

# TABLE OF CONTENTS

	Page
<b>PLENARY PAPERS</b>	
Carrying Capacity: Food Production ..... Leonardo A. Gonzales	1
The Safety of Novel Foods ..... Estrella F. Alabastro	60
Critical Issues and Strategies for the Development of Major Agricultural Crops ..... William D. Dar	72
Major Issues, Policies and Strategies on Fisheries ..... Arsenio S. Camacho	120
Global Perspective on Cereals – Focus on Rice ..... Ronald P. Cantrel	130
Global Perspective on Pesticides ..... Manfred Kern	148
<b>TECHNICAL PAPERS</b>	
<i>Mathematical, Physical and Engineering Sciences</i>	
Commutative Centralizer Algebras and Related Structures ..... Jose Maria P. Balmaceda	155
On Hierarchical Circulant Networks ..... Felix P. Muga II	166
A Novel 8 KD Sulfur-Rich Protein in Soybean (Glycine Max) Cotyledon: Purification and Gene Cloning ..... Ma. Jamela R. Revilleza, Alfred Galvez, Deanne C. Krenz, Benito O. De Lumen, and Evelyn Mae T. Mendoza	185

Research Note: Biologically Active Constituents from <i>Mentha Cordifolia Opiz</i> Leaves .....	197
Irene M. Villaseñor, Jennifer Angelada, Arlyn Canlas, Deborah Echegoyen	

Metals and Total Organic Levels in the San Mateo Landfill Leachate and Its Receiving Water Systems .....	201
Michael D. Tangatco, Rommel M. Wong, Fabian M. Dayrit, Emilyn Q. Espiritu, and Paul Hector L. Segarra	

*Biological Sciences*

Varietal Differences in Growth, Sodium Uptake and Antioxidant Responses of Rice Seedling to Salinity Stress .....	216
Maribel L. Dionisio-Sese	

The Ciguateric Potential of Some Philippine Rabbitfishes (Family Siganidae) .....	227
Glorina N. Pocsidio	

Update: Japanese Encephalitis Virus Activity in the Philippines .....	244
Veronica F. Chan	

Detection of Dengue Virus and Antibodies in Patient Sera Collected from 1995 to 1999 in the Philippines .....	253
Ronald R. Matias, Ma. Giselle V. Espiritu, Jhoe Anthony R. Alfon, Deu John M. Cruz, Ma. Luisa G. Daroy, Efren Dimaano, Dengue Research Network, Filipinas F. Natividad, and Akira Igarashi	

*Agricultural Sciences*

Diagnosis of Diffuse Hepatocellular Disorders in Dairy Cattle Through Ultrasonography and Digital Analysis .....	263
Jezie A. Acorda	

Philippine Lakes: Status and Strategies for Sustainable Development .....	278
Rafael D. Guerrero III	

Molecular Cloning of the Philippine Isolate of Banana Bunchy Top Virus (BBTV) .....	287
Vermando M. Aquino, Hui Wang, Evelyn Mae T. Mendoza, and John S. Hu	

Applications of Molecular Marker Technology in the Philippine Rice Breeding .....	292
Edilberto D. Redoña, L.R. Hipolito, L.S. Moreno, T.D. Ocampo and Samuel A. Ordoñez, Jr.	

### *Health Sciences*

Detection, Sequencing and Genotyping of Human Papilloma Virus Associated with Cervical Cancer among Filipino Women .....	308
Ronald R. Matias, Joyce Irene V. del Rosario, and HPV Study Group	

Association Between Chromosome Fragile Site and Oncogene Location: A Profile of Filipino Head and Neck Cancer Patients .....	318
Ma. Luisa D. Enriquez, Gil M. Vicente, Rhodora R. Santos, and Filipinas F. Natividad	

A New Medium for Isolation, Culture and Metronidazole-Sensitivity Testing for <i>Helicobacter pylori</i> : Diagnostic Value for Early Eradication of <i>H. pylori</i> Infection .....	323
Blanquita B. de Guzman, Liza P. Faustino, Ma. Corazon B. Paredes, and Filipinas F. Natividad	

### **Abstracts of Poster Papers Presented during the NAST 21st Annual Scientific Meeting, 7-8 July 1999, Manila**

#### **Mathematical, Physical and Engineering Sciences**

Pseudo-Lexicographic and Anti-Lexicographic Ordering of Permutations and Some Algorithms .....	328
Alexander S. Carascal	
Finite Invertible Loops of the Coset Product Type .....	329
Raoul E. Cawagas	
Latin Square Composition of Factorable Groups and Loops .....	330
Raoul E. Cawagas	
Construction of a Family of Power Associative Pseudogroups of Order $n=2m$ with Normal Subsystems of Order $m$ .....	330
Aurea A. Rosal	
Assessment of Influential Observations in Maximum Likelihood Factor Analysis .....	331
Zenaida F. Mateo and Yutaka Tanaka	
Prediction of Sediment Movement in Lingaycn Gulf: An Evaluation of Approaches and Implications to Coastal Stability .....	331
Zenon Richard P. Mateo and Fernando P. Siringan	

Changes in Water and Shoreline Positions and Their Applications to Sediment Dispersal and Sedimentation Rates Rates in Manila Bay .....	332
Fernando P. Siringan and Cherry L. Ringor	
Patterns of Sedimentation, Sources of Sediment and Their Applications to Laguna de Bay's Life Span .....	333
Fernando P. Siringan and Carolyn Jaraula	
Subsidence and the Worsening Flood Problem in Pampanga and Bulacan .....	335
Fernando P. Siringan and Kelvin S. Rodolfo	
Utilization of Local Raw Materials for White Earthen Wares and Porcelain Bodies Manufacturing .....	336
Renelyn M. Andrada, Elsa S. Calantoc, Dennis Warren C. Ines, Jaime C. Portugal and Onstante G. Rosales, Jr.	
Protein Hydroperoxides: Protein Damage Induced by Peroxynitrite .....	337
Marivic S. Lacsamana, Janusz M. Gebicki	
Hypoglycemic Activity of Some Folklore Antidiabetic Plants .....	338
Amelia P. Guevarra, Marites Guino-O, and Jenny Mae Perez	
Design Construction and Evaluation of An Acid Treatment Bath .....	338
Walfredo P. Ubungen and Romualdo V. Pascua	
Prophorus-31 NMR Studies on <i>Escherichia coli</i> and <i>Bacillus subtilis</i> .....	339
Jennifer T. Aguilan, Antonio M. Basilio, Edward T. Chainani, Enrico Cruz, Fabian M. Dayrit, Emilyn Q. Espiritu, Noreen Gonzales, Bernadette Matanguihan, and Nina L. Rojas	

## Biological Sciences

Wildlife Inventory of the University of the Philippines Diliman and the Ateneo de Manila University Campus, Diliman, Quezon City, Luzon, Philippines .....	340
Perry S. Ong, Marisol DG. Pedrogosa, and Michael G. de Guia	
Zooplankton from Lake Taal .....	341
Nellie C. Lopez, Roberto C. Pagulayan, and Francis S. Magbanua	
Distribution and Abundance of Atyid Shrimps in Volcano Island Shores, Lake Taal, Batangas .....	341
Raissa T. Paredes and Nellie C. Lopez	
Lake Taal's Endemic Freshwater Sardine, <i>Sardinella tawilis</i> : Speciation in Progress or Ghost of Ancient Polymorphism (Insight from Molecular Data) .....	342
Irene E. Samonte, Werner E. Mayer, and Roberto C. Pagulayan	
A Biometric Study of <i>Sardinella tawilis</i> , <i>S. fimbriata</i> , and <i>S.</i> <i>albella</i> (Pisces: Clupeidae) .....	343
Mamie Grace Intrina-Sonico and Robert C. Pagulayan	
Fish Composition of the Pansipit River: A Comparison with the First Report Made 70 Years Earlier .....	344
Roberto C. Pagulayan and Francis Magbanua	
Subic Bay Forest Rivers: What Mollusks Do They Support? .....	345
Roberto C. Pagulayan and Maria Brenda M. Hernandez	

Diversity of Mangrove Vascular Flora and Associated Macrofauna in Mangal Communities of Catanduanes .....	346
Jimmy T. Masagca	
Ovarian Changes in <i>Apongon themalis</i> Cuvier in Relation to Spawning .....	346
Therese C. Capalongan, Clarissa I. Vea, and Nellie C. Lopez	
Preliminary Analysis of the Genetic Structure of Giant Clam ( <i>Tridacna crocea</i> ) Populations from Northern Palawna and the Kalayaan Islands Group (KIG) .....	347
Marie Antonette Juinio-Meñez, Virginia D. Monje, Eiza T. Yu, and Rachel G. Ravago	
Molecular Evolution of $\beta$ -Glucanases in Cereals .....	348
Gabriel O. Romero, Brucer R. Thomas, and Raymond L. Rodriguez	
DNA Sequences of the Mitochondrial 16s rRNA and Cytochrome b Gene Loci of the Philippines .....	349
Vinzon C. Ibañez, Juan Carlos Gonzales, and Cynthia T. Hedreyda	
Mapping Homologs of Developmental Genes <i>Engrailed</i> and <i>Hunchback</i> in the Red Flour Beetle, <i>Tribolium castaneum</i> .....	350
Zaldy F. Doyungan, Susan J. Brown, Rob E. Denell, and Richard W. Beeman	
Transient Expression of Salt-Tolerance Genes in Cyanobacteria .....	351
Marie Antoinette C. Fleta, Charissa T. Ronque, Maryland V. Loveria, and Saturnina C. Halos	
Screening for Enzyme Producing Bacteria Using Polymerase Reaction and Hybridization .....	352
Cynthia T. Hedreyda and Albert D. Agomaa	
Optimization of Conditions for <i>Agrobacterium tumefaciens</i> -5279 .....	352
Glenn Y. Ilar, Rhodora R. Aldemita, Laverenee S. Gueco, and Eleanor S. Avellanoza	
Effects of Time and Environmental Conditions on STR Primer Amplification of DNA Extracted from Human Bloodstains .....	353
Ma. Rowena R. Ramos, Gayvelline C. Calacal, and Saturnina C. Halos	
Generation and Characterization of a Recombinant Anti-Tumor Humanized Tetravalent Antibody .....	354
Ameurfin D. Santos, Syed V. Kashmiri, and Eduardo A. Padlan	
Multiple Roles for the N-MYC GNA in Mammalian CNS Development .....	355
Cynthia Palmes-Saloma and Hisato Kondoh	
Physiological Responses of Four Microalgal Isolates to Cadmium .....	356
Gilda C. Rivero and Patty B. Lintongan	
Hispathological Alterations in the Intestine of <i>Chanos chanos</i> in Response to Molluscicide Metaldehyde .....	356
Nicodemus Pulumbarit, Jr. and Arsenia A. Casauay	
Genetic Analysis of Chemically-Induced Loss of Albinism in Rice .....	357
Cynthia Palmes-Saloma and Julius Decano	

## Agricultural Sciences

Data Management System for Germplasm .....	358
Gabriel O. Romero, Thelma Alegado, and Ma. Cristina Newingham	
Characterization of Heterosis in Philippine Hybrid Rice Germplasm .....	359
Samuel O. Ordoñez, Jr., Teodora M. Esmabe, Stella Marie T. Ablaza, Imelda A. Dela Cruz, and Edilberto D. Redoña	
Molecular Genetic Diversity and Heterosis in Rice .....	360
Loida S. Moreno, Samuel A. Ordoñez., and Edilberto D. Redoña	
Identification of Genetic Donors for Rice Seedling Vigor .....	361
Theresa D. Ocampo, Imeldalyn G. Pacada, Oliver E. Manangkil, and Edilberto D. Redoña	
Breeding Salt-Tolerant Rice Varieties in the Philippines .....	361
Philbert S. Bonilla	
Screenhouse Evaluation of Transgenic IR72 Containing XA21 Gene for Bacterial Blight Resistance .....	362
Genetic Engineering Approach to Develop Pest Resistance in Rice .....	363
Glenn Y. Ilar, Rhodora R. Aldemita, Lavernee S. Gueco, and Eleanor S. Avellanoza	
Management of Soil-Borne Diseases in Rice-Vegetable System .....	364
Ronaldo T. Alberto, L. Sanchez, G.B. Amar, J. Rillon, V.L. Judal, M. Valdez, S.E. Santiago, and S.A. Miller	
Earthworm Complex in the Ifugao Rice Terraces .....	365
Ravindra C. Joshi and Samuel W. James	
<i>Meloidogyne graminicola</i> : A Nematode Pest from Rice to Onion .....	365
Evelyn B. Geron, Victoria Judal, Carlito Ravina, Ruben Gapasin, and John Halbrendt	
<i>Monolepta</i> sp. (Chrysomeliidae: Coleoptera), A New Pest of Corn Seedlings .....	366
Bonifacio F. Cayabyab, Rolando G. Bayot, Edgardo Gutierrez, Reynaldo Arapan, Fredelino P. Penalosa, Rodolfo Desingano, and Mario V. Navasero	
<i>Macrosiphum (Sitobion) miscanthi</i> Takashi: A New Aphid Attaching Sugarcane (Homoptera: Aphididae) .....	367
Jessamyn D. Recuenco-Adorada and Julieta D. Recuenco	
Completing Ability and Control of <i>Echinochloa colona</i> (L.) Ink in Cotton .....	367
Benita U. Bilgera	
<i>Hispodonta</i> sp. (Alticiniidae: Chrysomeliidae) A New Pest of Banana .....	368
Boni Ligat, Mario V. Navasero, Rolando G. Bayot, Reynaldo Arapan, Melvin D. Ebuenga, Fredelino Peñalba, and Bonifacio F. Cayabyab	
The Endangered Giant Wild Honeybees ( <i>Apis dorsata</i> Fab.) Habitat and Behavior .....	369
Lita Molitas-Colting and Cleofas R. Cervancia	

Philippine Species of <i>Illeis Mulsant</i> (Coleoptera: Coccinellidae: Coccinellinae: Psyllaborini) .....	370
Jessamyn D. Recuenco-Adorada and Victor P. Gapud	
El Niño and Its Effect on Field Population Increase of Migratory Locust .....	370
Bonifacio F. Cayabyab, Melvin D. Ebuenga, Mario Navasero, Rolando G. Bayot, Reynaldo Arapan, Edgardo Gutierrez, Renato B. Geli, Emerita Candelaria, Fredelino Peñalba, and Dominador Canlas	
Insecticidal Properties of Seven Indigenous Plants Against the Oriental Migratory Locust on Sugarcane .....	371
Julieta D. Recuenco	
Diversity and Foraging Behavior of Insect Pollinators of Common Fruit Trees in Central Luzon State University .....	372
Annie Melinda P. Alberto, Epifania Castro, and Sherilyn DG. Vicencio	
Development of Silkworm, F1 Hybrids for Semi-Arid Condition .....	373
Cristeta F. Gapuz, Julieta P. Abuan, Francisco V. Gapuz, Jr., Edgar F. Padilla, Gemma E. Supsup, Virgilio M. Libunao, Marybel N. Licay, Marlyn A. Milan, and Emilio E. Cariño	
Extraction and Characterization of Tobacco Seed Oil .....	374
Alvin D. Glova, Julie L. Mercado, and Reynaldo C. Castro	
Use of Organic Substances to Promote Anther Culture Response in Rice .....	374
Nenita V. Desamero, Maria Corazon N. Julaton, Wilhelmina E. Villalba, Martha V. Chico, Sharon S. Macabale, Celia M. Leano, Leonilo G. Domingo, Robert V. Punzal, Arnel Q. Ambalina, Jose A. Orcino, Emily R. Corpuz, and Thelma F. Padolina	
The Acceptability of Tilapia <i>Oreochromis mossambicus</i> Spread .....	375
Corazon P. Macachor, Severino R. Romano, and Erma S. Capuno	
<i>Bacillus cereus</i> var. Improved Sensory and Protein Qualities of Fermented "Tinabal Molmol ( <i>Scarus</i> spp.) .....	376
Esterlita L. Calonga and Priscilla C. Sanchez	
Levels and Sources of Significant Wastewater Parameters in Selected Sugar Mills in the Philippines .....	377
Raphael Henri B. Mundo, Ma. Christina V. Dimapilis, and Agnes G. Collado	
Cumulative Effects of the Existing Land Uses on the Water Resources of the Sand Dunes of Ilocos Norte .....	377
Floramante C. Pastor	
Growth, Feed Conversion Ratio, and Survival of the Philippine Abalone <i>Haliotis asinina</i> Cultured in Net Cages at Different Stocking Densities .....	378
Emmanuel C. Capinpin Jr., Jobert D. Toledo, Vincent C. Encena II, and Masanori Doi	
Culture of "Lato" <i>Caulerpa lentillifera</i> In Ponds Using an Artificial Substrate .....	379
Severino R. Romano	



## Health Sciences

Validation of Two Steps Different Extraction from Seminal Fluid Mixed with Epithelial Cells .....	381
Gayveline C. Calacal, Tanya Aletheia P. Bagadion, Ralph Kevin Brett, John Michael L. Danao, Nina Marie C. Fleta, Jose Carlo Z. Natividad, and Saturnina C. Halos	
Bioassay of Paralytic Shellfish Poisoning (PSP) Toxins from Toxic Bacteria ( <i>Micrococcus sp.</i> ) Using Brinc Shrimp <i>Artemia salina</i> (Linnaeus) .....	382
Deu John M. Cruz and Noel G. Sabino	
Detection of <i>Mycobacterium tuberculosis</i> by Polymerase Chain Reaction .....	383
Jingle R. Candelario, Ma. Lourdes S. Yanga, Reena Katigbak-Pompa, Loreto Codamos, Evelino N. Lagamayo, Roberto Barzaga, Blanquita B. De Guzman, and TB Study Group	
Microsatellite DNA Polymorphisms in Filipinos .....	383
Jasmin JIJ B. Miranda, Josephine Y. Chu, Allan Chris M. Ferreon, Michelle Music F. Magno, and Saturnina C. Halos	
Identification of HCV Genotypes in Filipino Population by Restriction Fragment Length Polymorphism .....	384
Benjamin Gerardo A. Perez, Sherrie Querubin De Ocampo, Joseph C. Bocobo, Leonora Trinidad D. Salda, Jesus Y. Perez, and Ronaldo R. Matias	
Binding Profile to Neoglycoprotein Probes in Cervical Carcinomas .....	385
Annabelle A. Herrera, Sonia Jacinto, Delisa Manuel, Laurie Joy Valera, and Edna A. Amparado	
Binding Profile of a Lectin and Neoglycoprotein Probes on Normal and Thyroid Carcinomas from Filipino Patients .....	386
Sonia D. Jacinto, Kathryn T. Sanchez, Marie Antonette H. Suplido, Maria Loreta V. Quitariano, Marnie Grace I. Sonico, Anabelle A. Herrera, Edna A. Amparado, and Arlene A. Casauay	
Breast Cancer with P53 Gene Mutation .....	386
Edna A. Amparado, Arsenia A. Casauay, Custer Deocariz, Annabelle A. Herrera, and Sonia D. Jacinto	

## Social Sciences

Educating for Critical Thinking: Review of Literature .....	388
Daniel S. Santos	
Benguet Farmers Adopt Agricultural Technologies .....	389
Wilfredo R. Estolas and Cipriano C. Consolacion	
Attitudes Toward Biodiversity Conservation of Mangroves Among Coastal Dwellers in Catanduanes .....	390
Jimmy T. Masagca and Manrico T. Masagca	
Author Index .....	391
Subject Index .....	394