break treatment resulted in the best flowering compared to other treatment combinations. 2). The duration of irradiation has a significant effect on plant height, the number of leaves, the wet weight of the harvest, and the dry weight of the harvest. 4-hour irradiation resulted in plant height, leaf number, wet harvesting weight, and best dry weight of crops compared with 2-hr irradiated and control. 3).The bright 15-minute night-break and 3 minute off resulted in a 7-day faster rate of interest than the night-break (N0) treatment.

Key words : flower, night-break, ornamental, plant, radiation

Antibacterial activity of Epiphytic Fungi isolated from Liverwort, Pine Tree and

Sunflower against *Klebsiella pneumoniae*

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ABSTRACT

Losing the effectiveness of commercial antimicrobial agents including antivirals and antibiotics due to the development of multidrug resistance bacteria has become an alarming problem worldwide. Natural products are continuously emerging as alternative antimicrobial agents and one of these products were noted to be present in fungi, both endophytic and epiphytic, due to the presence of thousands of secondary metabolites which inhibit the growth of pathogens and viruses, and have potential as treatment for human diseases. Hence, in this study epiphytic fungi isolated from liverwort, pine tree and sunflower were evaluated for their antibacterial potential. The antibacterial activity of crude ethyl acetate extracts of the three epiphytic fungi namely *Trichoderma aggressivum, Pithomyces cynodontis,* and *Pestalitiopsis microspore* was evaluated by determining their minimum inhibitory concentrations (MICs) through microbroth dilution method against gram-negative bacteria, *Klebsiella pneumoniae*. Out of the three epiphytic fungal extracts, two of them which belong to genus *Pithomyces* and *Trichoderma*, exhibited a good antibacterial activity against *K. pneumoniae* with the highest shown by *Pithomyces cynodontis* for all concentrations of 250 mg/ml, 125 mg/ml, and 50 mg/ml having a percent inhibition of 78.80%, 51.71%, and 0.800% respectively, while two concentrations of *Trichoderma aggressivum* which are 250 mg/ml and 125 mg/ml, showed high MICs with percent inhibition of 53.04% and 1.82%, respectively. The findings of this study therefore indicate the capability of epiphytic fungi to produce bioactive natural products which may provide a new lead in the development of new pharmaceutical agents against harmful microorganisms.

Selected Narratives Of Women In An Urban Coastal Community Of Manila Bay On Disaster And Disaster Preparedness

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This paper brings to light the voices of the women in an estuarial community, as to their perception and their participation in the community in times of disaster. Women play varied multiple roles in their communities (Ferris, 2012). Aside from this status, these women as residents of a coastal community are of greater risk from disaster like flooding and tidal surges which are frequent occurrences in the communities like Brgy.

La Huerta and Baseco. Often, women are seen and perceived as victims of disaster but they should also be seen as prime movers for disaster prevention and reduction. This paper would like to argue that efforts of women go unnoticed, unappreciated and unrecognized because it is the work of the men, their husbands, who are the frontliners in times of disasters who are usually tapped, recognized and highlighted. This study used the Feminist Standpoint Theory of Dorothy Smith as a framework to highlight the significance of the role of the women. The researcher utilized interview, focus group discussions, field observations, and review of secondary data. The results of the study seek to contribute to the literature on women's empowerment and possibly significant inclusion of women in policy creations for disaster risk reduction and management plan.

Keywords : women, disaster, coastal community

Nutrient Content of Tropical Almond (*Terminalia Catappa*) Seeds Flour, in Different Methods of Preparations.

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ABSTRACT

Talisai tree or Tropical Almond *(Terminalla catappa)* is a large decisoud tree, reaching a height of 20 to 25 meters. Fruits is smooth and ellipsoid, 3 to 6-centimeter-long, and prominently bi-ridged or keeled down to the sides. The tree can be found throughout the Philippines, especially along seashores. The seed is edible and is a good source of minerals such as potassium, calcium, magnesium, sodium and other minerals. The seeds were found to be a good source of oil such as unsaturated fatty acids, the oleic and linoleic acids. The fruit is also purgative. In the preparation of Tropical almond flour, toasted seeds contain higher calcium (as Ca) which is 4394 mg/kg. compared to the sun dried and freshly grounded. Sun dried seeds also contain higher potassium (as K) which is 7695mg/kg , 7664mg/kg for the toasted seeds, and 7145mg/kg for the freshly grounded seeds. Sodium is also high in sun dried seeds, 249mg/kg, compared to the toasted, which is only 95.0mg/kg and freshly grounded which is also 92.9mg/kg. The product also contain fat, crude protein, carbohydrates, food energy value and no sugar (as sucrose) is being detected within <1.0%.

Keywords: seeds, nutrients, flour

Physico-Chemical Analysis of Tilapia (Oreochromis Niloticus) Twist Crackers Enriched with Horse Radish (Moringa Oleifera)

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ABSTRACT

The aim of the study was to develop a crackers using the tilapia offal as a by – product of the tilapia fish. Maximum utilization of product is one of the important aspects for food sustainability and security. The product may help abate the problem of malnutrition, since it is packed with some important nutrients. The product contain 51.8 % carbohydrates, 531 kcal/100g food energy value, 9.39% sugar (as sucrose) ,8.96% total dietary fiber, 8672/mg/kg Sodium (as Na), 6098 mg/kg Calcium (as Ca), 11604 mg/kg Potassium (as K), 14.05 crude protein, 29.8% total fat, 1.28 % moisture and 3.10 % ash. The product was also negative with Salmonella, mold and yeast.

Keywords: Crackers, tilapia, horse radish, moringa oleifera, Oreochromis niloticus

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

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Kale is one of the popular nutritious leafy vegetable that contains antioxidant, vitamins and minerals. The study aimed to evaluate the performance and quality of aquaponically grown kale supplemented with different nutrient solutions. It was laid out in Randomized Complete Block Design with 8 treatments replicated 3 times. Kale was harvested 36 days after transplanting with 100 percent survival rate. Significant differences were obtained in growth and yield parameters of kale grown in aggregate hydroponic system applied with VSU-Liquid Nutrient Formulation and in combination

with fermented kuhol and malunggay in aquaponic system. Pigment content of kale was enhanced by application of VSU-LNF and its combination with ferments. Free radical scavenging activity was higher in kale grown in aquaponic system without supplementation while vitamin C was higher in kale supplemented with combined application of VSU-LNF and fermented kuhol in aquaponic system. Sugar content was found higher in kale grown in aquaponic system either with or without supplementation of fermented organic nutrient solutions. Comparable results were obtained in titratable acidity, oxidation reduction potential, electrical conductivity and total dissolved solids while leaf nitrogen was higher in commercially grown with slightly acidic leaves. VSU-LNF is a good fertilizer for kale production as well as its combination with ferments in aquaponic production system.

Keywords: VSU-LNF, aquaponics, kale, ferments, qualities

Utilization Of Water Hyacinth As A Source Of Livelihood Of Women In The Water Hyacinth Weaving Enterprise Of The Villar SIPAG Foundation In Las Piñas

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ABSTRACT

This study aims to illustrate the impact of sustainable livelihood to the women in community of Las Piñas as well as understand the advantages of Villar SIPAG Foundation: Arts & Crafts Center Sustainable Livelihood Program. Anchored on Scoones' IDS Sustainable Rural livelihood framework which identifies the key elements that should be considered to achieve a sustainable livelihood. The study used qualitative methods using literature research, field observations, and interviews. Results show that through the efforts of the Villar SIPAG Foundation and its people, and the community were able to reduce water hyacinth infestation within the area. The livelihood achieved its goal in alleviating poverty and has since expanded to the other parts of the country infested with water hyacinths. Through the livelihood, women were given the opportunity to work and provide for their families which gained the women empowerment and self-worth.

Keywords: Arts & Crafts Center, Villar SIPAG Foundation, Sustainable Livelihood, Las Piñas

Food Safety Implementation of Boneless Siganids (*Siganus Puellus*) Technology

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Abstract

Food safety is vital in any fish processing activities. This paper aimed to determine the gender role on how food safety be implemented in boneless siganid processing activities. This study utilized the experimental and descriptive methods of research employing the process of coconut water treated boneless *danggit* production observing the good manufacturing practices (GMP) and hazard analysis critical control point (HACCP) protocol after analyzing the microbial content of boneless *danggit* in Taboan market. The study revealed that the samples of the top three best seller dried *danggit, pusit* and *mangsi* had bacterial total plate count of 1.0×10^4 cfu/g, 2.5×10^4 cfu/g and 5.0×10^4 cfu/g, respectively; mold count of 2.3×10^1 cfu/g, 2.0×10^1 cfu/g, and 1.5×10^1 cfu/g. The *Staphylococcus aureus* count of 30, 50 and 100 cfu/g sample for dried *danggit, pusit* and *mangsi,* were within the acceptable standards of Bureau of Food and Drug Administration. The pH level of dried fish samples was within 6.1 to 6.5, while the water activity of the dried products is 0.98 based on Lupin's water activity (Aw) mathematical calculation. The experimental process of coconut water treated boneless danggit had 3.3×10^3 cfu/g which had lower count compared to the commercial samples. The process had been disseminated to the five groups of Bantayan, Cebu, Philippines fisherfolks who engaged in boneless siganids industry emphasizing the GMP and HACCP protocol of processing. Out of 50 fisherfolks engaged in boneless siganid industry, 70% are female with age bracket of 35-55 years old. Most of the female responsibilities in the industry are filleting, salting, drying and packing the dried products, while male did the fishing, chilling of raw siganids and transporting of finished products. The food safety were integrated in the salting and drying processes by using chilled coconut water and drying cabinet instead of exposing the product under the heat of the sun since proliferation of flies couldn't be controlled. Continuing food safety and HACCP integration to all boneless siganid industry of the island is recommended.

Keywords: **food safety, boneless siganids, drying**

Acceptability of Kangkong Cookies Enhanced with Peanut *Arachis Hypogaea*

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Abstract

Peanut is abundant in the Northern part of Cebu particularly in the town of Tabogon. The study determined the acceptability of kangkong cookies enhanced with peanut. The study aimed to determine the acceptability of *kangkong* cookies enhanced with peanut based on sensory evaluation using descriptive and preference testing. The experimental method of research was used in conducting the study employing the laboratory techniques and procedures with Treatment 1. Kangkong Cookies without peanut(*control*); Treatment 2: 15 grams of peanut; Treatment 3. 30 grams of peanut and Treatment 4. 45 grams of peanut. Based on the Analysis of Variance at 5% level of significance. the most preferred kangkong cookies containing 45 grams of peanut had light green in color, moderate peanut in flavor, very much peanut odor and very much crunchy in texture with general acceptability of "like very much". Thus, incorporation of peanut into the kangkong cookies can enhanced the color, flavor, odor and texture of the product.

Keywords: peanut. kangkong cookies, cookie making

The Implementation of the Management Processes of Mobile Hospital Health Services in the Province of Maguindanao

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Abstract

Although agreement about the need for quality improvement in health care is almost universal, the means of achieving effective improvement in overall care is not well understood. Mobile hospital health interventions could have beneficial effects on health

care delivery processes. This study explored the extent of the implementation of the management processes of Mobile Hospital health services. Survey questionnaire were used to collect data from health workers from different municipalities of the province of Maguindanao. The study shows that the management processes of the mobile health services in terms of planning, organizing, staffing, implementation, monitoring, and evaluation were properly implemented. The implication of the study is that the Mobile Hospital health services in the Province of Maguindanao through the application of management processes are effective.

Keywords: Mobile hospital, health care, delivery processes

Allelopathic Effects of *Chromolaena Odorata* (L.) R. King & H. Robinson on Germination and Seedling Growth of *Brassica Rapa* L.

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ABSTRACT – Plant allelopathy encompasses both inhibitory and stimulatory biochemical interactions between species. The allelopathic effect of *Chromolaena odorata* (L.) R. King & H. Robinson leaves on the germination and seedling growth of *Brassica rapa* (L.) was determined using petri dish bioassay and pot experiment. For the petri dish bioassay, percentage germination, root and shoot length and root and shoot biomasses were measured after 3 days. Results showed that germination percentage is not significantly affected by the three *C. odorata* leaf extract concentrations (0.125%, 0.25% and 0.5% wt/v). However, root length and shoot length increased significantly with leaf extract concentration. Root biomass and shoot biomass were also measured, however, significant effect was only observed on shoot measurements. Nonetheless, results suggest the stimulatory potential of *C. odorata* leaf extract on the growth of *B. rapa* L. For the pot experiment, percentage germination was measured after 7 days while root biomass and shoot biomass were measured after 21 days. Results showed no significant effect for all parameters across concentrations (0.625%, 1.25% and 2.5%

wt/wt soil). In addition, trend analysis of the number of *B. rapa* alive per day suggests that higher concentration of dried leaves in the soil decreases the mortality of *B. rapa* individuals. Thus, it is highly recommended that further experimentation must be conducted to validate the stimulatory effect of *C. odorata* by increasing the concentration of the extract and also by investigating its effect to other bioassay species.

Keywords: Allelopathy, allelochemicals, Chromolaena odorata, invasive species, Brassica rapa

Hypoglycemic Effects of Sea Hare, *Dolabella Auricularia* Ethanol Crude Extracts on Alloxan - Induced Albino Mice

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ABSTRACT

Marine organisms are not well explored in terms of their therapeutic potential to several chronic illnesses like diabetes mellitus. Most of the potent novel compounds with anti-diabetic activity are derived from plants and majority of these are of terresfasting interval time origin. This study is carried out to determine the hypoglycaemic activity of a marine invertebrate organism, the sea hare *Dolabella auricularia* ethanol crude extract to alloxan- induced mice. Twenty four healthy and normal albino mice were induced with alloxan monohydrate (0.1 ml for 20 gram mice) to elicit increase in blood glucose level. They were subsequently administered with ethanol extract of sea hare at different concentrations as treatments (T1- control, T2- 100%, T3- 50%, T4- 30%) after 24-hour and 6-hour fasting intervals. Results show that ethanol crude extracts of *D. auricularia* has blood glucose-lowering effect of 4.8 – 37.4% in the 24-hr fasting interval and 17 – 18.5% decrease observed in the 6-hr fasting interval time. The finding suggests that the hypoglycaemic activity of the extract is dose–dependent, showing a promising effect at 100% dose than at lower concentrations. Different fasting time intervals also affect the activity of the extract on

the experimental albino mice. Further study is recommended to ensure consistent and accurate findings in the hypoglycaemic potential of sea hare crude extract.

Keywords: diabetes mellitus, hypoglycaemia, fasting time interval

You're thinking it right: native plants are affected by invasive alien plant species in the campus of De La Salle University-Dasmarinas

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Abstract

De La Salle University Dasmarinas (DLSUD) is known to be one of the world's greenest universities. Currently, information on the distribution of native plant species inside the campus is known. The biological invasion of alien plant species (IAPS) however warrants the need for the formulation of institutional policy standards in the prohibition and monitoring certain invasive plants as information on these IAPS inside the University is limited. In this study, a field ocular observation technique was employed to examine the abundance and distribution of these IAPS in the 27 hectare-sized campus. Ten species of invasive plants were assessed and evaluated using a developed criteria and rating system for determining the biological invasiveness of alien plants. Results on assessment and evaluation using the developed criteria and rating system showed that species invasiveness scores ranged from 32-39 points (i.e., all species are invasive). This indicates that the alien plants considered have varying potentials of biological invasion within the campus. The present study also focused on the issues and threats posed by these IAPS on the native plant species in DLSUD. The data will suggest that it is important to monitor, evaluate and provide immediate feedbacks on the distribution of these IAPS. Similarly, these results indicate that a policy document needs to be followed by the University's Environmental Resource Management Center where monitoring plan of invasive plant species will be emphasized for sustainable environmental management.

Population Density Assessment and Habitat Characterization of Mangrove Blue Flycatcher *Cyornis Rufigastra* in Nug-As Forest Key Biodiversity Area in Cebu

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ABSTRACT
Nug-as forest in Alcoy, is one of the key biodiversity areas (KBA) in the Philippines with high conservation priority in southern Cebu. Harboring the highest number of threatened endemic wildlife of Cebu including two critically endangered birds (Cebu Flowerpecker and Cebu Brown Dove), three endangered species (Black Shama, Cebu Hawk-owl and Streak-breasted Bulbul) and a number of vulnerable species. Point count method was used to determine the population density of *C. rufigastra*). A total of ten plots with 20m radius and 200-meter distance between plots have been established within the study site with only eight encounters with the target species. A modified belt transect method wherein 10 quadrats (20mx20m) were laid out along a 2-km transect within the plots. Nested quadrat sampling was used to assess the species structure and composition of plant communities associated with the target species (20mX20m for trees>10cm-dbh, 5mX5m for shrubs<10cm-5m-dbh, 1mXm for herbacious<5cm-dbh). Vegetation variables were calculated including height, diameter-breast-height, canopy cover, shrub cover, no.of species and individuals per species among others. Diversity indices were also determined using Shannon(H'), Evenness(J') and Simpson's(D) index. Based from results the population density of *C. rufisgastra* were six individuals per ha calculated from eight encounters. Vegetation analysis showed 124 morpho-species, 398 individuals and 67 families in four-transect established. Dominant families including, Anacardiaceae, Stemunoraceae, Moraceae, Rubiaceae, Annonaceae, Myristicaceae, Apocynaceae, Clusiaceae and Meliaceae. All ten transects showed high to very high diversity in both Shannon and Simpson's indices. Correlation analysis shows positive relationship between species richness and distribution (H') and occurrence of *C. rufigastra* occurrence *(P*<.05, R^2(adj) = 42.6%).

Keywords: Nug-as Forest KBA, Mangrove Blue Flycatcher *Cyornis rufigastra,* Key Biodiversity Areas in Cebu, Population Density Assessment and Habitat Characterization of *C. rufigastra*

Comparative Study on Reflection among Medical Technology Students Using the Failure Mode and Effect Analysis (Fmea) to Assess the Health-Care Waste Management in Southwestern University, Cebu City

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Health-care wastes (HCW) has increased in the last decade as more hospitals are built in urban areas and as medical tourism has become part of the modern world. In addition, medical institutions largely contribute to the production of these special wastes which need much attention by the government. Hence, a continuing study involving level 3 Medical Technology students is conducted to identify faulty areas and processes in a proposed means of management of health-care wastes generated by Clinical Chemistry classes in Southwestern University Phinma in the second semester of academic year 2017-2018 using the modified FMEA Tool from the Institute for Healthcare Improvement in
Cambridge, Massachusetts, USA (2004) and reflection strategies. The six (6) sections of level 3 students majority of which are grouped into four will accomplish the tool reflecting on problems before they occur for each of the five (5) steps of the proposed new HCW management procedure. The risk priority number (RPN) that will be obtained from the study will provide useful data for improving the institutional handling of the HCW. Moreover, a comparison of data obtained from the previous school year will be done.

Customary Laws in Natural Resources Management: Practices of Conner, Apayao

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Abstract
This study was conducted at Ancestral Domain of Isnags of Conner, Apayao. The general objective was determination of Customary Laws in natural resources management practice by Isnags in Conner, Apayao. In particular, it described the land-cover/land uses and resources of forestlands, it determined the goals and objectives of traditional governance and it determined the different Customary Laws as management of different land-cover/land uses. Data were gathered using Participatory Rural Appraisal Techniques like the focus group discussion, key informant interviews were carried out among members of the Talifugo Isnegs Farmers Association and Council of Elders and were analysed using qualitative analysis. The existing governance system of these

resources is based on their Customary Laws and traditions. In addition, modern governance of natural resource management is also adopted nowadays. However, these natural resources management practices are threatened to be lost due to education, modernization and migration.

Keywords: Ancestral Domain, Customary Laws, Resource Management

Strengthening Community Engaged Resilience in an Island Community: Case of Fisherfolks in Pamarawan Island, Malolos, Bulacan, Philippines

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Abstract

This study illustrates how Pamarawan, an island ecosystem along the Manila bay exposed to various hazardous events can withstand natural disasters. The study is anchored on the concept of community engaged resilience. Researchers used mixed methods (field observations, survey, interviews and focused group discussion) in ascertaining resilience and economic sustainability of the fisherfolks. Research tools include transcriptions, field notes and questionnaires. The locals living with water all their lives are sensitive to the needs of the island environment, and are complacent on the nature of disaster. As daily wage earners dependent on nature, they resort to loans when they are short of money. As an isolated community, disaster information is inadequate. Mobility is limited and accessibility to the mainland is slow-on set. In conclusion, the island ecosystem is able to withstand perturbation due to micro-governance and strong social capital. It is recommended that for the island community to sustained fishing as a major industry, community engaged resilience should be strengthened among the locals where they have access to proper education with microfinance support, implementation of community-based waste disposal management, space as buffer between the sea and community and responsible collaboration among the local government, residents and partner communities.

Keywords: community resilience; economic resilience; economic security; island community; micro-governance

Role of Teachers in Post-disaster Response as Basis for a DRRM Plan: The Case of Antipolo City, Philippines

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Abstract

A comprehensive disaster risk reduction management plan at the school level is important in order to ensure the safety of students, staff and faculty, division offices and schools nationwide. Mainstreaming disaster risk reduction and climate change in development process such as socio economic development planning, budgeting, policy formulation and governance particularly in the areas of agriculture, water, energy, health, poverty reduction, land use, urban planning and education, among others is highly imperative. Two natural disasters, such as earthquake and typhoon, can make major impacts in the City of Antipolo, and this was used to determine the preparedness of teachers. Teachers gather information from various sources like television, radio, newspapers and magazines, the workplace and the provincial and local government units. Teachers have been found to be willing to learn in order to be prepared and ready to respond when disaster strikes, vigilant in seeking information while checking their level of preparedness. Audio visual information remains as an effective tool in disseminating DRRM campaigns. With training being conducted for disaster preparedness and response, teacher will be able to continue to become resilient and prepared when disaster strikes.

Keywords: Disaster Risk Reduction Management Plan, Post-disaster response, schools, teachers

ODeL Administrative Support: Linking the Academics and Administrative Functions of Faculty Members

Lorelee Mones and Eden Salon
Presenter: Lorelee Mones/Eden Salon

Abstract

When environmental education is placed in the web, an odel institution should develop a strong administrative support especially for the faculties-in-charge, tutors, and

lecturers. Administrative processes in an odel institution do not only involve addressing the needs of the unit offering the environmental education program but also meeting the technical as well as logistical requirements of those involved in the implementation and management of the program. Administrative support is the vital foundation to a sound online environmental education program. Such support could range from assistance in the form of funding, processing requests and overload honoraria, facilitating the processing of appointment, provision of tutors especially for large classes, and the like. Under a healthy working environment, administrative support could lead to innovation and persistence of enthusiasm to teach by the faculty members. The current paper will discuss how administrative support is done at UPOU. It would also elucidate how such support helps faculty members perform their tripartite functions in the University. It will close with a presentation on the implications of an effective administrative support to offering an environmental education in an online environment.

Keywords: environmental education, open and distance e-learning, administrative support

A Simulation Modeling of the Parasitic Behavior of Small Hive Beetles and European Honey Bees inside a Beehive

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ABSTRACT

Small hive beetles (SHB) pose an adverse impact in the bee industry and in agriculture. SHB infestation may lead to decrease in honey bee population since brood and pollen are its food sources, and they also cause honey fermentation which affects honey quality. As response to SHB infestation, honey bees employ imprisoning or blocking of SHB movement. However, SHB trick worker bees to feed them which allows

them to survive imprisonment. An agent-based program was used to model the interaction of beetles as they enter the hive and bees as they block SHB. Simulation results show that the rate of infestation is dependent on the strength of the colony and the rate at which the beetles enter the beehive. Different strategies are also formulated to minimize the risk-spreading strategy of SHB.

The Biodiversity Assessment in the SACK Watersheds of Bislig City, Surigao del Sur

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ABSTRACT

This study aimed to formulate a framework that illustrates the sustainability of local biodiversity in the purchased lots of Bislig City Water District (BCWD) in the San Antonio, Cumawas and Kauntuan (SACK) Watersheds, Bislig City, Surigao del Sur. It also aimed to establish a baseline data that will document the varieties of Flora and Fauna on the year 2003 and on the year 2014 in the said location. It also identified and discussed the ecological concepts and principles embedded in the different management interventions adopted by the Bislig City Watershed Management Council (BCWMC), an overseer of the said Ten (10) Year Watershed Management Plan implementation.

A descriptive survey method was used in the study. The results revealed that before the Ten (10) Year Watershed Management Plan implementation of the Bislig City Watershed Management Council in the year 2003, there were just more than 50 varieties of flora and more than 20 varieties of fauna inventoried and recorded in the said location. After 10 years of plan implementation during the 2014 Biodiversity Assessment by a private entity, it was found out that there were more than 150 varieties of Flora and more than 30 varieties of Fauna thrived in the said part of the SACK Watersheds. The ecological concepts and principles embedded in the different management interventions adopted by the Bislig City Watershed Management Council (BCWMC) were: Ecological Concepts: 1.) Native Species and 2.) Disturbances. For the Ecological principles: 1.) Disturbances shape the characteristics of populations, communities and ecosystems and 2.) Protection of species and species subdivisions will conserve genetic diversity.

Keywords: *Biodiversity Assessment, Bislig City Watershed Management Council (BCWMC), Ecological Concepts and Principles and Flora and Fauna*

Folkloric Utilization, Knowledge and Management of Medicinal Plants of an Aeta Community in Sitio Parapal, Hermosa Bataan

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ABSTRACT

The folkloric use of plants is part of the integral knowledge, skills, and practices based on theories, beliefs and experiences of indigenous cultures. These plants are used to promote, maintain and improve health. The Negritos, more known as Aetas has been subjected to several ethnographic and ethnobotanical studies and their subgroups, however, no recorded traditional use and understanding of herbal plants of the Aeta community in Sitio Parapal, Hermosa Bataan has been conducted.

Focused ethnography used the ethnomedicinal free listing of herbal plants and interviews on knowledge and management were employed to understand the plant-for-disease. Plants most used and most versatile were determined by ethnobotanical indices, WHO ICD-10 identified the various categories of diseases/conditions treated, and themes were identified from the open-ended interviews.

Twenty-one respondents identified seventy-two (72) medicinal plants. Plant parts most utilized were leaves (58%) and fruits (12%), the preferred mode of medicinal preparation was boiling of plant parts (33%) and remedies were mainly administered orally by drinking one glassful (24%) and applied on the skin (22%). Seventy-eight illnesses/conditions documented were classified into 16 body systems/use categories. Animal bites, burns and wounds are the most common conditions. The most used plant for a condition and most used by the community members is "Silisilihan or Lutok" (*Ageratum conyzoides* (L.) L.) for wounds. The most versatile - used for different diseases - plants are Bayabas (*Psidium guajava* L.), Kalamansi (*Citrus japonica* Thunb.) and Silisilihan. Continued patronage of herbal plants is due to tradition, availability and as health resource. Frequency of harvest and transfer of knowledge is not limited to the community but shared and loss of resource and treat to environment is expressed in the management of the folkloric medicines. This study will preserve the traditional medicines through proper documentation, an addition to the ethnographic profile and further empower their ethnicity.

Keywords: Medicinal plants, Sitio Parapal, Aetas

Vegetative Morphological Characteristics of Tree Flora in Mt. Sinaka

by
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Abstract

The study aimed to assess the vegetative morphological structure of the existing tree flora in Mt. Sinaka range. It had also aimed for the identification, classification, description and characterization of the existing tree flora within the Mt. Sinaka range.

Descriptive-classification and descriptive-status design were employed. All of the species found and encountered in the study area were collected, classified and determined their vegetative morphological structure through leaf morphological characteristics, pictures were also taken for documentation and easy reference.

There were 70 species of naturally thriving tree flora identified excluding the exotic species found within the perimeter of the study area. All of the species belong to Division Spermatophyta, there were three (3) species belonging to Subdivision Gymnospermae (softwoods) and the rest belong to Subdivision Angiospermae (hardwoods) which all belong to Class Dicotyledonae. It has been subdivided into 19 orders and 35 families. Among the families, Euphorbiaceae dominated having an 8.6 % relative dominance.

Most of the species were classified as large trees reaching a height of more than 5 meters and beyond 40 centimeters in diameter, a dimension of trees having a potential for production. However, most of the identified species were already endangered and there were also rare in nature therefore relevant conservation measures are necessary to protect those species from rampant collection, considering that Philippine Eagles and other wildlife thrive in the area.

A similar study on biodiversity index of the area may also be conducted to serve as baseline data for forest managers to find better management strategy in managing what is left of our resources.

Keywords: morphology, descriptive- classification, descriptive- status design, rare species, biodersity index

Student Support in an Online Learning Mode: Practices and Issues

Rubielita Parcon and Rhonna Vereña

Presenter: Rubielita Parcon

Abstract

In applying ODeL framework in providing quality education, any institution should be able to establish a strong student support. This is necessary because physical separation in ODeL creates isolation effect, which may lead to students' de-motivation. At UPOU, student support has evolved from being centrally managed to being devolved into the Faculties. The devolution, however, has produced challenges and issues that need to be addressed to maintain strong students' academic engagement. Using the authors' experience, the paper will discuss the role of student support in an online learning, and describe how student support is done at UPOU especially at the level of Faculty. It will also present the issues associated with student support and the processes how they were being addressed.

Keywords: open and distance e-learning, student support, devolution

Vermicomposting Using Three Invasive Aqua Terrestial Plant Species

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Abstract

Substrates formulation during vermicomposting is very important. In this study the composting worm name *Eudrilus eugeniae* (African night crawler) was used. The study was conducted at the vermi-house and laid out in Completely Randomized Design. There were seven treatments used using a combinations of mixed agricultural wastes, swine manure and invasive species (kangkong, water hyacinth and Azolla) in different ratios. Statistical analysis showed that the different formulations of substrates with kangkong, water hyacinth and Azolla significantly affected the weight and population of African night crawler, weight of vermicompost, weight of unconsumed substrates and percent recovery. Among the treatments, African night crawler fed on T3 (1 mixed agricultural wastes: 2 hog manure: 1 kangkong) had highest African night crawler weight and population, weight of vermicompost, percent recovery and lowest weight of unconsumed substrates. The said treatment was comparable with T5 (1 mixed agricultural waste: 2 hog manure: 1 water hyacinth) in terms of weight of vermicompost, percent recovery and unconsumed substrates. Thus, among the three

invasive species, substrates formulations with kangkong and doubling amount of swine manure improved biomass production, weight of vermicompost and percent recovery. With the significant results of the study, it is therefore recommended that said formulation of substrates with kangkong in vermicomposting can be done for higher African night crawler biomass and vermicompost yield.

Keywords: vermicompost, African night crawler. invasive aqua terrestrial species, kangkong, Azolla, water hyacinth

The Antibiosis of Biological Agents *Streptomyces* Sp. , *Gliocladium* Sp., and *Trichoderma Harzianum* from East Java Indonesia to *Fusarium Oxysporum*

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ABSTRACT

This study was undertaken to determine the species of biological agents *Streptomyces* sp. from Pare-Kediri tomatoes land, *Gliocladium* sp., collection of Pandaan Food Crops and Horticulture Plant Protection, and to know their antagonistic to *F. oxysporum* f.sp. *lycopersici* soil borne pathogens from Wajak village - East Java-Indonesia. Completely randomized design was used and each treatment was repeated four times. Biological agents were identified by morphology characteristics and DNA sequensing. *Streptomyces* sp. wich was found, was identified as *Streptomyces griseorubens* and *Gliocladium* sp. as *Gliocladium virens*. The results also showed that *S. griseurubens G. virens* and *T. harzianum* were hiperparasit of *F. oxysporum* hyphae, food and space competition potentialy to *F. oxysporum* in rhizosphere and induced through the formation of pheripher roots. The third mixture of these biological agents also produced antibiosis in the rhizosphere that could inhibit *F. oxysporum* f.sp. *lycopersici* growth.

Keywords: antagonism, biological agents, rhizosphere.

Attitude and Coping Mechanisms Towards Natural Disasters of Fishermen in Mulanay, Quezon

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Abstract

The study focused on the attitude and coping mechanisms towards natural disasters of fishermen in Mulanay, Quezon. The objectives of the study includes describe the natural disasters experienced by the fishermen, determine the effects of natural disasters, determine the attitudes of the fishermen towards natural disasters, describe the coping mechanisms of fishermen toward natural disasters, and assess the relationship of attitude and coping mechanisms towards natural disasters. The research methods used were self-constructed test for the measurement of the attitude and coping mechanism, in-depth interview, focused group discussion, observation, and review of documents. The data were analyzed through descriptive statistics, thematic analysis and Spearman rho. Results revealed that the natural disasters experienced by the fishermen are typhoon, flooding, and the southwest monsoon tropical wind. The effects of natural disasters are mostly on their capital assets like boats, fishing gears, and houses. Other effects include food insecurity and emotional effects. Generally, the fishermen have favorable attitude towards natural disasters. Most of them use problem-focused than emotion-focused as coping mechanism. For the relationship of the fishermen's attitude and coping mechanism towards natural disasters, result revealed that it is strongly associated (rs = 0.774) which means that the fishermen with a positive attitude can highly cope with the effects of natural disasters. It can be concluded that the fishermen often experience natural disasters due to its geographical location which is near in Bicol and along the coastline. The positive effects of natural disasters among fishermen are religiosity and resiliency. Further, the frequent occurrence of natural disasters resulted to enactive mastery particularly in dealing with problems associated with strong typhoon and floods.

Key words: attitude, coping mechanism, natural disaster

Growth, Yield and Postharvest Quality of Cauliflower (*Brassica oleracea* var. botrytis L.) Supplemented with Liquid Nutrient Solutions Under Aggregate Hydroponic System

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Cauliflower is considered beneficial to human health for it is an excellent source of vitamins C, B complex and minerals. This vegetable crop can be grown in aggregate hydroponic system with alternative sources of indigenous materials. The study aimed to determine the growth, yield response and postharvest qualities of cauliflower fertilized with different liquid nutrient solutions. It was arranged in randomized complete block design with VSU liquid nutrient formulation (VSU-LNF), fermented malunggay, fermented kudzu, malunggay + VSU-LNF and kudzu + VSU-LNF as treatments and replicated thrice. The result showed that VSU-LNF significantly influenced cauliflower growth in terms of plant height, number and size of leaves Plants applied with VSU-LNF produced the biggest and heaviest curds. Postharvest quality of cauliflower significantly differed with the application of different nutrient solutions. Vitamins C, titratable acidity (TA) and oxidation-reduction potential (ORP) of curds were found were found to be highest when grown in fermented kudzu and with kudzu mixed with the VSU-LNF. Total soluble solids (TSS) were higher in curds from plants grown in fermented malunggay and fermented malunggay combined with VSU-LNF. No significant difference was observed in pH of curds among treatments but electrical conductivity (EC) was found highest in curds from plants supplemented with VSU-LNF.

Keywords: VSU-LNF, cauliflower, fermented extracts, oxidation-reduction

Farmers' Knowledge on the Role of Shade Trees in Coffee Based Agroforestry Systems in Provision Ecosystem Services

ABSTRACT

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Farmers' knowledge on coffee shade tree species largely determines the vegetation structure, tree diversity and the provision of ecosystem services of coffee agroforestry. This study aimed to analyze the relationship between farmers' knowledge about coffee shade tree species in the study area in relation to ecosystem services in coffee agroforestry. The study was conducted on simple shade coffee plantations and coffee

multistrata in Ngantang, Malang, East Java, Indonesia. In-depth interviews showed that farmers planted shade trees based on several considerations, such as (1) the ability of shade trees to provide organic matter, (2) tree covered area, (3) the use of tree leaves as fodder and (4) the economic value of the trees. Gamal (*Gliricidia sepium*) was a highly favored tree species as coffee shade, followed by banana, avocado, and durian. Coffee multistrata had higher species (shade) tree diversity and greater ecosystem services, as well as tree biomass and soil carbon stocks (C-stock) (26.3 Mg ha^{-1} and 76.7 Mg ha^{-1}, respectively). However, not so with the diversity and populations of earthworms, density, biomass, and diversity of earthworms in coffee farms with simple shade trees was 156 indiv. m^{-2}; 22.1 g m^{-2}, and 7 species, respectively, whereas in multistrata coffee farms was 125 indiv. m^{-2}; 32.0 g m^{-2}, and 7 species. Dominant worm species which were found in both types of coffee plantations were *Pontoscolex corethrurus* (endogeic) and *Peryonix excavatus* (epigeic). Constant infiltration in both coffee agroforestry systems were no different, where the infiltration at coffee multistrata was 31.4 cm hr^{-1} and at simple shade coffee was 40.2 cm hr^{-1} .

Keywords: Earthworm, Ecosystem services, Agroforestry coffee based

Formulation of Endophytic Bacteria As Elicitor Plant Resistance to Wilt Disease on Solanaceae

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Abstract

Wilt disease is one important disease on solanaceae that cause by *Ralstonia solanacearum,* be potential limiting factor of product and impact on economic country. Control of it using some technique have not been success so biocontrol of it using endophytic bacteria is one alternative control methods and support sustainable agriculture. But application of endophytic bacteria need the right formulation that supports the effectiveness. The object of these experiment is selected of endophytic bacteria formulation that effectively suppress bacterial wilt disease on solanaceae. The formulation that using in this research are seed coating and powder. The The result show that *in vivo* test, seed coating and powder formulation can suppress bacterial wilt disease as 3.5-7.5%.

Keywords: *wilt disease, endophytic bacteria, biocontrol*

Enhancing the Resilience of Indigenous Peoples through a Climate-Smart Ancestral Domain Sustainable Development and Protection Plan

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Abstract

The Ancestral Domain Sustainable Development and Protection Plan or ADSDPP ensures that the rights of the Indigenous Cultural Communities (ICCS) or Indigenous Peoples (IPs) and their rights to ancestral domains are recognized and promoted. It also identifies programs, projects and the responsibilities of the ICCs/IPs for the sustainable management of their ancestral domains. Review of the current ADSDPP was done to analyze its technical and social soundness. The evaluation was primarily focused on how the ADSDPP is relevant and responsive to changing climate events. The generally high dependence of IPs on natural resources for their livelihood makes them highly vulnerable to the effects of climate change. These natural resources are exposed to changing climate, which in turn threaten the very existence of the IPs. Interviews and focus group discussions were conducted with selected ICCs in Floridablanca, Pampanga that has approved ADSDPP. Results show that the current ADSDPP is not climate-change ready and it lacks provision on how the IPs can respond to these challenges through climate-proof programs and projects for the sustainable management of their livelihood. The study provides a set of recommendations highlighted by strategies on how to mainstream climate change and disaster risk reduction toward a climate-smart ADSPP.

Keywords: Ancestral Domain Sustainable Development and Protection Plan, Climate Change, Indigenous Cultural Communities, Indigenous Peoples, Natural Resource Management

Environmental Protection of Osmeña Peak Towards Eco-Tourism Development

HUBERT G. QUIÑONES

Abstract

Beautiful places are the most important that local and foreign tourists are being devoted to visits and leave a footprint of memory. The Philippines particularly the southern part of Cebu province a well known Osmeña Peak is being visited by a flock of tourist. The involvement and strong, courageous cooperation of the stakeholders can make the place eco-tourism destinations. The study aims to; 1) sought to determine

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how the organizers, local residents, and other key players adopt a common practice of protecting and maintaining its environment, the habitat, and the flora and fauna, 2) Identify and analyze the environmental concerns of Osmeña peak. At the same time employed a descriptive quantitative method of research.

The cabbage and antorium were the plants cultivated very productive in this area. One of the interviewees narrated to us that long long time ago there were no forest trees had been growing in this area. The Local Government and other government organizations had tried many attempts at planting trees but it did not survive. Only the former kind of plants can continue to exist.

The common practices adopted by the organizers and local residents of Osmeña peak are reforestation, cleanliness, landscaping, varied forms of livelihood, and agricultural farming regulations.

Keywords: *Osmena Peak, LGU, Community, NGOs, Academe, and Tourism Key Players*

From the University to the Community: An Examination of Community Leaders Disaster Management Practice

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ABSTRACT This phenomenological inquiry purports to assess the application of community development (CD) program of the University of Santo Tomas (UST) in the disaster management practice of the partner communities, based on the lived experiences of its leaders. Building upon a community's shared activities and interactions cannot be detached from the way people respond to disasters. Experience tells us that the brunt of disasters is felt first and toughest by the community, especially those from the marginalized groups. Consequently, the response of the people to disaster is associated with their culture, knowledge, socio-economic life, and capacities that become part of the challenges addressed through CD. To assess the way leaders of the partner communities apply the CD programs of UST in the management of their disaster program, each of the twelve (12) community leaders from Central Luzon representing the leaders of the partner communities of UST was invited to participate in an in-depth, semi-structured, one-on-one interview. Phenomenological reduction was observed using a dendogram, where verbalizations were listed, categorized and thematized to reveal the forces of community development strategies. As the leaders manage the disaster program of the community their own *rules* and *role*s were reflected that described their own strategies to achieve community development. The *innovative*

yet respectful of local knowledge, self-reliant yet reliant on community participation, delegator yet provider of capacity-building program, and *independent yet dependent on partnership* can be equated to magnetic forces that provided a portrait of community leaders development strategies. A Model on *Community Leaders CD Forces* emerged in this study. These behavioural forces of community development strategies are typified by the *crafting while respecting, organizing while engaging, governing while building, and self-determining while depending* roles, which served as guideposts for community development practitioners and community organizers as they work towards the development of marginalized communities.

Keywords: community development, community empowerment, community organizing, community participation, focused ethnography, people's participation, self-reliance

Analytical Hierarchy Process Analysis of the Communication Strategies in Disaster Risk Reduction in Infanta, Quezon

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Abstract

Communication strategies such as message, channel, and approaches in the implementation of the disaster risk reduction programs and projects of the Local Government Units in Dinahican, Infanta, Quezon served as the focus in this undertaking. The objectives of the study include to determine the strengths, weaknesses, opportunities, and threats of the communication strategies in disaster risk reduction. Research methods include conduct of survey among randomly selected respondents, focus group discussion, key informant interview among local officials, and review of documents. Data were analyzed through descriptive statistics and Analytical Hierarchy Process.

The strengths, weaknesses, opportunities, and threats (SWOT) using the Analytical Hierarchy Process (AHP) analysis revealed that the communication strategies in the area are within the strength and opportunities area more than over the weaknesses and threats area. There are five identified internal strengths, four internal weaknesses, five external opportunities, and four threats. The use of cellular phone for text messaging is the utmost strength, poor information dissemination is the identified weakness, use of simple language in communicating appeared as one of the opportunities, and the uncontrolled telecommunication signal is a threat. It is good to

note that the respondents see technology such as cell phones as one of the easiest and fastest ways to receive instruction and/or warnings with regards to natural disaster. The strength is given the most weight in applying communication strategies, with priority vector of .47. This is followed by weakness (.26) and opportunities (.20). Further, the category with the least given strength is threats with priority vector of .06.

Key words: communication strategies, analytical hierarchy process, disaster risk reduction

Geo-tracking of *Collybia reinakeana* in the Philippines

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Collybia reinakeana (P.) Henn used to be a wild endemic edible mushroom not until it was discovered in the mountainous area of Puncan, Carranglan, Nueva Ecija, Philippines after the great earthquake that jolted Central Luzon in 1990. It is characterized to having big fruiting bodies (about 1 foot tall) that grow in cluster. Its mycelia were rescued from the wild and the first domestication studies were conducted which lead to the generation of its production technology. It is a nutraceutical mushroom that exhibits antibacterial and anti-hypertensive properties aside from its appreciable content of both standard as well as non- standard amino acids. It also exhibits mycoparasitic habit against species of *Aspergillus*, *Cladosporium* and *Fusarium*. Recently, emergence of this mushroom in the different areas in the Philippines have been reported which prompted our research team to conduct geo – tracking in order to rescue its secondary mycelia in our desire to conserve this endemic species of mushroom. With our conservation efforts, we have tracked the areas where it was found growing and subsequently isolated the secondary mycelia. At present, our research team were able to collect 9 different strains from the different areas namely Bataan (1), Science City of Munoz (2), Urdaneta City (1), San Manuel, Pangasinan (1), Rosales, Pangasinan (1), Bicos, Rizal, Nueva Ecija (1), Dipaculao, Aurora (1) and Bamban, Tarlac(1).

Keywords: *Collybia reinakeana*, geo-tagging, mushroom

Phytochemicals and Antioxidant Activity of Some Gymnosperms in UPLB Campus

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The University of the Philippines Los Baños (UPLB) resides at the foot of Mt. Makiling having high diversity of plant species including the gymnosperms. These plants are known to contain phytochemicals having medicinal benefits. Screening was done to confirm the presence and variety of phytochemical constituents in the leaves of three gymnosperm species: *Podocarpus macrophyllus*, *Gnetum gnemon,* and *Araucaria heterophylla*. Thin Layer Chromatography (TLC) was done to detect flavonoids, essential oils, and alkaloids while chromogenic reaction analysis was carried out for tannins. Results showed that all species have flavonoids, essential oils, and tannins. Among the three species, *P. macrophyllus* exhibited the most number of bands of flavonoids and essential oils in TLC and high amounts of tannin precipitates in chromogenic analysis suggesting high variations and relative concentrations of those phytochemicals. Meanwhile, no alkaloid was detected in all plant samples. DPPH assay was also done to evaluate the antioxidant activity of each plant. IC_{50} value of *P. macrophyllus* was 31.88 µg/ml, *G. gnemon* had 66.03 µg/ml and 294.67 µg/ml for *A. heterophylla*. This implies that *P. macrophyllus* had the highest antioxidant activity which may be attributed to the variety of phytochemicals present in the plant. Thus, *P. macrophyllus* had the highest capability to become an alternative source of tested phytochemicals having relatively high antioxidant capacity.

Keywords: gymnosperms, phytochemicals, chromatography, antioxidant, DPPH

Floristic Composition and Vegetation analysis in Homonhon Island, Philippines

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Abstract

In the absence of any published studies regarding data on the flora of Homonhon Island, this study provide a thorough inventory of plants found in the Island to save the floral species that are affected by the mining companies.

Quadrats measuring 10m x10m were established in the island each were systematically set and spaced at intervals of 50m. Also, subplots of 5m x 5m, 1m x1m and additional plant species occurring outside the quadrats, but inside the forest within 10 m distance were recorded only as 'present' floristic composition. A total of 130 quadrats were established in the island.

A total of 252 plant species sparsely distributed among 94 families were encountered. The families with the greatest numbers of species were Rubiaceae (19), Fabaceae (17), Asteraceae (15), Euphorbiaceae (12), Poaceae (11), Lamiaceae (8), Malvaceae (8), Myrthaceae (8), Araceae, Apocynaceae and Dichapetalaceae (7 each).

Seed Yield and Quality of Chili Pepper (*Capsicum Anuum* L.) Applied with Organic and Inorganic Fertilizer and their Combination

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ABSTRACT

This study was conducted to evaluate the effects of organic and inorganic fertilizer and their combination on the seed yield and quality of chili pepper. The experiment was laid out in randomized complete block design with ten treatments: (T1- control, T2- chicken dung 400g/plant, T3- vermicompost 400g/plant, T4- chicken dung 200g/plant + 150-100-160 kg/ha N, P2O5, K2O, T5- vermicompost 200g/plant + 150-100-160 kg/ha N, P2O5, K2O +, T6- chicken dung 200g/plant + 75-50-80 kg/ha N, P2O5, K2O, T7- vermicompost 200g/plant 75-50-80 kg/ha N, P2O5, K2O + T8- RR 150-100-160 kg/ha N, P2O5, K2O, T9- chicken dung 400g/plant + 150-100-160 kg/ha N, P2O5, K2O and T10 - vermicomposting 400g/plant + 150-100-160 kg/ha N, P2O5, K2O) with three replication.

The application of 200g chicken dung + 150-100-160 kg/ha (T4) produced more with heavier seeds, highest herbage yield and yield of seeds/fruit which were significantly different from all other treatments. This means that 200g chicken dung + 150-100-160 kg/ha (T4) is worth recommended in optimum chili pepper seed

production. All these results would indicate the importance organic and inorganic combination to attain the highest yield with best qualities of chili pepper.

Key words: chili pepper, inorganic fertilizer, organic, seed yield

Agronomic Performance and Shelf Life of Pole Sitao Under Regional Field Trials

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This study was conducted to evaluate the performance of seven pole sitao lines with NSIC PS 4 (check var), PSB-PS 2 (check var) and Sandigan (local check) in terms of horticultural characteristics, yield, insect pest and disease resistance for two dry and wet seasons from cropping year 2015-2016. The experiment was laid out in randomized complete block design with ten treatments replicated three times. The different lines had generally better performance during the dry season as manifested by the shorter days to first harvest and longer days to last harvest, longer pods, greater and heavier weight of marketable pods and total yield. Line PS-02-7 out yielded the check entries which had almost the same yield per ha with PS-02-2 with. The two had also the longest shelf life, hence are considered potential or promising pole siato varieties. There was only a mild infestation of aphids and pod borer and no infection of fusarium and mosaic virus for all the entries.

Key Words: vegetable, yield, insect resistance, disease resistance, shelf life

Growth, Yield and Postharvest Qualities of Ampalaya (*Momordica Charantia L.*) as Influenced yy Different Nutrient Solutions and their Combination Under Aggregate Hydroponics System

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The study was conducted to evaluate the growth, yield performance and post-harvest qualities of ampalaya, and to assess the profitability of growing ampalaya

on organic and inorganic nutrient solutions under aggregate hydroponic system. The experiment was laid out in a Factorial Randomized Complete Block Design with three replications using ampalaya hybrids as factor A and nutrient solutions as factor B. Ampalaya hybrids applied with commercial solution showed significantly greater values in terms of horticultural parameters, yield components, and postharvest qualities while application of fermented banana peel alone gives the lowest values in all parameters. Between the two ampalaya hybrids, no significant effect was observed in most of the characteristics except on the weight of roots. Galaxy had heavier weight of roots compared to Jade star. In terms of chemical characteristics, ampalaya applied with commercial solution obtained the highest free radical scavenging activity, chlorophyll a, b and total carotenoids. Application of commercial nutrient solution provided higher net returns and lowest net return was obtained with the application of fermented banana peel.

Consistent superiority of plants applied with commercial solution was manifested in most parameters. The overall results revealed that sustainable production of Ampalaya hybrid using an aggregate hydroponic system is inevitably profitable.

Key Words: aggregate hydroponics, ampalaya, nutrient solutions, postharvest qualities

Green Marketing Strategies of Restaurants in Zamboanga City, Philippines

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As a growing awareness on the repercussion of global warming, non-biodegradable solid waste, harmful impact of the pollutants and the like, both marketers and consumers are shifting into green products and services (Erikson, 2004). In this light, the objectives of this study are to (1) identify the green marketing strategies of restaurants in Zamboanga City; (2) examine the reasons and benefits of adopting green marketing strategies; and (3) investigate the challenges faced by the restaurant owners/managers in implementing green strategies. Descriptive research design was employed in the study. A survey questionnaire and an interview guide were utilized to gather data. Among the highlights of the results, the study found out that as to the green strategies, restaurant managers/owners make use of cleansers or soaps that do not harm the environment in the food establishment. Corporate social responsibility is the chief reason for adopting green marketing strategies. Restaurant managers or owners believed that they have managerial obligation to take action to protect and improve the welfare of the society and the interest of the organization. Regarding the benefits, green marketing helps the restaurant obtain a green reputation and brand image. Lastly, pertaining to the

challenges, restaurant managers/owners held that green strategies require technology, which requires investment in research and development.

Keywords: Green marketing, Green marketing strategies, Restaurant.

Discourse Analysis of Indigenous Women's Construct on Biodiversity and Sustainable Development

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ABSTRACT

Managing and understanding the environment and its issues is not limited to one environmental discourse but to numerous discourses. Discourse is created through histories which might result in contradictions as narratives may oppose each other. This opposition though is considered an important aspect of discourses.This study explored how biodiversity and sustainable development were discursively constructed by Indigenous women and examined the outcomes arising from their construction of biodiversity and sustainable development through discourse analysis using the conceptual tool provided by Hajer (1995). Five major discourses emerged from this study: conserving biodiversity through the notion of contrasting views on farming responsibilities, conserving biodiversity through a sense of community, sustainability of government initiatives, negotiating cultural heritage and economic benefits, and articulating sustainable development.

Keywords: Biodiversity, Gender, Sustainable Development, Indigenous Women, Discourse Analysis

The effect of brand quality and brand affect on attitudinal and behavioral loyalty (Study on One of Smartphone Brands)

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ABSTRACT
Brand quality and brand affect are two needed variables in the business world. This study goals are to explain about the importance of brand quality and brand affect when those variables are related with the loyalty owned by the customers and to describe about the condition of the smartphone brand customers in Indonesia. The partition of loyalty being attitudinal and behavioral loyalty will be the important value of this study. Four variables are combined untill obtaining four tested hypotheses. With the number of 70 samples, this study tries to reveal the condition of Indonesian smartphone customers who receive some stimuli from the marketers such as brand quality and brand affect. Partial least square is the tool of this study to analyze the proposed hypotheses. All of the hypotheses in this study are accepted showing that the effect of brand quality and brand affect give some impact to the behavioral and attitudinal loyalty of the customers. This finding will contribute theoretically and practically remembering that brand is one of the valuable assets for business.

Keywords: Brand effect, brand quality, behavioral loyalty, attitudinal brand

Kopyor Coconut Research Overview: From Laboratory Work to Publishing, Community Extension and Industry

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Abstract

To create a research that has an impact in economic development is not easy. Many researches have been end up in publisher in the form of journal and book. To avoid it and to save the results of research from the dead of valley, we tried to raise the entrepreneurial heart mindset in the research work. Our research focus on kopyor coconut and it has been done almost 16 years. Kopyor coconut is Indonesian Makapuno, resulted from normal coconut mutation that expressed in the endosperm. This mutation caused lethal to the embryo because the endosperm cannot be utilized as source of nutrients during germination. To rescue the embryo the only way is through

embryo culture technology. In the field, the lived kopyor coconut is developed from the normal coconut tree that bearing kopyor trait. Kopyor coconut is rare palm and only found in Java Island, later we also found in Lampung, Sumatera Island. Starting in 2002, we began explore the kopyor coconut germplasm in the farmer's field in East Java and established the series protocol of embryo culture in the Biotechnology Laboratory. In the 2005 after completing the laboratory protocol, we started with the somatic embryogenesis experiments and began explore the genes that control kopyor traits, improving the embryo culture protocol as well. In the 2010, it was time to go to the coconut community to transfer the embryo culture, diversification products, and management technologies. Almost 3 years we intensively did extension in Sumenep, East Java and Pati, Central Java and still have communication with them until now. We developed zero waste technology of kopyor coconut for 5 years to produce heterozygote and homozygote kopyor coconut seedling and some products such as kopyor frozen meat, kopyor ice cream, kopyor cocktail, nata de kopyor, biovet (kopyor fertilizer), and liquid smoke. In this year, we are preparing two products: heterozygote kopyor seedling and kopyor frozen meat to go to industry supporting by the Ministry of Research, Technology and Higher Education. Seven patents result of these researches were protected under patenting law.

Keywords: kopyor coconut, commercialization, coconut technology

School Performance of Severely Wasted Pupils of Malire Elementary School

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ABSTRACT

This research aimed to determine the school performance of severely wasted pupils of Malire Elementary School. Specifically, aimed to determine the demographic profile in terms of age, gender, Body Mass Index and number of siblings; level of school performance in terms of school performance, co-curricular participation, extracurricular and behavior and if there is any significant influence on the demographic profile and the school performance of the respondents.

Purposive sampling was used in this study. A set of questionnaire was used to obtain the data information on the demographic profile of the pupils which includes age, gender, body mass index, and number of siblings, part II consisted of data on academic performance, co-curricular participation, extra-curricular activities and behavior.

There were fourteen pupils within the age 8-10, majorities were male in number, there were eight belong to 128-132cm; and thirteen pupils have 2-4 siblings.
On academic performance of pupils; they were fair in English and Mathematics.On the level of co-curricular participation of pupils; they were fairly active in scouting.On the level of extra-curricular activities; they were fairly active in attending different programs in school, participating in clean & green program; and participating in pupil's government organizations. On the level of behavior. They were active in joining with the non-wasted pupils and attend class regularly; while fairly active in participating in class discussions.

Keywords: school performance, wasted pupils, Malire Elementary School

Pechay Applied With Kinds And Levels of Organic Fertilizers

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Abstract

This study aimed to determine the kinds and level of organic fertilizer gave favorable growth and yield on pechay planted at Katipunan, Arakan, Cotabato. The Organic fertilizers used were manure (Carabao and Goat) and Fermented Plant Juice (FPJ) and Fermented Fruits Juice(FFJ).
Result of the study revealed that among the animal manure used, goat manure was found better on the three parameters tested such as height, number and weight of leaves.
In the case of fermented plant application it was observed that (FPJ) excelled only on the plant height while FFJ found to have better effect on the number of leaves and weight of pechay.
Having all the kinds and levels of organic fertilizers used it was noticed that Fermented Fruit Juice at the rate of 6tbsp/lit. of water was known to be excellent in all parameters tested.

Keywords: Organic fertilizer, animal manure, fermented plant juice, fermented fruit juice

Supporting Course Material Development in an ODeL Institution: "The What and How"

Rhonna Vereña, Rubielita Parcon, and Pauline Grace Milante
Presenter: Pauline Grace Milante

Abstract

Course development is an important component of an online learning. Learning materials need to be developed before the rolling out of a course. Since teachers and students in an online learning are separated, course materials availability in the virtual classroom is imperative. However course material development (CMD) is a complex and tedious process. At UPOU, course material development (CMD) is facilitated through the creation of a quality circle whose members include the content expert, who is the module writer, multimedia specialist, critic or reader, language editor, instructional designer, universal accessibility expert, and gender specialist. Likewise, CMD involve the use and creation of open educational resources (OERs). Hence, a strong support is necessary to produce quality learning materials on a timely manner. The support is needed in searching for literature relevant to the course, in following up the writers, in monitoring the activities and expenditures, arranging transactions, and the like. The paper will narrate the authors' experiences in and challenges they faced with these processes, and will provide an analysis as to how CMD support could facilitate the implementation of environmental education in the web.

Keywords: open and distance e-learning, course material development, quality circle, open educational resources

The Open and Distance e-Learning: A Framework for Environmental Education

Rhonna Vereña and Ricardo Bagarinao
Presenter: Rhonna Vereña

Abstract

Open and distance e-learning (ODeL) is a worldview that integrates the affordances of open learning, distance education, and e-learning to produce social transformation. With web 3.0 and industrial revolution 4.0, ODeL framework plays a significant role in advancing the theories and principles of environmental education to achieve a more environmentally literate citizenry. Its borderless and ubiquitous characteristics provide access to quality education to a wider population including those who cannot enjoy the opportunities provided for by the classroom-based education. The paper elucidates ODeL as a worldview and presents specific arguments as to how it can be utilized as a

framework for environmental education. It discusses the challenges of classroom-based education, and how ODeL could serve as a tool to address such challenges. It concludes with a presentation on how it could be implemented in an institution.

Keywords: open and distance e-learning, environmental education, environmental literacy, quality education

Localizing Education for Sustainable Development in Selected Public Elementary Schools: A Case of Camanava

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ABSTRACT – This study presents an analysis of how Education for Sustainable Development (ESD) is localized through programs in selected public elementary schools in an urban population. Operationally defined as mainstreaming, promoting, advancing and making ESD local in character while pursuing actions at the local level, localization is a particular issue of relevance on the Post-2015 Development Agenda in the Philippines. **Guided by the theoretical lens of General Systems Theory,** this case study used a mixed method design in unraveling the issue of localization as to programs implemented. Results of survey carried out in 2017 in four purposively selected public elementary schools, one for each Schools Division in first class cities of CAMANAVA, revealed that **ESD is translated through programs following a top-down approach with DENR, DepEd, DILG as the primary agencies in the institutional arrangements and PCSD as the national monitoring unit. Programs implemented in the study site are in line with either the environmental, socio-cultural or economic pillar of SD with programs mostly initiated in the national level.** Six identified government initiated ESD related programs, i.e. Disaster Risk Reduction and Management campaign, Eco-savers Program, Search for Sustainable and Eco-friendly School, *Gulayan sa Paaralan*, Green School Program and Climate Change adaptation were found to be relevant to the participants' respective areas of jurisdiction either to a moderate or to a great extent. Diversity and various levels of commitment to the promotion of ESD were found to be evident thru the adaptation of policies, guidelines, programs and activities in the local context.

Keywords: *localizing, Education for Sustainable Development, public schools, elementary level, programs*

Biogenic Sediment Production of the Calcareous Green Alga (*Halimeda macroloba*) in the Intertidal Shore as Potential Control for Coastal Erosion

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ABSTRACT

Calcareous algae such as the *Halimeda macroloba* were identified as one of the organisms considered in the formation of coral reefs and as sediment contributor in the coastal zone. The distribution pattern of the natural assemblages of calcareous green alga is essential in the production of sediments that eventually deposited along the beaches by the effect of longshore current. The distribution pattern of *H. macroloba* were pre-determined with the used of 50 m transect and 0.5 m x 0.5 m quadrat survey method and analyzed by Morista's index of dispersion. The whole thalli that were inscribed in the quadrat were counted as thalli density, and collected, and then air dried for several days until constant weight were obtained. Each calcified thalli were then powderized with the used of mortar and pestle. Their net sediment product and by-product were weighed separately of which both were correlated with the dried weight of the whole calcified thallus. The natural occurrence of *Halimeda macroloba* showed a randomly distributed pattern in the intertidal shore of Canhaway, Guindulman, Bohol. Approximately 95% of calcified thalli weight could contribute sediment while the remaining 5% as by-product that could be utilized in other forms. A positive relationship was observed between their mean thalli dry weight and the mean weight of sediment generated by the alga with r=0.998. Likewise, a positive relationship was also observed between the thalli density and the sediment production with r = 0.733. Therefore, the *H. macroloba* that is randomly distributed in the shore is a potential source for sediments to control coastal erosion.

Keywords: Biogenic, Sediment, Calcareous Algae, *Halimeda macroloba*, Intertidal, and Coastal Erosion

A Look into Sinulog Festival Sustainability: Triple Bottom Line Approach

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Abstract- Tourism is one of the contributors of global warming and sustainability is a forefront issue globally at present. Thus it is important to take into consideration to inculcate sustainability in any type of tourism. Events around the world produce huge amount of waste. Planning and implementing event and festival is an area should adopt green means to achieve sustainability. The triple-bottom line approach sustainability is the balance among environmental protection, social development and economic benefit. Sinulog festival is the most vivid and biggest festivals in the Philippines which is both a cultural and spiritual celebration in honor of the Holy Child Jesus which is held every third Sunday of January. However the festival has been producing an increasing amount of waste and has social-cultural issues that manifest in the behaviours of the younger attendees for the past years. The study aims to assess Sinulog festivals sustainability through the Triple Bottom Line approach and highlight the best green practices of Sinulog and present mitigating measures that will minimize the negative impacts of Sinulog. It also aims to identify effective sustainable practices from successful green events to provide valid recommendation that will benefit the organizers and the local government to a greener Sinulog festival. The study employed descriptive quantitative method of inquiry and secondary data collection from various sources such as publishes journal articles, news articles. Data content analysis was conducted basing on the TBL. Graphical presentations of relevant data were done and presented in the discussion. Sinulog festival has embedded green policies yet the implementation is not firm and needs to conduct concrete programs which should be implemented every year.

Keyword: Green event, green festivals, sustainable events, festivals, Sinulog

Free Radical Scavenging Activity of Three Varieties of Chili Peppers (Capsicum Spp.) at Varying Fruit Maturity Stages

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Abstract

This study was conducted to determine the free radical scavenging activity of three chili pepper varieties at different fruit stages using three different solvents. The free radical scavenging activities were evaluated using the 1,1-diphenyl-2-picrylhydrazyl (DPPH) method following a 3-factor factorial Completely Randomized design (CRD). Results revealed significant differences on free radical scavenging activities (FRSA) on chili

pepper extracted with different solvents, chili pepper varieties, and fruit stages. Ethanolic extracts showed the highest free radical scavenging activities followed by the sodium acetate buffer extracts then distilled water extracts. Red Hot chili pepper (3701.74 ± 157.90 TE/100g) exhibited the highest free radical scavenging activity followed by Sinigang No.1 (3460.88 ± 134.74 TE/100g) and Vulcan (3163.29 ± 284.20 TE/100g) showed the least. The red ripe mature stage (3649.29 ± 175.47 TE/100g) exhibited the highest free radical scavenging activity followed by the breaker stage (3469.45 ± 226.90 TE/100g) then the green mature stage (3207.18 ± 302.58 TE/100g). Thus, the highest free radical scavenging activity was obtained from "Red Hot" chili pepper at red ripe maturity stage using 95% ethanol solvent system.

Keywords: FRSA of Chili Pepper, Free Radical Scavenging Activity

Poster Paper Abstracts

Potency of Rose Hydrosol in Managing Keratoconjunctivitis Sicca

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Optometry Interns

ABSTRACT

Keratocojunctivitis sicca or KCS is a common and widespread ocular pathology, known also as dry eyes syndrome. Eye drops are being used to manage this. The purpose of this study is to determine the potency of rose hydrosol in managing keratoconjunctivitis sicca. The study utilized an experimental design, specifically, a pre-test and post-test design. The participants were divided into two groups, namely the experimental group (rose hydrosol) and the control group (commercial eye drops). Results showed that the two different forms of eye drops were effective in managing KCS. However, there were other participants who showed no improvement after using commercial eye drops, compared to those who used rose hydrosol. Further, the result showed that the use of two eye drops have no significant difference as indicated by the p-values obtained. However, if referring to mean difference, rose hydrosol posted a higher value. This implies that somehow, prepared rose hydrosol is more effective in managing keratoconjunctivitis sicca. Thus, rose hydrosol can be used as alternative for commercial eye drops.

Institutional Arrangement In The Management Of Angat Watershed And Dam

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ABSTRACT

This study problematizes the different institutional arrangements in managing Angat Dam and Watershed, in relation to disaster risk. It aims to understand the historical background of the Angat Dam, the different institutions managing a rural dam and watershed, as well as the linkage of the institutions. The research used case study design, with qualitative approaches such as semi- structured interviews with local LGUs, NAPOCOR officials for Watershed and Dams, DRRM; field observation in Barangay San Lorenzo where Angat Dam is located; and review of secondary data. SWOT analysis and Problem Ranking were also used to identify the strengths and opportunities and consider how to optimize these resources, as well as identify weaknesses and threats. Results show that the Angat watershed and dam is being managed by various stakeholders and interest groups with varied protocols affecting the indigenous tribes of Dumagats and informal settlers

Key Words: Angat, Watershed, Dam, Institutions, Management

Performance of Administrators on School Improvement

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Abstract

This study aimed to determine the management performance of school administrators in the school improvement plan particularly, the performance of school heads on the management functions in terms of planning, organizing, implementing, and controlling; the extent of the implementation of School Improvement practices of school heads in terms of staff development, community building, resource management, learning environment, and curriculum development; significant relationship that exists between the management functions and the implementation of School Improvement, and probed the significant influence of the management function to the implementation of the School Improvement.

Purposive sampling technique was employed to obtain the samples of the study. Collected data were analyzed through frequency count, mean and Pearson Regression-Correlation Analysis.

Results revealed that the school administrators of Antipas districts always performed their management functions in terms of; planning, organizing, implementing and controlling.

It is concluded that Antipas district Administrators always referred their school improvement plan in the Implementation of School Improvement such as; staff development, community building, resource management, learning environment, and curriculum development.

Planning, Organizing, Implementing and Controlling were highly significantly associated to the implementation of School Improvement Plan. While organizing and controlling were the significant variable factors influencing the implementation of school improvement plan.

The school administrators may consider the performance of teachers from in strategic planning based from their SWOT Analysis in order be guided accordingly.

Keywords: *School improvement, administrators, planning, organizing, implementing, and controlling*

Geo-Tagging of Mushroom Pharming in the Philippines

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ABSTRACT

The Philippines is an archipelagic country in Southeast Asia that is composed of 7,100 islands, It is basically a tropical country where rainfall is more prevalent from May to September. Though surrounded by marine water, the Philippine archipelago remains an agricultural country where rice, corn, banana, coffee and other staple crops are being cultivated in the countryside, Its tropical rainforest is diverse which is dominated by the natïve dipterocarps and other exotic tree species.

Wastes as a result of intensive agro – forestry activities are being generated which the locals oftentimes burned in the field that posed hazard to the environment. In order to discourage this practice, our research team generated technologies on mushroom pharming that are location – specific depending on the abundance of agro-forestry wastes and the suitability of mushroom species to grow in climatic conditions that prevail in the specific geographical area. With support from different institutions, we promoted the cultivation of medicinal mushrooms to the Filipinos through pro-active engagement in research as well as intensive trainings and workshops. Ligninolytic mushrooms such as shiitake (*Lentinula edodes)*, different species of oyster mushroom (*Pleurotus)*, lacquered mushroom (*Ganoderma)* and wood ear mushroom (*Auricularia* spp.) are grown by the locals. Similarly, leaf – litter degrading mushrooms such as button mushroom (*Agaricus bisporus*) and paddy straw mushroom (*Volvariella volvacea*) are also being cultivated in the countryside. Production technologies for specialty mushrooms such as *Coprinopsis cinereus*, *Schizophyllum commune* and *Lentinus tigrinus* were also introduced. However, most mushroom growers in the country adopt mushroom technologies which are not suitable in their specific area. This practice resulted in unsustainable production which contributed in the seasonal availability of locally grown mushrooms in the market thus making mushroom a luxury food among Filipinos. In order to address this problem, our research team initiated the establishment of database of mushroom growers in the country. Similarly, the prevailing climatic condition in the geographical area and the type of biomass -wastes that are being generated out of cultivating the agro – forestry commodities have been mapped. With this development, geo-tagging of mushroom pharming was facilitated. This resulted in an increased number of mushroom growers in the country that adopt the appropriate mushroom technologies which are suitable in the specific geographical area. Moreover, high value mushroom – based products other than the fresh mushrooms are already in the local market.

Keywords: agro – forestry wastes utilization, mushroom cultivation, mushroom pharming

Integration of Technology in Teaching Mathematics in Secondary Schools of Cebu Province

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ABSTRACT

This study investigated the development of using technology in Mathematics teaching, the perceptions in Mathematics teaching and learning and using technology, technology used and instructional practices of the secondary school Math teachers, and the barriers of technology integration. The data came from the private and public secondary school teachers, principals, and students of the randomly selected secondary schools of the Provinces of Cebu through a survey questionnaire and the data gathering lasted five months, from November, 2015 to March 2016. Principals, teachers, and students have disparate perceptions with regards to the integration of technology in the teaching learning process. Development in technology usage and instructional practices varies greatly from district to district where the schools are located. The result of this study adds to the previous researches in the field of teaching Mathematics for the 21st century learners. Further research in the area is needed for a more complete understanding on how ICT integration affects the Mathematics performance of the learners.

Keywords: *Information and Communication Technology, Instructional Practices, Secondary Schools, Teaching and Learning Mathematics*

Impact of hot water treatment in maintaining postharvest quality of tomatoes produced under protected cultivation (*Solanum lycopersicum var. Diamante max*)

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Abstract

Tomato is one of the most important fruit vegetable in the Philippines and it is widely distributed annual vegetable crop which is consumed fresh, processed or cooked. The study investigated the the effect of hot water dip treatments (HWD) on postharvest characteristics of tomato fruits harvested under protected cultivation. A 4 x 2 factorial experiment was laid out in Completely Randomized Design (CRD) with four treatments, each consisting of 10 fruit samples replicated 3 times. The treatments were as follows: Factor A- Hot Water Dip (HWD): T_1 – control (no HWD) T_2 - 40°C / 5mins-dip, T_3 - 45°C/ 5mins-dip, T_4 - 50°C/ 5mins-dip; Factor B- Storage condition: S_1 – Ambient room, S_2 – Refrigerated storage. Hot water temperature at 45^{o}C, 5 minutes dip and stored in refrigerated condition seemed to be promising in reducing weight loss, inhibiting shriveling delayed ripening and enhanced visual quality appearance whose effects compared well with that of 40^{o}C HWD treatment. Chemical analysis such as total soluble solids (TSS) was enhanced at refrigerated condition than in ambient condition during storage. It had no adverse effects on TA and pH of tomatoes when fruits dip in hot water temperature tolerance and stored at ambient and refrigerated conditions. Water temperature of 50^{o}C or higher were already excessive as the obtained similar results with that of non-heated tomatoes.

Keywords: *Solanum lycopersicum*, hot water treatment, postharvest quality, protected cultivation

Postharvest quality of ampalaya as affected by hot water temperature tolerance

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Abstract

Ampalaya is known for its bitter taste but has countless health benefits to offer. A postharvest experiment was conducted (1) to evaluate the effect of hot water treatment on postharvest characteristics of ampalaya fruits and (2) to determine the postharvest quality of hot water treated ampalaya stored at different storage conditions. A 4 × 3 factorial experiment was conducted in Completely Randomized Design (CRD) with 3 replications using the following treatments: Factor A- Hot Water Treatment: T1= No Hot Water Treatment, T2= 40°C, T3= 45°C, T4= 50°C all for 30 sec. dip and Factor B (Storage Condition): S1 – Ambient, 25°C, S2 - Refrigerated, 7-10°C and S3 – Evaporative Condition, 24°C, 95% RH. Results revealed that hot water treatment significantly affected the postharvest characteristics of ampalaya fruits, either or both of the hot water temperatures 45°C or 50°C improved visual quality rating, reduced shriveling and prolonged the shelf life. Hot water treatments had no adverse effect on the chemical analysis of the fruits which includes total soluble solids (TSS), titratable acidity (TA) and pH. The three storage conditions were seen to have advantages and disadvantages which have greatly influenced the quality and shelf life of the ampalaya fruits. EC storage was best in minimizing weight loss and shriveling of the fruits than at ambient storage and refrigerated condition. Ampalaya fruit stored at refrigerated condition (7-10°C) prolonged the shelf life and significantly controlled the ampalaya fruits from any disease occurrence and yellowing than at evaporative cooler condition and ambient condition. Refrigerated storage was also significantly higher on firmness, TSS and TA among all treatments.

Keywords: ampalaya, hot water treatment, postharvest quality

Indigenous Food Crops Cultivated and Collected In the Forest by the Pala'wan Tribe in Southern Palawan, Philippines

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ABSTRACT – Food shortage is one of the prime indicators of poverty, especially in rural areas. In fact, it is reported that about 795 M of the 7.3 billion people of the world are hungry people suffering undernourishment; and, they are found in developing countries. In the Philippines, about 28 percent of the 100 million Filipinos found in the rural areas are living below poverty line. Alternative sources of nutritious but natural and cheap food sources must be found; must be identified so as to contribute in easing such food shortage. This premise was the basis in conducting this anthropological study among the Pala'wan tribe in Southern Palawan who has wealth of knowledge regarding

indigenous sources of food. The results of the study indicated that there are 23 sources of carbohydrates identified; 14 of these food crops are cultivated; and nine were collected from the wild. These food sources are classified as grains, tubers, corms, and palm. For grain crops, rice – the staple food of the tribe – has 55 lines/cultivars identified. For vegetables, which are mostly foraged in the forest, 48 kinds were identified of which young/tender leaves/shoots and hearts are utilized for food.

Key words: Indigenous food crops, Pala'wan tribe

Job Competence As Perceived By the Graduating Students of WPU-Quezon Campus, Quezon, Palawan

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ABSTRACT - State Colleges and Universities are established to produce competent workforce essential for the nation's sustainable development. Thus, Western Philippines University commits to produce quality human resources and green technologies essential for such development. This descriptive study which aimed at assessing the perceived job competence of its graduates is an endeavor to check if the University is achieving its vision-mission, goals and objectives; then, necessary adjustments for fine-tuning could be implemented. Seven categories of quality job performance criteria with 25 indicators are used in determining the level of their perceived job competence. All of the 36 respondents from education, agribusiness and rural development signified that they are competent for work. However, across 25 job performance indicators, education student-respondents outdid the two programs. But, they lack leadership and ability to organize people unlike those of rural development and agribusiness. Rural development respondents lack competence in written communication and report writing. Nevertheless, all respondents from three programs indicated high competence in working with others, teamwork, effectiveness in dealing with clients and coping with change. Cognizant of the deficiencies in each of the programs, appropriate teaching strategies and measures could be implemented.

Keyword- job competence; rural development, agribusiness and education graduating students

Indigenous Fruits Collected and Used as Food by the Pala'wan Tribe in Southern Palawan, Philippines

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ABSTRACT – This study was conducted in response to the rapid deterioration and degradation of the forest covers of the province as a result of the influx of settlers coming in looking for available lands to till for agriculture. Before it is too late to identify the indigenous fruit-bearing plants in Southern Palawan, an inventory should be done. Thus, this study was implemented to identify the fruit-bearing plants in the study sites employing a qualitative approach in data collection. Indirect-participant observation, community immersion, unstructured interviews with key informants and triangulation method with the tribal members were the strategies employed in the data collection. Pictures on parts of such fruit-bearing plants were also taken. Based on the results of the study, there are 37 fruit-bearing plants identified as sources of edible fruits. These are categorized into tree-type, vine/climbing type, and other types of fruit-bearing plants. For tree-type fruit-bearing plants, 27 are identified; common of these plants are the wild mango, wild *rambutan* (several kinds), and durian. There are five kinds of vine/climbing type of fruit-bearing plants of which *tabo* is popular; and, six for other types.

Keywords: Indigenous fruit-bearing plants, Pala'wan tribe

Economic Vulnerabilities Of Women In Tañong Fishport Trading System

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This study examines the vulnerabilities of women inside the premises of the Fish Port based on their experiences and on how they were able to survive the working conditions present in the workplace. This study is anchored on the theory of Access

Model of Ben Wisner (2003) as theoretical lens, the study analyses the ability of the women to deal with the conditions they face as to access to resources needed for livelihood. The study is a qualitative study that explores the narratives of economic vulnerabilities among women in the fish port trading system using in-depth interview of 10 purposively selected women and field observation. Results show that women working in the Fish port participate in the bidding and selling of the fish catch from midnight and early morning to supplement family income. These women are at risk in terms of health, profit, family, social environment, and hazardous events. In conclusion, they chose to remain because of the easy flow of income in the workplace. The active participation and economic contribution in the fish trading system of women mirror empowerment to their family despite being exposed to vulnerabilities of the workplace.

Keywords: Fish Trading System, Tañong, Women, Economic Vulnerabilities, Fish port

Ecological Assessment of the Seagrass Community of Ulotayan Island, Capiz, Western Philippines

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ABSTRACT

Sea grasses plays a major role in marine ecosystems serving various ecological functions like food for marine herbivores, nursery and habitat to many species, sediment filter, erosion buffer and nutrient cycling. It is likewise imperative to gather data as basis for sustainable use, management, protection and conservation of this resources.

This research was set to assess the ecological status of sea grasses in Ulotayan Island, Capiz, Philippines. Specifically this study was conducted to document the species composition, determine the cover abundance and density of the seagrass beds and note the associated flora and fauna of the said ecosystem.

Field sampling methods was conducted in October of 2015 and in April-May of 2016. Three sampling sites were plotted in Sitio Looc (Proper) . Transect plots and quadrat technique was employed. Protocols as cited in English (1997) and as suggested by Seagrasswatch.org was followed.

There were five reported sea grass species in the area ; *Halodule uninervis , Halophila minor, Thalassia hemprichii, Enhalous acoroides,* and *Cymodocea serrulata.* The species are variedly distributed in the island. Of the reported species, *T. hemprichii*

has the highest cover present in all transects and accounting for 35.00 % of the total mean cover abundance.

Associated flora were also observed thriving with the sea grasses, the species includes red , green and brown algae. Likewise macrofauna living along the seagrass beds includes, sponges, echinoderms, shrimps, crabs, mollusks, soft corals, anemones , jelly fishes and juvenile fishes .

Keywords: seagrass, marine ecosystem, island ecology, marine flora

Traditional Games in Camotes Islands, Cebu, Philippines: Proposed Traditional Games' Enhancement Program

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ABSTRACT

The traditional games in Camotes Islands; San Francisco, Poro, Tudela, and Pilar are one of the natural beauties of the people. This study was conducted to find out what traditional games are still played by children nowadays that were enjoyed before by old folks, its characteristics, how they were played this time and some reasons of not playing them anymore this time as reported by the children, teenagers, adults and older folks . It sought further programs of the school or barangay where traditional games are promoted as provided by school heads and barangay captains in the questionnaires and interviews. The study reveals that many traditional games usually played by adults during their childhood days are no longer enjoyed by present children like "Shatom" (Bat-Cobra), "Bombatsu", "BAgol", "Karang" (Bamboo stilt), "Buwan-Buwan", "Jolen" (Holen), "Luthang", "Kasing" (Top) and others. It was reported that the games are played this time just almost the same. If there are changes, it matters only on the available material which is already available in the market now. Many games were least played or no longer played anymore because children and teenagers love to stay at home after school and do research and play computer games. Aside, they do not have area for playing the games since streets and highways are busy with vehicles. There are lots of gadgets, modern materials and equipment and competitive games already available for playing. The schools and barangays do not have program of activities for this that would give them opportunities to enjoy it. Traditional games are not almost evident in the localities of Camotes Islands, Cebu, Philippines as they are not anymore patronized by children this time and the schools and barangays do not have program of activities to promote them. However, some classes in Physical Education make use of these games for physical fitness.

Key words : traditional games , physical fitness, education, recreation

Seaweed Concentrate as Foliar Fertilizer for Lettuce (Lactuca Sativa L.)

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ABSTRACT

Seaweed is valuable and an inexpensive resource for agriculture because it can be used as fertilizer or even a substitute for soil. However, its effect to leafy vegetables such as lettuce is not fully understood due to limited information. This study was conducted to give a closer attention to the effects of seaweed concentrate applied as foliar fertilizer on the growth of lettuce. The experiment consisted of three treatments: T_1 = Control (water alone), T_2 = 25% seaweed concentration (SC), T_3 = 50% SC, and T_4 = 75% (SC) with three replicates each laid out in Completely Randomized Design (CRD). Data gathered were compared and analyzed using the ANOVA. Results showed that seaweed extract did not have any significant effects on plant height, number of leaves, size of leaves, diameter of whorl, length of roots and weight of roots. However, significant differences were observed in the total herbage yield of lettuce. This observation implied that seaweed foliar fertilizer can increase herbage yield of lettuce.

Keywords: seaweed extract, fertilizer, lettuce, herbage yield

Teachers' Learning Support Mechanism and Pupils' Self-Regard

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ABSTRACT

The study was conducted to determine the teacher's learning support mechanism in relation to pupils' self-regard in randomly selected elementary schools of Magpet East District. The research design used was descriptive correlational method with 200 (60%) respondents allocated equally to the five (5) schools.

The descriptive design was used to describe the level of teachers' learning support mechanism as measured through supplementary materials availability, teachers' coaching ability, and teachers' facilitating skills; and pupils' self-regard as measured in terms of self-esteem, self-valuing, and self-regard. The correlation method was employed to determine the significant relationship between the level of teachers' learning support and pupils' self –view.

The study disclosed that among the teachers' learning support mechanism, the highest was teachers' coaching ability, followed by teachers' facilitating skills, then the availability of supplementary materials which were all as high. The overall level of teachers' learning support was high.

In terms of the level of pupils' self – regard , self-valuing was the highest, followed by self – esteem, then self – view which were all described as high. The overall level of pupils' self – regard was high.

The findings revealed that there was a significant relationship between teachers' learning support mechanism and pupils' self – regard which means that the teachers' learning support can affect the pupils' self – regard.

Keywords: Teachers, learning support, pupil, self-regard

Trace Levels of Copper (Cu^{2+}) Can Alter the Shell Morphological Development of the Freshwater Snail, *Radix quadrasi* (Gastropoda: Pulmonata)

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ABSTRACT

Copper (Cu^{2+}) is one of the heavy metals from industrial and household wastes, and agricultural run-offs that has become a major pollutant in freshwater ecosystems

affecting many animals including snails. However, there are very limited studies on how trace levels of Cu^{2+} can alter the linear and shape characters of a gastropod shell. To determine the effects of Cu^{2+} on shell morphological development, laboratory-reared *Radix quadrasi* juveniles (4-day post hatching) were exposed to different concentrations of Cu^{2+} (0.8µg/L, 4µg/L and 20µg/L) using static renewal toxicity test for 28 days. Principal component analysis revealed that linear shell character combinations of *R. quadrasi* subjected to Cu^{2+} did not diverge from the control group. Geometric morphometrics analysis of the shell shape (7 type I landmarks) showed significant Mahalanobis distance between juveniles exposed to 20µg/L Cu^{2+} and 4µg/L Cu^{2+} compared to control group, while juveniles exposed to 0.8µg/L Cu^{2+} exhibited a fluctuating Mahalanobis distance from the control snails. Only juveniles exposed to 20µg/L Cu^{2+} and 4µg/L Cu^{2+} exhibited abnormal shell formation marked by widening of the body whorl and shortening of the spire, and shell thinning the longer they were exposed to Cu^{2+}. The present findings suggested that shell development of *R. quadrasi* can be altered even by trace levels of Cu^{2+}.

Constructing the Bulungan Shorefront Area as Contested Space: The Case of Barangay La Huerta, Parañaque

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ABSTRACT
This study focuses on the use of the shorefront space as socially constructed by varied community residents in an urban coastal area of Barangay La Huerta, Parañaque. The key functions of shorefront areas include filtering pollutants, reducing the amount of pollutants that enter the body of water, and stabilizing soils and protects it against erosion (Hudson et al. 2012). The study argues that the shoreline, beyond its environment related functions, has many other competing uses as far as the community residents are concerned. They consider it as a contested space in terms of livelihood, leisure, playground, residential, socialization, garbage dumping site, and natural buffer. Thus the study dwells on the following objectives: (a) to know how the community residents frame the function of the shorefront space, (b) to find out the factors that influence how they understand the function of the shorefront space, and (c) to determine how power relations influence the access and use of the shorefront area of La Huerta. The research utilizes the Political Ecology theory as its framework which understands environmental change as a result of power relations causing high variable access to resources (Taylor, 1999). Moreover, the study utilizes descriptive and exploratory design and uses a qualitative research method for data gathering through the conduct of key informant interviews of selected officers and members of the Unified

Cooperative and survey using semi-structured interviews of selected community residents of Barangay La Huerta.

Probability distribution of Philippine earthquakes grouped per fault line and volcano

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Abstract

The Pacific Ring of Fire is an area in the Pacific frequented by numerous earthquakes and volcanic eruptions. The Philippines is situated in the Pacific Ring of Fire. The country experiences about 200 earthquakes with magnitude 1.5 or greater per year. Up to this date, there is still no way to predict earthquakes. In this regard, this study aimed to find the probability distribution of earthquakes with magnitude of at least 5. Earthquakes were grouped per fault line and per nearby volcano. Fifty-year daily earthquake data were collected from Philippine Institute of Volcanology and Seismology (PHILVOCS). The data were organized by removing earthquakes with less than 5-magnitude and by performing distribution fitting. The frequency of earthquakes of having at least magnitude 5 was also found. This study can be used by the public to give a reasonable estimate when an earthquake with at least magnitude 5 will occur. This study can also be used by insurance companies providing Real and Property Insurance.

Keywords: earthquake, fault line, volcano, probability distribution

Collaborative Management Of Beach Tourism: Pagudpud As Case Study

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ABSTRACT

This study illustrates how the different sectors collaborate in managing and promoting the beach tourism industry in Pagudpud. Anchored on the theoretical lens of Kapucu et al. (2009), this study argues that sectors act as the public managers and are interdependent with each other in achieving a common goal. This study highlights the

mode of collaboration among the sectors, roles played by each sector including emerging issues as they collaborate. Case study was employed using methods of interview, field observation and review of secondary sources. Tools used were transcripts and field notes. Five themes summarized the findings namely economic, environmental, socio-cultural and security. While collaboration is done, issues emerged on responsibilities for infrastructure development and inter-sector competition. Results show that the three sectors collaborate through employment of locals, conducting basic life support trainings, having clean-up drives and funding for environmental projects. Issues on collaboration were project approval between the local government and private sector and the perception of rivalry in livelihood between the local community and private sector. In conclusion, the local government, private sector and local community act as the public managers in Pagudpud and collaborate with each other in order to achieve sustainable beach tourism.

Keywords: collaborative management, public managers, beach tourism, sustainable tourism, Pagudpud

Grasses in the University of Eastern Philippines, Catarman, Northern Samar

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ABSTRACT

This study aimed to present information on the species composition, distribution, local names, economic uses, and the ecological significance of grasses in the University of Eastern Philippines, University Town, Catarman, Northern Samar. Purposive sampling was used in the study, complemented by additional techniques such as transect walk, ocular surveys, and interviews with local residents to assess the presence and abundance of grasses in the area within the last five to ten years, the local names, and the economic and ecological uses of grasses. There were 58 species of grasses, and among them, the most abundant and widely distributed was cogon (*Imperata cylindrica* [L.] Beauv. var. *major* [Nees] E. C. Hubb.), which was observed in all the sampling sites. The least frequently observed was Bermuda grass (*Cynodon dactylon* [L.] Pers.), while the least abundant was sugarcane (*Saccharum officinarum* L.), which was seen and observed in only a few patches in some of the sampling sites. Thus, it can safely be said that there is still an abundance of grasses in the University Town, which are utilized by the local residents for various purposes.

Keywords: species composition, abundance, distribution, grasses, University Town

The Environmental Literacy of Philippine Elementary and Junior High School Teachers

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Abstract

Teachers play pivotal roles in developing future generations' environmental literacy (EL). This descriptive, correlational & evaluative study aimed to investigate teachers' EL in order to assess their readiness and capacity to impart it among their learners. The 2015 Programme for International Student Assessment (PISA) framework of Hollweg, et. al., served as the theoretical basis for assessing the teachers' EL. Specific objectives include determining and comparing teachers' EL in terms of the following component variables: environmental knowledge, dispositions, competencies, and responsible behavior; and investigating causal relationships among these variables. Overall, teachers' obtained less than 50% of the total scores in knowledge and competencies. Thus, both elementary and high school teachers have limited readiness and capacity to impart environmental education in compliance with Philippine Republic Act 9512 due to lack of environmental knowledge and competencies. Providing trainings that would improve teachers' knowledge, competency and EL as a whole is recommended.

Keywords: environmental literacy, environmental knowledge, climate change, elementary & junior high school teachers, Philippines.

A Cross-sectional Study of College Students' Environmental Psychographics

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Abstract

The purpose of the study is to compare college students' environmental psychographics, i.e., knowledge about global warming, environmental attitudes, perceptions, concerns, and actions. Purposive sampling was done in a Manila-based comprehensive University, concerning eight colleges at two distinct points in time, i.e., in 2010 (n = 1160) that served as the baseline, and in 2016 (n = 1052) for comparison. It was hypothesized that there would be positive changes in these variables brought about by the implementation of environmental education policies, e.g., RA 9512, and activities promoting environmental awareness, e.g., Youth for Environment in Schools (YES) Organization under Department of Education DO 72, s. 2003. Also, students' direct experiences with frequent natural calamities were taken into account. However, descriptive and inferential analyses using effect sizes revealed no significant changes in the six variables at these two occasions. Further study involving elementary and high school teachers' capacity to impart environmental education is recommended.

Key words: cross-sectional study, college students, global warming, environmental psychographics

Academic Performance, Problems and Learning Styles of Esgp-Pa Grantees Of Ctu-San Francisco Campus, San Francisco, Cebu

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ABSTRACT

Academic performance of students has been the main concern for teachers over the years. Dunn and Dunn, 1999 (qtd from Bautista, 2006) postulates that individuals have unique patterns for learning new and difficult information. Article IV, Section 1 of the Philippine Constitution states that *"to protect and promote the right of the citizens to qualify education at all levels and shall take appropriate steps to make such education accessible to all."*

CTU-San Francisco Campus has 34 grantees which showed that 15 grantees have intrapersonal intelligence followed by existentialist and kinesthetic with 5 respectively. In terms of IQ, 22 or 65% of the grantees fall *below average*, with almost the same percentage of 16% or 6 grantees who have *Average* and *Above Average* IQ. On the other hand, 15 grantees who took English showed that their academic performance is good with 58.82% or 10 grantees. Moreover, there were 6 grantees or 35.29% who fall under

very good and only 1 grantee or 5.88% who has superior academic performance. Grantees who enrolled Math reveals that most of them fall under *Very Good* or 91.67% and only 1 student who falls under good. The academic performance of ESGP-PA grantees implicates that most of them have difficulty in learning the language. In terms of academic problems taken from Guidance Form 1 (GO) 2015 Edition, results showed that there is no significant academic problem experienced by the students as can be seen from the final rating in English and Mathematics obtained by the grantees and from their answers in the questionnaire.

Based on the findings, a remedial class must be given to these ESGP-PA grantees especially in English communication. This remedial class is called ESGP-PA Bridging Program.

Keywords: **ESGP-PA, Learning Styles, Academic Problems, Multiple Intelligence, Bridging Program**

Influence of Effective Microorganism (Em) on the Growth Performance Of Garlic(Allium Sativum)

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Abstract

This study was conducted to evaluate the effects effective microorganism (EM) on the growth of garlic as a natural fertilizer. Each garlic plant seedling was applied with 250ml of EM mixture. The amount of the diluted EM mixture served as the treatments such as the following: T1 = control, T2=50% EM, T3=75% EM and T4=100% EM with 7 replicates laid out in a completely randomized design (CRD). Data on the vegetative and reproductive growth potentials of garlic plants were gathered and treatment means were compared and analyzed using analysis of variance (ANOVA). Results showed no significant differences among treatments on the vegetative growth of garlic plants, while the diameter and the width of the garlic bulbs showed significant differences demonstrating that plants that were applied with EM had improved diameter and weight of garlic bulbs as compared to the control.

Keywords: Effective microorganisms (EM), growth, performance

Increasingly colder waters induce physiological and behavioral changes in guppies (*Poecilia reticulata*)

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Tropical fishes thrive in narrow temperature ranges thus, may be more vulnerable to slight deviations in temperature. While the effects of warming may have a serious impact on the fitness and survival of fishes, little information is available regarding the impacts of acute cold stress. This study examined guppies exposed to different temperatures (i.e., 18, 21, 24 and 28^{o}C). Respiration rate and carbon dioxide production were measured whereas swimming behavior was quantified at 1-min intervals for two hours. Guppies at 28^{o}C increased their respiration rate after 1 hr. In contrast, fish in colder waters appeared to show decreasing rates through time (from ~92-119 to ~52-56 opercular movements per minute). Carbon dioxide production also showed decreasing rates with declining temperature. Fish were generally less active in colder waters such that swimming and opercular movement was pronounced at 21^{o}C. In addition, the time it takes for fish to display erratic swimming activities became shorter as temperature declined. This study suggests that acute cold stress induces physiological and behavioral changes that can affect the survival of freshwater fish populations.

Keywords: Acute cold stress, guppy, fish physiology, behavior

Perceived Level of Importance of the Ecosystem Services and Willingness to Pay for Preservation of an Urban Forest: Arroceros Forest Park, City of Manila, Philippines

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ABSTRACT

Arroceros Forest Park (AFP) is an urban forest along the university belt in Manila. It provides important regulating and cultural ecosystem services (ES) to the people of

Manila such as air quality regulation, climate and temperature regulation, recreation, education and research. In this study the perceived level of importance on 6 urban forest ecosystem services (ES), attitude and motivation, and factors that influenced their willingness to pay (WTP) for preservation of AFP was assessed through a survey conducted on January 2018 to the college students of 4 universities in Manila. Survey showed that air quality regulation (mean=3.73, SD=0.018) and climate and temperature regulation (mean=3.71, SD=0.018) are two most important urban forest ES as perceived by the students. The willingness to pay of the students was motivated by the bequest value (concern for future generation) and ecological function value of AFP while the protest response was influenced by economic reason. Binary logistic regression showed that the significant variables that influenced the WTP to donate money for the preservation of AFP are environmental attitude, allowance or income, and residence. The WTP is weakly correlated with allowance (r=0.193, p=0.000). Male students had higher WTP than female despite their lower allowance but the mean WTP is not significantly different (t=1.13, p=0.258). This study provided evidence that pro-environment decision is significantly influenced by attitude and knowledge to environmental issues. Perceived high importance value of air quality regulation, climate and temperature regulation, bequest value, and ecological value may give important insights into the demand of students for these ecosystem services and indirect use value.

Keywords: Arroceros Forest Park, attitude, ecosystem services, urban forest, willingness to pay

Growth Performance of Crossbred Landrace and Large White Weanling Pigs Supplemented with Organic Acid in their Diet

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ABSTRACT

Acidifiers added to pig diets may potentially help improve growth performance by improving digestive processes. However, a clear mode of action has yet to be described. This experiment sought to determine the effect of organic acidifiers to the growth performance in terms of gain in weight and feed conversion ratio (FCR) of crossbred landrace and large white weanling pigs. A total of nine crossbreed weanling

pigs were used in a four week feeding trial composed of 3 treatments (T1=Control, T2= provided with organic acidifier for two weeks , and T3 = provided with organic acidifier for three weeks). Results showed that adding organic acid supplement to weanling pig's diet for two and three weeks did not significantly increase the feed conversion ratio and average weekly gain of the weanling pigs but managed to increase by some point at week two, three and four of the study. Organic acidifiers appeared to decrease the FCR of T2 by 20%, 20% and 5% respectively while T3 decreased feed conversion ratio by 9%, 10%, 10% respectively. On the other hand, the acidifier managed to increase the gain in weight by 8%, 11%, and 7% respectively for T2 and 1%, 2% and 8% for T3. This suggests that the addition of organic can improve the weight gain obtained from the feed.

KEYWORD: Organic acidifier, landrace, large white, FCR and weight gain

Livelihood Extension Program of Ctu-San Francisco Campus, Improving Outcomes and Enhancing Programs of Implementation

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ABSTRACT

Livelihood programs are some ways of improving and augmenting the income of the people, most especially to the unemployed, out of school youths and unemployed mothers. The extension program on Basic food preparation and processing of the CTU-San Francisco Campus paves the way of augmenting the income of the beneficiaries of the said program. Based on their evaluation, it was found out that the activity was a great help in generating income for their daily needs and for the preparation of healthy food for their family, thus malnutrition will be abated. Some of the trainees, got a problem in finding for a capital that will help them to start for a small business, likewise others also find difficulty in selling and record keeping of sales. Based on the survey, some of the trainees suggested to have a follow up training or enhancement training to acquire more skills and knowledge, some said that the training hours was not sufficient. The training gives an input and an eye opener for the out of school youths an unemployed people to establish their income through the knowledge and skills they acquired during the training. The livelihood programs particularly the Basic food preparation and processing gives an opportunity to the unemployed to acquire an income, and the underpaid employees may also have an additional income. A

cooperative among the participants may be established to further acquired financial support from the government through livelihood programs

Keywords: skills, processing, food, income, livelihood

Efficacy of Citric Acid Supplementation as Feed Additives on Newly Weaned Piglets

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Abstract

Organic acids have been proven to be beneficial in improving average daily gain (ADG) and increasing nutrient digestibility. Citric Acids are a common organic acid included in some diets for this reason. This study was conducted to determine the efficacy of citric acid supplementation on the growth performance of newly weaned piglets. The piglets were assigned to 3 treatments replicated 3 times. Treatment 1 piglets were fed with commercial starter feeds with no citric acid supplementation. Treatment 2 piglets were fed with commercial starter feeds with 1g of citric acid, and treatment 3 with 10g granulated citric acid as feed additive. Result showed no significant effects ($P<0.05$) on the growth performance of newly weaned piglets supplemented with different levels of citric acid. However, numerical data showed (T_1 Gain in weight: 3.3, 2.2 and 3.6 while T_3 are 4.3, 3.7 and 4.1) that the growth rate of the piglets mixed with citric acid were higher compared to the control but its growth rate gradually decreased. Citric Acids are organic acids which are extracted from citrus fruits whose sour taste can promote feed intake without harmful effects on the experimental animals and the environment.

Keywords: Citric Acid, Supplementation, Organic Acids, Additives, Mortality

Gender Roles of Bangsamoro Women Teachers on Class Room Discipline

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ABSTRACT

The purpose of this study was to determine the Bangsamoro teachers' gender roles towards classroom discipline. This study used the descriptive correlational research design. The survey was used to gather the Bangsamoro teachers' gender roles, attitudes

and classroom discipline. Regression was used to measure the relationship of variables in this study. This study was conducted at the selected public elementary and secondary schools in the Province of Maguindanao. The respondents of the study were 200 elementary and secondary Bangsamoro teachers focusing on the major ethno linguistic groups that comprise the Bangsamoro (Maguindanaon, Iranon and Maranao).

The findings revealed that the Bangsamoro teachers possessed a progressive awareness on gender norms and attitudes towards 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 were not significant to the awareness and attitudes as well classroom discipline.

Keywords: Gender roles, attitudes, bangsamoro, women teachers.

Bangsamoro Women and their Socio-Moral Development

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ABSTRACT

This study sought to determine the values of the Bangsamoro women and their socio-moral development. It utilized a normative survey research. Data collection was done through a questionnaire.

A total of 200 Bangsamoro women from the four municipalities in the Maguindanao Province constituted the sample of the study.

Findings on the values of the Bangsamoro women revealed that the weighted mean was 4.62 and were treated as Obligatory or Fardhu as Islamic values. The values of the Bangsamoro women respondents turn out that there were fifteen (15) Value Dimension which came out to be within Value 5 (Obligatory/Fardhu). These include values on *greetings* with the mean of 4.95*; what to acquire (*4.65); *important persons;* (4.98) *prayer* (4.71); *affection for sickness* (4.82); *Muhammad s.a.w.s.* which got the highest mean (5.00)*; prayer before sleeping (*4.56); *day of obligation (Friday)* (4.85); *wealth* (4.87); *Ramadan* (4.84); *animals* (4.81); *worthy thing* (4.62); *intellect* (4.55); *property* (4.63) and *concern for others (*4.92).

Finally, five (5) Value Dimensions came out as Recommended or Sunnah values. These are values on: *preference at home* (3.78); *religion* (3.71*); noontime prayer* (4.45); *nature* (4.31) and *resolving conflict* (4.41).

However, the demographic profile of the respondents like age, civil status, educational attainment and monthly income did not significantly influence the Islamic values of the Bangsamoro women.
Moreover, the respondents obtained 4.45 in their socio-moral development, the highest level of socio-moral development. Finally, the relationship between value practices of the Bangsamoro women with the socio-moral development was significant at .01 level, although relationship was considered weak.

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Keywords: Bangsamoro, women, socio-moral, development.

Performance of Broiler Chickens (*Gallus Gallus L.*) Supplemented with Garlic (*Allium Sativum L.*) Powder as Feed Additive

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ABSTRACT

This study was conducted to determine the effect of powdered garlic as feed additive on broiler performance in terms of feed conversion ratio (FCR). The broiler strain used in the experiment was Cobb 500 which was randomly selected and assigned to the control group (T_1) which were fed with plain commercial feed rations, and the experimental group ($T_{2)}$ with commercial feeds supplemented by 2% powdered garlic. The type of commercial feeds used was changed according to the age of the broilers from booster to starter to finisher. The experiment was laid out using the completely randomized design (CRD) and the data compared through the analysis of variance (ANOVA). Results showed that the mean FCR of T_1 of 1.76 was higher than T_2 of 1.6, initially suggesting that birds whose feeds were supplemented with powdered garlic were relatively more efficient. However, the differences between treatments were found to be statistically insignificant. Testing of different levels of powdered garlic feed supplementation on broilers is recommended to further determine its potential as a feed additive for improved FCR.

Key words: Broiler, Garlic Powder, FCR, Feed intake, Gain in weight

Effectiveness of the Communication Strategies in Disaster Risk Reduction in Infanta, Quezon

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Abstract

Communication strategies serve as blueprints for how information will be exchanged. Communication is highly imperative to avoid the occurrence of natural disasters. Generally, the objective of the study is to assess the effectiveness of the communication strategies in disaster risk reduction programs and projects of the Local Government Units (LGUs) in Dinahican, Infanta, Quezon. Research methods include conduct of survey among 60 randomly respondents consisting of 30 male and 30 female, focus group discussion, key informant interview among local officials, and review of documents. Data were analyzed through descriptive statistics and QDA Miner Lite for the thematic analysis.

Findings revealed that the respondents understand the key message in disaster risk reduction programs and projects of the LGUs. The respondents feel empowered particularly the female respondents in terms of knowledge on natural disasters. Communication channels on disaster risk reduction were maximized by the LGUs such as face-to-face communication, mobile phone, Information Education and Communication materials, and usage of megaphone. Further, the generated themes include attitude as barrier to effective communication strategies, DRR communication message on storm surge and evacuation, power of local officials in disseminating DRR information, and northeast monsoon as a major reason for poor attendance in meetings.

Key words: *effectiveness, communication strategies, disaster risk reduction*

Rice Production and Climate Change: A Case Study of Barangay Marawa, Jaen, Nueva Ecija,

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ABSTRACT

This study seeks to identify how the farmers manages to produce crops, specifically what techniques do they take in order to produce rice. As well as describe how resilient the farmers are to climate change and define the situation of rice productivity in Barangay Marawa, Jaen, Nueva Ecija. The objectives of this study are to determine the condition of rice production in response to climate change, to identify the techniques that the farmers use to produce rice efficiently, and to enumerate the impacts of climate change in the productivity of the farmers in rice production. This study is anchored on the theory of challenge and response (Schmandt & Ward, 2000), which explores how society still functions even when faced with certain ecological stress or shock. This theory primarily focuses on the cycle of disruption and recovery that the society undergoes through in response to the challenges and difficulties. The qualitative methods that will be used in conducting the study are interviews, survey, observation and review of secondary data. After thorough research, the researchers found out that the rice production of the farmers is usually affected when disrupted by weather disturbances or changes in climate. They prevent this by planting and harvesting earlier. Lastly, that the rice production in the area is stable and does not experience shortages.

Keywords: climate change in the Philippines, resiliency, rice production in Jaen

Teachers' Knowledge on the Ncbts Domains: Its Influence to the Effectiveness of Secondary Schools

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Abstract

Generally, this study sought to determine the extent of teachers' knowledge on the National Competency Based- Teacher Standards (NCBTS) domains in relation to school effectiveness of secondary schools in Arakan District.

Specifically, the researcher endeavoured to determine the socio-demographic profile; the level of the teachers' knowledge on the NCBTS domains; the level of the school effectiveness and the significant influence of the socio-demographic profile and NCBTS domains on school effectiveness.

Complete enumeration was employed to obtain the respondents. There were 51 teachers from public secondary schools of Arakan District, data were gathered and tabulated using frequency, percentage to determine the socio-demographic profile, the

level of the teachers' knowledge on the NCBTS domains and its relation with school effectiveness.

On the level of the teacher's knowledge on the NCBTS domains and on the level of school effectiveness they were rated very satisfactory.

The socio-demographic profile and NCBTS domains do not significantly influence the school effectiveness.

The influence of NCBTS domains in terms of teachers' performance, curriculum and instruction, and community involvement has significant influence on school effectiveness in terms of achieving mission, vision, goals and objectives.

This implies that when teachers' have knowledge on the NCBTS domains they contribute to the realization of school effectiveness in achieving mission, vision, goals and objectives. Moreover, realization of school effectiveness would be enhanced when teachers have relevant trainings to NCBTS.

The Rubiaceae of Marinduque Wildlife Sanctuary, Philippines

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Abstract

Rubiaceae (coffee family) is one of the most specious angiosperm family in the Philippines with endemic genera such as *Antherostele, Greeniopsis, Kanapia, Sulitia* and *Villaria.* Most of the accounts of Rubiaceae in the country are outdated thus there is a need to conduct various botanical exploration for inventory and updating that will have an impact in biodiversity conservation. In this study, a rapid inventory of the Rubiaceae species in Marinduque Wildlife Sanctuary (Mt Balagbag side) was conducted. A total of 173 taxa were counted belonging to 7 genera such as *Hedyotis, Coffea, Lasianthus, Ophiorrhiza Psychotria, Urophyllum, Villaria.* Indices of diversity were computed for the first time in this habitat for Rubiaceae species and are as follows; Dominance=0.305; Simpson=0.696; Shannon=1.48.

Mathematical Analysis of the Different HIV Immunology Models

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Abstract

Human immunodeficiency virus (HIV) is a virus that result to acquired immunodeficiency syndrome (AIDS) if not controlled. HIV attacks the body's immune system by destroying CD4+ T helper cells that are responsible to fight off infections. Once these cells are at low-level, the body cannot combat infections and other diseases. Understanding the dynamics of the HIV infection is important in obtaining insights about HIV epidemiology.

Mathematical models are used to analyze the dynamics of the HIV pathogenesis and to test the effects of various drug treatments. In this study, various mathematical models of HIV pathogenesis were considered and analyzed. The analyses included the determination of equilibrium values and stability analysis. Numerical simulation was implemented to further analyze the behavior of each model.

Keywords: dynamical system, epidemiology, HIV, mathematical modelling

Analysis of Cadmium and Lead Concentrations in *Pteria Penguin* Collected in Balayan Bay, Calaca, Batangas

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ABSTRACT

Bioindicators are organisms that can withstand increased heavy metal pollution in the environment due to rapid industrialization and urbanization. In this study, penguin wing oyster, *Pteria penguin*, was used as a bioindicator in assessing cadmium (Cd) and lead (Pb) concentrations in Balayan Bay, Calaca, Batangas from December 2017 to February 2018. Heavy metal analyses for Cd and Pb were conducted using atomic absorption spectrophotometry (AAS) in oyster and sediment samples, and inductively-coupled plasma optical emission spectrometry (ICP-OES) in seawater samples. Cd and Pb concentrations in the seawater are below the standards set by DENR for marine water quality which are 0.005 mg/L and 0.05 mg/L, respectively. Cd and Pb concentrations in oyster samples were also consistently below detection limits. In sediment samples, Cd was not detectable while Pb concentration ranged from 0.18 to 0.73 mg/kg. Levels of Cd and Pb concentrations in *Pteria penguin* conformed to the standard limits set by the Food Standards Australia New Zealand (FSANZ) and Food Safety Authority of Ireland

(FSAI). Cd and Pb metals may still accumulate in the sediments and food chain and may pose health risk for consumers due to bioaccumulation.

Keywords: heavy metal pollution, *Pteria penguin*, bioaccumulation, bioindicator

Alkaline water decreases blood glucose, RBCs, and WBCs in adult Philippine silver perch (*Leiopotherapon plumbeus*)

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The Philippine silver perch, *Leiopotherapon plumbeus*, commonly known as ayungin, is an endemic species and was once the most abundant freshwater fish in Laguna de Bay. Little to no data has been published on its biology and culture in the Philippines. In this study, adult silver perches were exposed to different water pH levels (pH 5, 8, and 9) for one week. Blood glucose concentration and red and white blood cell count were then determined. Notably, 100% mortality was observed in fish exposed to water at pH 5. Meanwhile at pH 8 and 9, growth of fish was not significantly affected by the water pH but blood glucose levels (24.0 $\pm$ 5.2 mg/dL) of fish at pH 9 were decreased compared to the blood glucose levels (70.0 $\pm$ 4.0 mg/dL). Meanwhile, RBC and WBC counts increased in fish exposed to pH 9. Results from this study showed that low pH levels are toxic, and at higher pH levels physiological stress increased suggesting adaptive response of silver perch to adverse water quality.

Keywords: Water quality, Ayungin, fish toxicity

Diversity and Community Assembly of Macroinvertebrates Along the Dakil River, Up Laguna Land Grant, Paete, Laguna, Philippines

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ABSTRACT

Macroinvertebrates are distributed in varied habitats wherein one of their highest diversity is concentrated in tropical forest streams. Despite their many ecosystem services, few data are available regarding their biology and ecology in the Philippines. This study aimed to determine the diversity and community assembly patterns of macroinvertebrates in the Dakil River of Laguna Land Grant, Paete, Laguna, Philippines. A total of 25 3x5 m (15 m^2) quadrats were randomly set along the four tributaries and the main Dakil River (5 quadrats in each station). The streams' physico-chemical and habitat features were measured. Standardized sampling was performed via direct handpick, kick and sweep technique, and cascade sieving of substrates. A total of 572 individuals (7 classes, 15 orders and 29 families) were collected from the five stations. Hexapods (16 families) constituted 55% of total abundance, followed by gastropods (21%) with five families. DW1 had the highest diversity index (H'=2.59) while DW2 had the lowest (H'= 1.69). MR had the high taxon evenness (E=0.78) while DW2 had the lowest (E=0.41). Taxon accumulation curve exhibited ß-dominated diversity with MR having the highest completeness ratio (0.66). Macroinvertebrates in the Dakil River, UP Laguna Land Grant have preferred microhabitat within the site as supported by Canonical Coresponce Analysis (CCA). The Global Linear Mixed Model (GLMM) revealed that species richness was highly affected by pH (E=0.3777, p<0.05) while the abundance, were inversely affected by river velocity (E=-0.1059, p<0.01), canopy cover (E=-0.0181, p<0.001) and conductivity (E=-0.1944, p<0.001). In Akaike information criterion (AIC) canopy cover + conductivity + pH + river velocity revealed to be most essential to abundance of macroinvertebrates (ΔAIC_c=3.52, $wAIC_c$=0.11) while null (ΔAIC_c=2.87, $wAIC_c$=0.06) for species richness. The present study suggested a complex macroinvertebrate diversity across the Dakil River in the UP Laguna Land Grant, Paete, Laguna reflecting its importance as an important biological refugia.

Keywords**:** Dakil River, diversity, Taxon Accumulation Curve, Canonical Correspondence Analysis (CCA), Global Linear Mixed Model (GLMM)

How to get financially ready for "The Big One"?

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Abstract

The Philippines is situated in the Pacific Ring of Fire, an area in the Pacific frequently visited by earthquakes and volcanic eruptions. A major fault line in the country, the West Valley Fault, is being monitored for movement. Such movement is predicted to bring a 7.2 magnitude earthquake, which is popularly known as "The Big One". According to studies, "The Big One" could result to the destruction of 40% of structures and properties. In line with this, there is a need for a financial protection to recover from the damages that will be brought by catastrophic earthquakes. Currently, there is no existing catastrophe insurance in the Philippines. As the interest of the citizens increased with life insurance and other forms of investments, there is also a need for this type of insurance policy as real properties are also a form of investment. This study created a catastrophe insurance policy, covering damages brought by at least magnitude 8 earthquake. The policy was designed and the premium price for the insurance was computed.

Keywords: earthquake, catastrophe, insurance

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, defaunation*

Efficacy of Malunggay (Moringa oleifera Lam.) and Ipil-ipil (Leucaena leucocephala Lam. De Wit.) Leaf Meals as Feed Additives on the Growth Performance of Broilers

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Abstract

The potential of Malunggay and ipil-ipil as leaf protein sources in the formulation of poultry feeds has not been adequately established. This study was conducted to determine the effects of malunggay and ipil-ipil leaf meals on the feed intake, weight gain, feed efficiency, dressing weight, and dressing percentage of broilers. A total of 81 straight-run day old Cobb 500 broiler chicks weighing 40 g were randomly distributed into 3 treatment groups. Each treatment had 3 replicates with 9 birds. There were 3 different feed rations which served as treatments (T1= no malunggay and ipil-ipil leaf meals added, T2= with 5 % malunggay leaf meal, T3= with 5 % ipil-ipil leaf meal). Data gathered were compared and analyzed using the ANOVA. Results showed no significant difference ($P>0.005$) on the growth performance of the broilers. However, the 5 % malunggay leaf meal yielded the highest values in terms of the average gain in weight (5.54 % higher than T_3; 8.86 % higher than T_1), average feed intake (2.65 % higher than T_3; 6.07 % higher than T_1), and average dressed weight (6.13 % higher than T_3; 4.15 % higher than T_1) and obtained the lowest average feed efficiency as compared to the other 2 treatments (2.65 % lower than T_3; 3.29 % higher than T_1) for 4 weeks of experimental trials. The 5 % ipil-ipil leaf meal (T_3) yielded higher values in terms of the average gain in weight (3.51%), and average feed intake (3.52 %) than (T_1).

Keywords: Malunggay, Ipil-ipil, Leaf meal, Gain in weight, Feed intake, Feed efficiency

Ang Aplaya sa Pananaw ng mga Bata: Constructing Social Space along the Coastal Urban Slum

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Abstract

The study examines how the children view the shorefront in BASECO. The study is anchored on Social Construction of Reality Theory (Berger & Luckman, 1966) to explain the phenomenon and experiences of the agencies in a place or a structure. The theory identifies and explains through a sociological analysis of the reality of everyday life of a person depending on their consciousness and commonsense that influences other people due to their social actions. This study is a descriptive study on constructing space, and methods used are oral history, semi-structured interview and field observations aided by transcripts and photographs. Accordingly, this study argues that the children utilize the shorefront based on how they frame it. They view the shorefront as the children's space; their playground, leisure area, a place where they dump garbage and their beach as well as a space for economic activities. Born and grew up along Aplaya, gave the children contentment and impressions to be resilient rather than defenseless in every life along the shorefront.

Keywords: Children, Views, Economic activities, Vulnerability, Resiliency, Aplaya, Social Construction of Reality, Space, Shorefront

Evaluation of the Effect of Mahogany Leaf Litters (*Switenia Macrophylla* King) on the Growth and Yield Response of Rice (*Oryza Sativa* L.)

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ABSTRACT

Mahogany, as cited by some researchers, can produce large amounts of leaf litters ideal for producing organic fertilizers. However, there is no sufficient information about its effects on rice production. In this regard, this study was conducted to determine the effects of mahogany leaf litters applied as organic fertilizers on rice's growth and yield performance. Chopped mahogany leaf litters were incorporated into the lowland soil which served as the medium of the rice seedlings. There were 4 treatments (T1=1.0 kg Mahogany leaf litter (MLL), T2= 1.5 kg (MLL), T3= 2.0 kg (MLL) and T4= Control (soil alone). Results showed that the number of leaves and number of tillers produced by rice plants applied with various quantities of the liter material had

significant differences with T3 having the highest number of leaves and tillers produced. Surprisingly, the addition of mahogany leaf litters did not enhance the rest of the vegetative and reproductive potentials of rice plants.

Keywords: mahogany, litter, reproductive potential

Currating For Sustainability Of Interior Spaces

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The paper illustrates how cultures and historical legacies could be sustained by curating interior spaces. It aims to discuss sustainability effort and plans in selected areas using the concept of adaptive re-use with Bahay Nakpil Bautista as case study. Using Qualitative methods, the paper employed FGD, interview and observation. In conclusion, historical interior spaces can be sustained using biodegradable and renewable materials.

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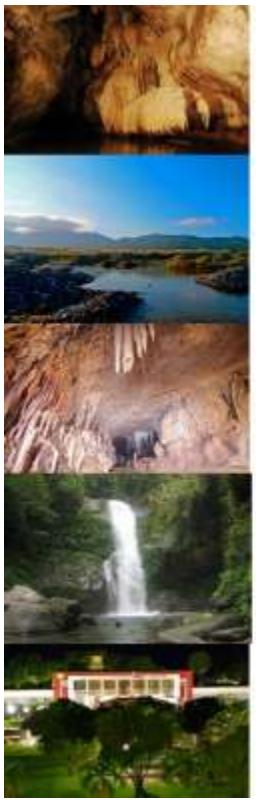

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