

2025 MMSU AGENCY IN-HOUSE RESEARCH REVIEW

August 4-6, 2025 NBERIC auditorium

LIST OF PAPERS RECOMMENDED FOR EXTERNAL PRESENTATION

I. Agriculture, Forestry and Natural Resources, Environment and Fisheries

Total: 18 papers

	TITLE	RESEARCHERS
1	Mainstreaming the sustainable conservation and utilization of iloco crop genetic diversity Pj 2. Germplasm collection, characterization and evaluation of underutilized root and tuber crops	Menisa A. Antonio, Maingeline B. Vivit, Joemel Agreda, Ruby Rose S. Tamayo, Josefa Pugat, Ma. Concepcion Birginias, Xenia Bucao
2	Conservation and improvement of vegetable landraces in Ilocos Norte Sty 1. Germplasm collection and characterization of vegetable landraces in Ilocos Norte Sty 2. Documentation of production practices for vegetable landraces in Ilocos Norte	Marissa Atis, Jonathan Ramos, Hazel Obien, Milen Fileza Inocencio, Menisa Antonio, Dionisio Bucao
3	Effect of Gamma Irradiation-induced radiosensitivity on the Vegetation Growth of selected NSIC-registered Garlic Varieties	Jeremay Layaoen, Noralyn Legaspi, Raymund Julius Rosales, Dionisio Bucao, Clarita Palacio, Christian Mark Aganus
4	Sustaining the multiplication of quality planting materials for garlic through tissue culture and bulbil methods Sty 1. Multiplication of quality garlic planting materials through tissue culture Sty 2. Enhancing bulbil production of garlic through improved cultural management practices Sty 3. Mass production of garlic clean planting materials from tissue-culture and bulbil cum training of garlic seed growers.	Marissa I. Atis, Ma. Joy T. Agacaoili, Evangeline S. Galacgac Noralyn B. Legaspi, Hazel G. Obien, Jonathan R. Ramos and Dionisio S. Bucao
5	Promoting resilient agriculture: A comprehensive study of soil fertility and groundwater potential in the MMSU farm Sty 1. Assessment of soil fertility in the mmsu farm Sty 2. Assessment on the availability of groundwater at the MMSU Research Farm Sty 3. Assessment of groundwater availability in the MMSU Farm Sty 4. Modeling of groundwater level in the MMSU Farm	Rodel T. Utrera, Joemel G. Agreda, Janet Villamor, Maria Concepcion B. Birginias, Josefa Pugat, Rodel Cabugon, Dionisio S. Bucao, Virgilio Julius P. Manzano, Jr., Nathaniel R. Alibuyog

6	Evaluation of different tomato lines in the Ilocos	Marissa Atis, Clarita Palacio, Jonathan Ramos, Hazel Obien
7	Varietal evaluation of corn: Study: Agronomic characteristics and yield performance of conventional yellow corn hybrids, open-pollinated varieties of corn, glutinous cor, and trait yellow corn hybrids at MMSU Batac station	Mario I. Remolacio, Constante Julian
8	Effects of <i>Lacticaseibbacillus paracasei</i> - ZFM54 and <i>Lentilactobacillus hilgardii</i> - LH500 on the laying performance, egg quality and bone traits of white leghorn layers	Sean R. Vidad, Peter James C. Icalla, Arc Josam Racho, Rodel Bañez, Benito Balneg, and Jeremy Christian Santiago
9	Development of true-to-type bolinao native chicken with enhanced production performance	Jeremy Christian Q. Santiago
10	Glass eel early weaning and nursery grow-out operations	Ernesto S. Del Rosario Jr., Jeric Reinard C. Balauro
11	Biodiversity in mesophotic coral reef ecosystems	Patrick C. Cabaitan, Rhea E. Olivas, Felix R. Olivas, Jr., Jun Dancil, Russel John O. Seguro
12	Livestock wastewater treatment using constructed freshwater mangrove wetland: a nature-based solution to tackle pollution	Arlene L. Gonzales, Ronnel S. Pagurayan
13	Sty 1. Macro floral species composition, diversity, spatial distribution and carbon sequestration of mangroves in Ilocos Norte Sty 4. Soil characterization and assessment of mangrove areas in Ilocos Norte Project: Bio-physical characterization of the mangrove areas in Ilocos Norte	Joselito Rosario, Chalie Main G. Cacactin, Jether Jorial, Rommel Pascua Joseltio Rosario, Craig P. Lucas, Charlie Main Cacactin, Jether Jorial, Bon Jovi Orteza, Rommel Pascual, Alvin Domingo
14	Elimination of Common Viruses in Ilocos White Garlic using a Combination of Thermotherapy, Chemotherapy and Tissue Culture and Validation through RT-PCR	Mae Rose M. Maoirat-Abad, Noralyn B. Legaspi, Marvin Jericho E. Cava, Ma. Joy Theresa T. Agcaoili
15	Alliin and total phenolic content of garlic (<i>Allium sativum</i> L.) accessions collected from Ilocos Norte	Marvin Jericho E. Cava Mae Rose M. Maoirat-Abad, Noralyn B. Legaspi, Clarita Palacio,
16	Development of an energy-efficient indoor office hydroponics system to produce lettuce	Thomas D. Ubina, Joefel Danipog, Raymart O. Villena, Kevin Jude I. Lasaten, Psalm David A. Pastor, Dexter John P. Perdido, Aean Gabrielle D. Tayawa, Nikko Jay G. Lorenzo,

		Salustiano D. Morales, Mark Willen D. Manzana, Lord Hendritch C. Casil
17	Nature-based solutions for sustainable mangrove management and resilient coastal communities through the innovative green engineering approach	Arlene L. Gonzales, Ronnel S. Pagurayan, Dionisio S. Bucao
18	Supplementation of <i>Lacticaseibacillus paracasei</i> 7060 improves digestibility and fecal characteristics in broilers	Sean R. Vidad, Marvielyn Olivar, Ma. Joy Theresa Agcaoili, Jimmbeth Zenila P. Fabia, Genesis Maloom, Felice Efanna Casil, Peter James Icalia Gann

BEST PAPER - Mainstreaming the sustainable conservation and utilization of iloco crop genetic diversity. Pj 2. Germplasm collection, characterization and evaluation of underutilized root and tuber crops/ *Menisa A. Antonio, Jonathan Ramos, Ma. Concepcion Birginias, Dionisio S. Bucao, Xenia Bucao, Zaldy Fernandez*

II. Health and Wellness and Product Development

Total: 15 PAPERS

No.	TITLE	RESEARCHERS
1	Genomic analyses of probiotics isolates from indigenous food plants	Lemuel Balloyan, Suerte Mangila Baranda, Jimmbeth Zenila Fabia, Grace Sheila Jalani, Arc Josam Racho, Marvielyn Olivar, Ma. Joy Theresa Agcaoili, Peter James Icalia Gann
2	Upregulation of amylases in <i>Limosilactobacillus fermentum</i> PJG11 Isolated from an endemic <i>Dioscoreaceae</i> enhances utilization of starch of its natural substrate	Suerte Mangila Baranda, Jimmbeth Zenila Fabia, Grace Sheila Jalani, Arc Josam Racho, Marvielyn Olivar, Ma. Joy Theresa Agcaoili, Peter James Icalia Gann
3	Epithelial upregulation of toll-like receptor 2 (TLR2) fast-tracks tissue repair in icr mice treated with probiogel infused with <i>Lactobacillus paracasei</i> 7061	Althea Pagurayan, Jimmbeth Zenila P. Fabia, Majoy Agcaoili, James Patrick Acang, James Patrick Peralta, Alvin Domingo, Peter James Icalia Gann
4	Implication of food preparation, handling and personal hygiene practices in the microbial contamination of food contact surfaces of primary school canteens	Fiona Tagudin, Jimmbeth Zenila P. Fabia, Marvielyn Olivar, Mark Limon, Majoy Agcaoili, Peter James Icalia Gann
5	In vitro evaluation of the probiotic potential and functional properties of <i>Lactobacillus spp.</i> isolated from indigenous food plants in Ilocos Norte	Xenia Erika N. Bucao, Christian Angelo R. Rafael, Sheja Ryz Uoiea I.

		Calamayan, Ruth Valerie S. Dagdagan, Kristian Gay D. Beltran, Ma. Danica Ines-Ramil, Angelica May DC. Mendoza, Philip Joshua S. Aliga, Mae Ann Batuyong-Lista, Dionisio S. Bucao and Rhian Jaymar D. Ramil
6	Growth kinetic evaluation of indigenous food plant-derived lactic acid bacteria	Mae Ann Batuyong-Lista, Juvan P. Ong, Christian Angelo R. Rafael, Sheja Ryz Uoiea I. Calamayan, Ruth Valerie S. Dagdagan, Erica Mae U. Macalma, Jodelyn Querubin, Johnmel A. Valerozo, Philip Joshua S. Aliga, Dionisio S. Bucao, Rhian Jaymar D. Ramil
7	Development and characterization of kamangeg (<i>Dioscorea luzoniensis</i>) resistant starch for use as biopolymer in probiotic microencapsulation	Kristian Gay D. Beltran, Nina Angelika C. Collado, Mae Ann B. Lista, Christian Angelo R. Rafael, Juvan P. Ong, Dionisio S. Bucao, Rhian Jaymar D. Ramil
8	Optimization of Functional Ice Cream Formulated with Squash, Blue Ternate, and Fermented Milk Using <i>Lactobacillus hilgardii</i> 2M38FABB3	Felicitas P. Sanculi, Juvan P. Ong, Erica Mae U. Macalma, Hazel P. Bartolome, Jodelyn M. Querubin, Dionisio S. Bucao, Rhian Jaymar D. Ramil
9	Comparative analysis of probiotic viability and physicochemical properties of milk fermented with IFP-derived <i>Limosilactobacillus fermentum</i> PJG11, <i>Lacticaseibacillus paracasei</i> HBUAS62617, <i>Lactobacillus paracasei</i> 7060, and <i>Lactobacillus fermentum</i> strain 36 ATCC 9338	Arianne Faith Mae N. Beseos, Juvan P. Ong, Erica Mae U. Macalma, Jodelyn M. Querubin, Dionisio S. Bucao, Rhian Jaymar D. Ramil
10	Optimization of bugnay <i>Kombucha</i> production and functional characterization using <i>Lactobacillus hilgardii</i> 2M38FABB3 Inoculation	Fairie Anne A. Domingo, Pramuan Saithong, Jirawut Permpool, Juvan P. Ong, Erica Mae U. Macalma, Jodelyn M. Querubin, Dionisio S. Bucao, Rhian Jaymar D. Ramil
11	Oral toxicity and immunomodulatory properties of <i>Lactoabcillus hilgardii</i> 2M38FABB3 isolated from bayog (<i>Dendrocalamus merrillianus</i> (Elmer) Elmer)) in Lipopolysaccharide-Induced Balb/C Mice	Ma. Danica Ines-Ramil, Christian Angelo R. Rafael, Sheja Ryz Uoiea I. Calamayan, Ruth Valerie S. Dagdagan, Jessica G.

		Asuncion, Dionisio S. Bucao, Rhian Jaymar D. Ramil
12	Interleukin 1 (IL-1) and Interleukin 10 (IL-10) regulation reduces epithelial inflammation in mice using a topical cream with <i>Ficus minahassae</i>	Franchezka Yda Manglal-Ian, Ma. Joy Theresa Agcaoili, Jimmbeth Zenila P. Fabia, Jessica Asuncion, Kristian Gay Beltran, Ina Krista Irapta, Peter James Icalia Gann
13	Heme oxygenase-1 (HMOX1) upregulation accelerates natural immune response to resolve inflammation in black garlic cream-treated mice	Rodge Carl R. Veja, Majoy Agcaoili, Jimmbeth Zenila P. Fabia, Jessica Asuncion, Shirley Agrupis, Peter James Icalia Gann
14	Impact of climate change on malnutrition, hypertension, and dengue in Ilocos Norte, Philippines	Nathaniel R. Alibuyog, Cheryll Didi Nellie Obra, Gerald Lester A. Caoili, Cristina Valentin, Alex Garibay, Jr. Shiverly Benedict FELAND Dolores, James Patrick Peralta, Esther Faith Gabriel, Sabina Parinas, Mari Elaine Lorica
15	Tissue repair progression in liver and stomach of alcohol fed male ICR using freeze-dried <i>Pomacea caniculata</i> slime and bovine milk	Doreen Domingo, Jessica Asuncion, Donna Fronda, Janelyn Roxas, Melvin Bagot

BEST PAPER: Development and characterization of kamangeg (*Dioscorea luzoniensis*) resistant starch for use as biopolymer in probiotic microencapsulation/
Kristian Gay D. Beltran, Nina Angelika C. Collado, Mae Ann B. Lista, Christian Angelo R. Rafael, Juvan P. Ong, Dionisio S. Bucao, Rhian Jaymar D. Ramil

III. Engineering and Industry

Total: 16 PAPERS

No.	TITLE	RESEARCHERS
1	Utilization of waste plastic for construction	Marlon Acoba, Kei Cyril John G. Baria, Mark Kevin A. Cardona, Soolian G. Leong, Mar Viandrus I. Ruiz, John Carlo R. Tabije, Hanz Jeremy C. Agngaraygay
2	Development of ceramic crop preservation storage utilizing locally available raw materials in Ilocos Norte	Anessa M. Dela Cruz, Andrew C. Doño, Samuel S. Franco,

		<i>Dionesio C. Pondoc, Arlene Mia G. Rugian</i>
3	Simultaneous synthesis and recovery of structured silica and carbon materials from rice hull chars for nanocomposites fabrication	Emie S. Mirasol
4	Presented Title: Documentation of Salt Production Practices in the Philippines: Basis for the Revitalized Industry Old Title: Assessment of salt production practices in the Philippines	Nathaniel R. Alibuyog, Rodel T. Utrera, Sherlyn B. Nicolas, Lea C. Agbigay, Constante B. Julian, Josefa L. Pugat, Joemel G. Agreda, Floramante C. Pastor, Cristina D. Valentin, Julius Jonar L. Butay, Ma. Concepcion Birginias, Roxanne Opelac, Shaira Camille Santos, Lord Ian R. Galano, Marinique A. Guerrero, Nadine Sharinette R. Bravo, Augustin B. Quidilla, Maricone A. Cabansag, Nelson Junior T. Rodillas, Ian Paul R. Villanueva, Selwyne Christian E. Ponce
5	Comparative analysis of flooring types in saltern farms: Assessing cost, efficiency, and sustainability in the Philippines	Nathaniel R. Alibuyog, Rodel T. Utrera, Sherlyn B. Nicolas, Lea C. Agbigay, Josefa L. Pugat, Constante B. Julian, Floramante C. Pastor, Joemel G. Agreda, Lord Ian R. Galano, Marinique A. Guerrero, Nadine Sharinette R. Bravo, Augustin B. Quidilla, Maricone A. Cabansag, Ian Paul R. Villanueva, Selwyne Christian E. Ponce, Julius Jonar L. Butay, Ma. Concepcion Birginias and Cristina D. Valentin
6	Mapping potential saltern areas using geospatial and climatic parameters for sustainable and innovative salt production	Rodel T. Utrera, Nathaniel R. Alibuyog, Julius Jonar L. Butay, Joemel G. Agreda, Josefa L. Pugat, Constante B. Julian, Nadine Sharinette R. Bravo, Lord Ian R. Galano, Marinique A. Guerrero, Augustin B. Quidilla, Maricone A.

		Cabansag, Ian Paul R. Villanueva, Selwyne Christian E. Ponce, Floramante C. Pastor, Sherlyn B. Nicolas, Lea C. Agbigay
7	Designing a climate-resilient and sustainable saltern prototype for small-scale salt production in the Philippines	Rodel T. Utrera , Nathaniel R. Alibuyog, Willen Mark D. Manzanias, Selwyne Christian E. Ponce, Cristina D. Valentin, Joemel G. Agreda, Josefa L. Pugat, Lord Ian R. Galano, Marinique A. Guerrero, Nadine Sharinette R. Bravo, Augustin B. Quidilla, Maricone A. Cabansag and Julius Jonar L. Butay
8	Evaluating the sustainability of GSMap satellite-based precipitation data for run-off estimation in the Abra River Basin	Nathaniel Alibuyog, Ma. Gloann Leizel Longboy, Christopher Zamuco, Rodel Utrera
9	Laboratory investigation of wave-structure interactions for existing and geometrically modified seawalls: Overstopping, run-up, and rundown analysis	Vasco Vic Valdez, Marlon Acoba, Rodel Utrera, Marie Angeli Penaflor, Charles Mateo, Willen Mark Manzanias, Aljay Santos, Karen Joyce Santiago, Kenneth Edra, Melissa Pungtilan, Emerson Bolibol
10	Hydrogen production using hydrogen fuel cell from electrolysis of seawater	Eric Halabaso, Loreli Faye Manzano, Ralph Lawrence Queddeng, Laurenz Aglipay, Shirley C. Agrupis
11	Efficient adsorption of copper from simulated wastewater using activated biochar derived from nipa husk	Eric Halabaso
12	Comparative Assessment of CHIRPS and PAGASA Rainfall Data for Hydrologic Modeling in the Abra River Basin, Philippines	Nathaniel R. Alibuyog, Shivherly Benedict Feland T. Dolores
13	Climate-responsive water management strategies in the Philippines: A case study of the Abra River Basin	Nathaniel R. Alibuyog, Rodel T. Utrera
14	Performance of an Alternative Fuel on a Multi-blend Capable Engine Test Motorcycle: A	Nathaniel Ericson R. Mateo, Aldrin Calderon, Shirley C.

	Supplemental test towards renewable biofuel solutions	Agrupis, Kendrick Cyrus Acidera, Loreli Faye T. Manzano
15	Predictive Skill of Delft3D-Based Storm Surge Forecasts Using Historical and Forecasted Typhoon Tracks	Nathaniel R. Alibuyog, Clein Winslee Duquez, Christine B. Mata, Olivia C. Captain-Hastibeer, Tristan Janryll Mata
16	Design and development of intellectual property management system of the Mariano Marcos State University	Rodel C. Cabugon, Artbellson B. Mamuri, Dionisio Bucao, Bryll Atienza, Cathelyn May Alupay

BEST PAPER - Climate-responsive water management strategies in the Philippines: A case study of the Abra River Basin/ *Nathaniel R. Alibuyog, Rodel T. Utrera*

IV. Education, Social Sciences, Humanities, Culture and Arts

Total: 4 papers

No.	TITLE	RESEARCHERS
1	Ekonomiyang Pamumuhay: Sukat, Epekto at kakayahang pagpapanatili ng mga tradisyonal na pamamaraan sa pangunguha ng pagkain mula sa mga piling munisipalidad ng Ilocos Norte	Janet F. Rivera, Ana Marie Faith L. Corpuz
2	Cross-sectional study on the readiness of community-based clinics in City of Batac, Ilocos Norte to Universal Health Care Reforms	Mayla Veronica C. Madrigal, Rachelle J. Bocoboc, Phoebe Nicole Y. Agcaoili
3	HEIRIT: Establishment of DOST-MMSU BANNUAR technology business incubator for advancing the creative manufacturing industry in the Ilocos Region	Armie Sabugo, et al.
4	Gameng ni Ilokano: Paggalugad, pagdalumat sa mga kagamitan, kultura, at mga kaugaliang Ilokano na maaaninag sa tan-ok festival - Sty 1. Pamulinawen, dinaklisan, binakul at iba pa: Isang pagsasalin sa mga Awiting-Bayang Ilokano na itatampok Sa Tan-Ok Festival 2023	Francisca S. Nicolas, et al

BEST PAPER - Cross-sectional study on the readiness of community-based clinics in City of Batac, Ilocos Norte to Universal Health Care Reforms/ **Mayla Veronica Madrigal, Policarpio. Joves Jr., Rachelle Bocoboc, Prince Kevin P. Adina, Jhune Vienna Elaine P. Antiporda, Danah Mae S. Aquino, Katrina E. Aquino, Dennie Dave B. Asuncion, Nikki Joy G. Balang, and Cavin Dionel Batinga, Franco Raphael R. Binala**