



**National Academy of  
Science and Technology**

**14TH  
ANNUAL SCIENTIFIC  
MEETING**

**THEME: COPING WITH NATURAL DISASTERS**

**PHILIPPINE INTERNATIONAL  
CONVENTION CENTER  
Roxas Boulevard, Manila  
October 1-2, 1992**

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# PROGRAM OF ACTIVITIES

October 1, 1992  
MORNING

Meeting Room 4

8:00 REGISTRATION

8:30 National Anthem

Invocation

**Bienvenido F. Nebres, S.J.,** *Academician*

Welcome Address

**Dr. Conrado S. Dayrit,** *Academician*  
Acting President  
National Academy of Science  
and Technology

Awards

## AWARDEES

### Philippine Science Talent Search

- First Prize - Rowena Cristina L. Guevara
- Second Prize - Roy Roberto L. Gerona
- Third Prize - Josephine U. Agravante
- Special Citations
  - Cesar G. Demayo
  - Neila S. Sumagaysay
  - Ru Angeline M. Edrada

### NAST-TWAS Science Prize (Mathematics)

- Polly W. Sy

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## Outstanding Young Scientists

Arsenio M. Balisacan (Economics)  
Rhodora A. del Rosario (Health Science)  
Portia G. Lapitan (Forest Biology)  
Luz R. Noche Franca (Mathematics)  
Valentino C. Perdido (Crop Science)  
Caesar A. Saloma (Applied Physics)  
Irene M. Villasenor (Chemistry)  
Ma. Helena T. Yap (Marine Biology)

## Investiture Ceremonies

### NEW ACADEMICIANS

Mercedes B. Concepcion, Ph.D.  
Ernesto O. Domingo, M.D.  
Rafael D. Guerrero III, Ph.D.  
Evelyn Mae T. Mendoza, Ph.D.

Master of Ceremonies: **Joventino D. Soriano**, *Academician*

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9:30 Coffee Break and Poster Session

(Coffee will be served in the Delegates Lounge)

10:15 **SYMPOSIUM - COPING WITH NATURAL DISASTERS**

#### "Impact of Disasters on the Human Community"

Speaker: **Lourdes L. Ignacio**

Professor and

Chairman, Department of Psychiatry, UP-PGH

Moderator: **Benjamin D. Cabrera**, *Academician*

Rapporteur: **Quintin L. Kintanar**, *Academician*

11:00 **"Monitoring and Warning System and the Role of Media"**

Speakers: **Leoncio A. Amadore**

Science Specialist, PAGASA

**Jessica Sojo**, Newscaster, Channel 7

Moderator: **Ruben L. Villareal**, *Academician*

Rapporteur: **Apolinario D. Nazarea**, *Academician*

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12:00 Lunch

**October 1, 1992**

**AFTERNOON**

1:30 **"Organizing for Relief"**

Speaker: **Milagros Llanes**

Social Welfare and Development

Moderator: **Benito S. Vergara, Academician**

Rapporteur: **Jose R. Velasco, Academician**

2:15 **"Approaches to Rehabilitation"**

Speaker: **Oscar Zamora**

Professor, UP Los Baños

Moderator: **Lourdes J. Cruz, Academician**

Rapporteur: **Pedro B. Escuro, Academician**

3:00 Coffee Break and Poster Session

3:30 **"Economic and Policy Implications of Disasters"**

Speaker: **Jerome F. Sison**

Professor, UP Los Baños

Moderator: **José Encarnación, Jr., National Scientist**

Rapporteur: **Tito A. Mijares, Academician**

4:15 **"Research Agenda for Disaster Mitigation"**

Speaker: **Raymundo R. Punongbayan**

Director, PHIVOLCS

Moderator: **Carmen C. Velasquez, National Scientist**

Rapporteur: **Filomena F. Campos, Academician**

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October 2, 1992

Meeting Room 4

**MORNING**

8:30 **COPING WITH NATURAL DISASTERS**

**Summing-up and Recommendations**

Chairman: **Ricardo M. Lantican**, *Academician*  
Members: All moderators and rapporteurs

9:30 Coffee Break and Poster Session

10:00 **SCIENTIFIC SESSIONS**

Mathematical, Physical and  
Engineering Sciences Function Room A  
Chairman: **Melecio S. Magno**, *Academician*

Biological Sciences Meeting Room 4 (A.M.)  
Chairman: **Joventino D. Sorlano**, *Academician*

Social Sciences Function Room B/C  
Chairman: **José Encarnación, Jr.**, *National Scientist*

Agricultural Sciences Meeting Room 7  
Chairman: **Faustino T. Orillo**, *Academician*

Health Sciences Meeting Room 8  
Chairman: **Edito G. Garcia**, *Academician*

12:00 Lunch

1:30 Scientific Sessions (continued)

**SCHEDULE OF PAPER PRESENTATIONS**  
**October 2, 1992 (Tuesday)**

MATHEMATICAL, PHYSICAL AND ENGINEERING SCIENCES (Function Room A)	BIOLOGICAL SCIENCES (Meeting Room 4)	SOCIAL SCIENCES (Function Room B/C)	AGRICULTURAL SCIENCES (Meeting Room 7)	HEALTH SCIENCES (Meeting Room 8)
<b>A.M.</b>				
R. Castro	E. Amparado	F. Laysa	R. Villareal	D. Delfin
P. Yap, Jr.	V. Cariño	N. Castillo	Z. Battad	J. Mojica
R. Cawagas	E. Cao	L. Dery	F. Bawang	C. Sylianco
E. Escultura	V. Cuevas		J. Cabrera	R. Garcia
S. Gervacio			R. Cambaya	
<b>P.M.</b>				
	A. Herrera			
M. Aniano-Illao	N. Lopez		E. Gaminde	
F. Ballesteros, Jr	I. Pagulayan		P. Lobo	
L. Posadas	G. Pocsidio		J. Valdez, Jr.	
C. Pahm	T. Reichert		B. Zaragosa	
F. Sevilla III	A. Arañez			
M. Soriano				

**POSTER SESSIONS**  
**October 1-2, 1992 (Monday-Tuesday)**



October 2, 1992

Function Room A

**MATHEMATICAL, PHYSICAL AND ENGINEERING SCIENCES**

Chairman: **Melecio S. Magno**, *Academician*

- |       |  |   |
|-------|--|---|
| 10:00 | <b>Passive Charging of a Solar Heat Storage System</b><br>(Reynaldo C. Castro*,<br>J.A. Alphin and W.H. Allen) | <b>Reynaldo C. Castro</b><br>National Tobacco Administration<br>Main Research Center<br>Batac, Ilocos Norte   |
| 10:25 | <b>A Viable Worldwide Solar Energy System</b>  | <b>Pio G. Yap, Jr.</b><br>UP Tacloban College<br>Tacloban City  |
| 10:50 | <b>The Sign Matrix Concept and Some Applications in Abstract Algebra and Theoretical Physics</b>               | <b>Raoul E. Cawagas</b><br>SCITECH Research and<br>Development Center<br>Polytechnic University of the<br>Philippines<br>Sta. Mesa, Manila                                    |
| 11:15 | <b>The Mathematics of Singularities</b>  | <b>Edgar E. Escultura</b><br>Institute of Mathematical<br>Sciences and Physics<br>College of Arts and Sciences<br>University of the Philippines<br>Los Baños, College, Laguna |
| 11:40 | <b>Singular Graphs: The Cartesian Product of Two Graphs</b>  | <b>Severino V. Gervacio</b><br>MSU-Iligan Institute of<br>Technology<br>Tibanga, Iligan City  |
| 12:00 | Lunch  |   |

\*To present paper

- |      |   |   |
|------|---|---|
| 1:30 | <b>Modification of Condensation Polymers for Soft X-Ray Lithography</b><br>(Marietta N. Aniano-Illao* and William H. Daly)                                      | <b>Marietta N. Aniano-Illao</b><br>De La Salle University<br>Taft Avenue, Manila  |
| 1:55 | <b>An Evaluation of the Efficacy of Cementitious Solidification as Treatment Technology for Heavy Metal Wastes</b>  | <b>Florencio C. Ballesteros, Jr.</b><br>National Engineering Center<br>University of the Philippines<br>Diliman, Quezon City            |
| 2:20 | <b>Investigation of Chlorophyll Fluorescence as Indicator of Leaf Senescence in Sitaw Plants</b><br>(Linda S. Posadas* and Mabelyn M. Tagasa)                   | <b>Linda S. Posadas</b><br>National Institute of Physics<br>College of Science<br>University of the Philippines<br>Diliman, Quezon City |
| 2:45 | <b>Continuous Fermentation of Acetic Acid Production from Ethanol Using Cell Immobilized in Calcium Alginate Gel Beads</b><br>(Chay B. Pham* and Amaya B. Mata) | <b>Chay B. Pahm</b><br>BIOTECH<br>University of the Philippines<br>Los Baños, College, Laguna   |
| 3:00 | Coffee Break and Poster Session   |   |
| 3:30 | <b>Chemical Transduction Through Field-Effect Transistors</b><br>(Fortunato Sevilla III* and Rafael L. Alfonso)   | <b>Fortunato Sevilla III</b><br>Research Center for the Natural Sciences<br>University of Santo Tomas<br>España, Manila                 |
| 3:55 | <b>Computer-based Metaphase Finding and Karyotyping of Human Chromosomes</b><br>(Maricor Soriano* and Caesar Saloma)  | <b>Maricor Soriano</b><br>National Institute of Physics<br>University of the Philippines<br>Diliman, Quezon City                        |

October 2, 1992

Meeting Room 4

**BIOLOGICAL SCIENCES**

Chairman: **Prescillano M. Zamora**, *Academician*

- |  |   |
|--|---|
| <p>10:00 <b>Embryotoxicity of Malathion, S-{1,2-(diethoxycarbonyl)-ethyl} dimethyl phosphorothiothionate} on the kidney of <i>Tilapia nilotica</i></b></p>   | <p><b>Edna A. Amparado</b><br/>University of the Philippines<br/>Diliman, Quezon City</p>   |
| <p>10:30 <b>Localization of Zinc in the Gonadal Tissues of <i>Tilapia nilotica</i> Linn.</b><br/>(Virginia S. Cariño*, Noel C. Cruz and Henry I. Ruero)</p>  | <p><b>Virginia S. Cariño</b><br/>Institute of Biology<br/>College of Science<br/>University of the Philippines<br/>Diliman, Quezon City</p>                       |
| <p>11:00 <b>Cultivar and Hybrid Characterization of Some <i>Camella</i> Hexaploids Using Isozyme Electrophoresis</b><br/>(Ernelea P. Cao* and Clifford R. Parks)</p>                                 | <p><b>Ernelea P. Cao</b><br/>Institute of Biology<br/>College of Science<br/>University of the Philippines<br/>Diliman, Quezon City</p>                           |
| <p>11:30 <b>Induction of Benlate Resistance for Improved Cellulase Production in <i>Trichoderma harzianum</i> Rifai</b><br/>(Virginia C. Cuevas*, C.T. Culiati, N.E. Sajise, and R.L. Manaligod)</p> | <p><b>Virginia C. Cuevas</b><br/>Institute of Biological Sciences<br/>College of Arts and Sciences<br/>University of the Philippines<br/>Diliman, Quezon City</p> |
| <p>12:00 Lunch</p>   |   |

\* To present paper

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**Biological Sciences (cont.)**

**Meeting Room**

- 1:30 **Cardiac Structure in Chronically Stressed *Oreochromis niloticus***  
(Annabelle A. Herrera\*, Elena Catap, and June Anne Luzares)
- 2:00 **Metazoan Parasites of *Glossogobius giurus* (Hamilton-Buchanan) from Naujan Lake, Oriental Mindoro**  
(Nellie C. Lopez\* and Fermin Palisoc)
- 2:30 **The Effects of Excised Cerebral Ganglia Extract on Growth of *Achatina ferussac***  
(Imelda F. Pagulayan\* and Thucydides L. Salonga)
- 3:00 Coffee Break and Poster Session
- 3:30 **The Antifungal Activity of the Holothurin of Philippine *Littoral holothurians***
- Annabelle A. Herrera**  
Institute of Biology  
College of Science  
University of the Philippines  
Diliman, Quezon City
- Nellie C. Lopez**  
Institute of Biology  
College of Science  
University of the Philippines  
Diliman, Quezon City
- Imelda F. Pagulayan**  
Institute of Biology  
College of Science  
University of the Philippines  
Diliman, Quezon City
- Glorina N. Pocsidio**  
Institute of Biology  
College of Science  
University of the Philippines  
Diliman, Quezon City

\*To present paper

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4:00 **Comparative Studies on the Morphology and Isoenzyme Patterns of Six Philippine *Acanthamoeba* Isolates**  
(Tanya Z. Reichert\*, R.R. Matias, F.F. Natividad, and G.L. Enriquez)

**Tanya Z. Reichert**  
BIOTECH  
College of Science  
University of the Philippines  
Diliman, Quezon City

4:30 **The Effects of Red, Blue and White Light on Gamma-Irradiated *Nostoc***  
(Adoracion T. Arañez\* and Raquel O. Rubio)

**Adoracion T. Arañez**  
NSRI, College of Science  
University of the Philippines  
Diliman, Quezon City

October 2, 1992

Meeting Room 7

### AGRICULTURAL SCIENCES

Chairman: **Faustino T. Orillo**, *Academician*

10:00 **Revolutionary Genes in the Genus *Lycopersicon***

**Ruben L. Villareal**  
College of Agriculture  
University of the Philippines  
Los Baños, College, Laguna

10:30 **Effects of Different Cutting Heights and Intervals on the Yield and Nutritive Value of *Desmanthus virgatus* (L.) Willd**  
(Zosimo M. Battad\*, L.T. Trung, O.E. Zamora and T.A. Atega)

**Zosimo M. Battad**  
Mariano Marcos State University  
Batac, Ilocos Norte

11:00 **Utilization of Pine Needles as Mulch: Their Effects on Weeds and the Germination, Growth, Yield and Some Postharvest Qualities of Pechay, Snapbean and Potato**

**Franco T. Bawang**  
Benguet State University  
La Trinidad, Benguet

\*To present paper

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**Agricultural Sciences (cont.)**

**Meeting Room 7**

11:30 **Growth Estimation of  
*Oreochromis niloticus* (L.)  
Cultured in Rice Paddies  
Using Circ Technique**

**Jocelyn D. Cabrera**  
NVSIT, College of Fisheries  
Bayombong, Nueva Vizcaya

12:00 Lunch

1:30 **Study on the Utilization of  
Indigenous Sources of  
Fertilizer Materials in the  
Bicol Region for Soil  
Amendments and Crop  
Productivity**  
(Romulo C. Cambaya\* and  
Lea H. Capucan)

**Romulo C. Cambaya**  
Department of Agriculture  
Region V, San Agustin  
Pili, Camarines Sur

2:00 **Nature of Indigenous  
Rhizobia from *Arachis  
hypogaea* L. in some  
Bicol Soils**

**Esperanza Celino-Gaminde**  
Bicol Experiment Station  
Department of Agriculture  
Pili, Camarines Sur

2:30 **Evaluation of Starflower  
(*Calotropis gigantea*) Against  
Golden Apple Snail (*Pomacea  
canaliculata*) in Lowland  
Transplanted Rice**  
(Paz Patria G. Lobo\*, Marian A.  
Llagas and Fe D. Laysa)

**Paz Patria G. Lobo**  
Department of Agriculture  
Region V, San Agustin  
Pili, Camarines Sur

3:00 Coffee Break and Poster Session

3:30 **Soil Loss and Run-Off as  
Affected by Strips of Ipil-Ipil  
Planted Along Contours of  
Sloping Cultivated Lands**

**Jorge G. Valdez, Jr.**  
Pampanga Agricultural College  
Magalang, Pampanga

\* To present paper

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- 4:00 **Etiology of the Yellowing and Wilt Disease of Black Pepper (*Piper nigrum* L.) Including Biocontrol** **Belen A. Zaragosa**  
(Belen A. Zaragosa\*, M.B. Castillo and L.L. Ilag)  
Bicol Experiment Station  
Department of Agriculture  
Pili, Camarines Sur

October 2, 1992

Meeting Room 8

**HEALTH SCIENCES**

Chairman: **Edito G. Garcia**, *Academician*

- 10:00 **Quantitative Echocardiographic Structural Analysis of the Left Ventricle (LV) After Intensive Endurance Training Among Filipino Athletes** **Danilo P. Delfin**  
(Danilo P. Delfin\*, Cheryl Peralta, Romeo Santos, Homobono Calleja, Renato Dantes and Ramon Abarquez)  
Division of Adult Cardiology  
Philippine Heart Center  
East Avenue, Quezon City
- 10:30 **The Relationship Between Exercise Capacity and Perceived Well-being in Elderly Patients with Coronary Artery Disease Undergoing Supervised Physical Conditioning** **Jose Alvin P. Mojica**  
(Jose Alvin P. Mojica\*, Elias Imperial, Peter Kelleher, Maree Pinson, Richard Cue, Reginald Mitchell and Karen Toh)  
Department of Rehabilitation  
Medicine  
UP-PGH, Taft Avenue  
Manila

\*To present paper

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**Health Sciences (cont.)**

**Meeting Room 8**

- 11:00 **Inhibition of the Initiation Stage of Carcinogenesis by Coconut Oil, Coconut Meat, Coconut Milk and Coconut Water** (Clara Y. Lim-Sylianco\*, L. Sylianco-Wu, E. Serrame, R. Mallarca, J. Balboa and A.P. Guevarra) **Clara Y. Lim-Sylianco**  
Institute of Chemistry  
College of Science  
University of the Philippines  
Diliman, Quezon City
- 11:30 **The Effect of "Neem" (*Azadirachta indica* A. Juss) Plant (Family Meliaceae) on the Ontogenetic Stages of *Schistosoma japonicum*, Katsurada, 1904 and Its Intermediate Host *Oncomelania hupensis quadrasi* (Davis)** **Rolando G. Garcia**  
Institute of Biology  
College of Science  
University of the Philippines  
Diliman, Quezon City

**October 2, 1992**

**Function Room B/C**

**SOCIAL SCIENCES**

Chairman: **José Encarnación, Jr.**, *National Scientist*

- 10:00 **The Porbaran Experience: Increasing Farmer's Participation in Technology Generation and Utilization** (Fe D. Laysa\*, J.R. Florin, Sr., G.H. Bordado III, R.B. Bitao, E.B. de la Torre and R.C. Cambaya) **Fe D. Laysa**  
Department of Agriculture  
Region 5, San Agustin  
Pili, Camarines Sur

\*To present paper



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**10:30 The Socio-Cultural-Psychological Milieu of Tuberculosis in the Philippine Context**

**Nina T. Castillo**

Department of Social  
Sciences

College of Arts and Sciences  
University of the Philippines  
Los Baños, College, Laguna

**11:00 Sina Raha Katunao, Lakandula Tupas at Matanda: Isang Pag-aaral sa Kanilang Kasaysayang Pampamilya at ang Papel na Ginampanan nila sa Kasaysayan ng Pilipinas noong Panahon ng Kastila**

**Luis C. Dery**

University of the Philippines  
College, Baguio City

\*To present paper

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# POSTER SESSIONS

October 1-2, 1992

## BIOLOGICAL SCIENCES

### Title of Paper

### Presenter/Address

**Some Edible Ferns in Bukidnon**

**Victor Amoroso**

College of Arts and Sciences  
Central Mindanao State University  
University Town, Musuan, Bukidnon

**The Sesquiterpene Lactones of  
*Mikania cordata* (Burm. F.)  
B.L. Rob.**

**Alicia Aguinaldo, Fumiko Abe,  
Tatsuo Yamauchi and  
William Padolina**

Research Center for the Natural  
Sciences  
University of Santo Tomas  
España, Manila; University of the  
Philippines, Los Baños

**Bio-Physico-Chemical and  
Socioeconomic Assessment  
of Sarnap Lake In Relation  
to its Fishery Productivity**

**Facundo B. Asia**

MMSU Staff Housing  
Batac, Ilocos Norte

**Quantitative and Qualitative  
Changes in the Skeletal Muscle  
Acetylcholinesterase Activity  
of *Oreochromis niloticus*  
Exposed to Methyl Parathion**

**Elena S. Catap  
and Glorina N. Pocsidio**

Institute of Biology  
College of Science  
University of the Philippines  
Diliman, Quezon City

**Changes in the Peripheral Blood  
and Hemopoietic Tissues in the  
Trunk Kidney of Nile Tilapia  
( *Oreochromis niloticus* )  
after Acute Exposure to Zinc**

**Arsenia A. Casauay  
and Virginia S. Cariño**

Natural Science Research Institute  
University of the Philippines  
Diliman, Quezon City

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**Biological Control of *Rhizoctonia solani* Kuhn by Fungal Antagonist ANF-777**

**Esperanza G. Gaminde**  
Bicol Experiment Station  
Department of Agriculture  
Pili, Camarines Sur

**Antimutagenic Potential of Bryophytes from Iloilo**

**Gerard Penecilla  
and Mansueta A. Yaplito**  
College of Arts and Sciences  
West Visayas State University  
Iloilo City

### **SOCIAL SCIENCES**

**Enhancing Validity Through Consistency Between Instruction and Evaluation Procedures**

**Dolores G. Garcia**  
31 Road 8 GSIS Hills  
Talipapa, Novaliches  
Quezon City

**The Irrelevance of Law to the Justice Needs of a Society**

**Fay L. Dumagat**  
44-C, Alley 3  
Road 8, Project 6  
Quezon City

### **AGRICULTURAL SCIENCES**

**Nodulation Among the Leguminosae in the Philippines**

**Norma O. Aguilar**  
Institute of Biological Sciences  
College of Arts and Sciences  
University of the Philippines  
Los Baños, College, Laguna

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**Survey of Nodulation of  
Philippine Tree Legumes**

**Nestor T. Baguion  
and Pura SV. Amoloza**  
Department of Forest Biological  
Sciences, College of Forestry  
University of the Philippines  
Los Baños, Laguna

**Sweet Potato Cutting Length  
Appropriate for Volcanic Ash-  
Covered Soil**

**Federico G. Villamayor**  
Philippine Root Crop Research  
and Training Center  
VISCA, Baybay, Leyte

**Quick Sap Test for  
Optimization of Vegetable  
Nitrogen Nutrition**

**R.R. Bonoan, P.E.H. Gregg  
and M.J. Hedley**  
National Tobacco Administration  
Main Research Center  
Batac, Ilocos Norte

**Clonal Propagation of F,  
Hybrids of Mungbean  
(*Vigna radiata* L. Wilczek)  
X Blackgram (*V. mungo* L.  
Hepper) by Tissue Culture**

**Renato A. Avenido,  
C.J. Mendoza , D.M. Hautea  
and S.L. Carandang**  
Institute of Plant Breeding  
College of Agriculture  
University of the Philippines  
Los Baños, College, Laguna.

**Fertility Classes of Soils and  
Quality of Irrigation Water in  
Tobacco-Growing Areas in  
the Philippines**

**Leonor Elizabeth Balito,  
R.R. Bonoan, J.O. Paz,  
L.D. Bagoisan, J.V. Raquel,  
E.F. Javier, N.D. Apilado,  
A.S. Cristobal, L.A. Raganit,  
R.J., Jr. and A.Q. Ganal**  
National Tobacco Administration  
Main Research Center  
Batac, Ilocos Norte

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**GENMOD: A Generalized  
Insect Population Model**

**Edwin A. Benigno  
and Melvin D. Eduenga**  
National Academy of Science  
and Technology  
Bicután, Taguig, Metro Manila  
National Crop Protection Center  
University of the Philippines Los Baños  
College, Laguna

**HEALTH SCIENCES**

**Locally Made Ventriculo-  
Peritoneal Shunt System**

**Steven Bacalian and F. Domingo, Jr.**  
62 L. Burgos St., La Paz  
Iloilo City

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Republic of the Philippines  
THE NATIONAL ACADEMY OF SCIENCE AND TECHNOLOGY

*presents the*

**1992 PHILIPPINE TALENT SEARCH PRIZE  
(First Prize)**

*to*

**ROWENA CRISTINA L. GUEVARA**

in recognition of her ingenuity and resourcefulness exerted towards locally-designed equipment for Electrical Engineering laboratories, exemplified by her project entitled "Development of Low-Cost, PC-based, Real-Time, Low-Frequency Spectrum Analyzer".

**(Second Prize)**

**ROY ROBERTO L. GERONA**

in recognition of his contribution in microbial leaching, as exemplified by his works on facilitated leaching of pyrite and other sulfide minerals from a refractory gold ore by *Thiobacillus ferrooxidans*.

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**(Third Prize)**

**JOSEPHINE U. AGRAVANTE**

in recognition of her contribution to the reduction of postharvest losses in horticultural crops ('Cavendish' banana , 'Carabao' mango) and the determination of the quality profiles of tropical fruits.

**(Special Citation)**

**CESAR G. DEMAYO**

in recognition of his contribution in helping to unravel the genetic variations in various insects pest populations infesting rice in the Philippines.

**(Special Citation)**

**NEILA S. SUMAGAYSAY**

in recognition of her contribution to the improvement of milkfish production in brackish water ponds.

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**(Special Citation)**

**RU ANGELIE M. EDRADA**

in recognition of her development of biochemical methods to screen for potential plant sources of new anti-inflammatory drugs.

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**THE NATIONAL ACADEMY OF SCIENCE AND TECHNOLOGY**  
and  
**THE THIRD WORLD ACADEMY OF SCIENCES**  
*present the*

**1992 NAST-TWAS SCIENCE PRIZE**  
**IN MATHEMATICS**

*to*

**POLLY W. SY, Ph.D.**

in recognition of her important achievements in the advancement of mathematical research and mathematics education in the Philippines. Her works on “the spectral theory of periodic Schrödinger operators” have found important applications in quantum mechanics and geometry.



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Republic of the Philippines  
**THE NATIONAL ACADEMY OF SCIENCE AND  
TECHNOLOGY**

*presents*

**The 1992 OUTSTANDING YOUNG SCIENTIST  
AWARD**

*to*

**ARSENIO M. BALISACAN, Ph.D. (Economics)**

in recognition of his outstanding researches on the economics of agricultural and rural development as well as on income distribution which have substantially improved the understanding of the nature, causes and consequences of rural poverty in the Philippines.

**RHODORA A. DEL ROSARIO, M.D. (Health Science)**

in recognition of her dedicated service and exemplary research in otolaryngology particularly on the microbiology of chronic otitis media leading to cost effective treatment of this disease.

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**PORTIA GAMBOA-LAPITAN, M.S. (Forest Biology)**

in recognition of her pioneering works on the biology of forest tree seeds which have identified the causes of the poor quality seeds used in reforestation as well as methods by which these can be overcome.

**LUZ R. NOCHEFRANCA, Ph.D. (Mathematics)**

in recognition of her significant contribution to the advancement of Mathematics in the areas of groups, graphs and combinatorics.

**VALENTINO C. PERDIDO, M.S. (Crop Science)**

in recognition of his exemplary performance in research entrepreneurship and his significant contributions to the development of affordable corn varieties for the benefit of small Filipino farmers. His vigorous efforts in crop improvement, particularly corn breeding, resulted in the development of three open-pollinated varieties (OPVs) of corn, namely: IES Cn 1, IES Cn 2, and IES Glut 1. These varieties have been approved and released by the Philippine Seed Board for commercial production in the country.

**CAESAR A. SALOMA, Ph.D. (Applied Physics)**

in recognition of his outstanding research achievements in the field of instrumentation physics which resulted in the development of new techniques and methods of measuring physical signals, particularly signal recovery techniques, the new techniques in signal sampling and reconstruction.

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**IRENE M. VILLASEÑOR, Ph.D. (Chemistry)**

in recognition of her important researches on the isolation and structure elucidation of mutagenic constituents from *Moringa oleifera* (Lam.) and *Capsicum frutescens* Linn. that may impact on mutagenicity in the environment.

**MARIA HELENA T. YAP, Ph.D. (Marine Biology)**

in recognition of her pioneering studies on the marine environments, especially coral reefs, that have led to fuller understanding of the ecology of these ecosystems. Her exceptional ability in marine research has helped build international recognition for the marine scientists of our country.

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Republic of the Philippines  
**The NATIONAL ACADEMY OF SCIENCE  
AND TECHNOLOGY**

*confers the Rank and Title of*

**Academician**

*to*

**MERCEDES BARREDO CONCEPCION, Ph.D.**

B.S. (Chemistry) UP, Diliman, 1951

Ph.D. (Sociology/Demography) University of Chicago, 1963

In recognition of her contributions in the field of population research and policy. Her study of population growth in the Philippines has been a significant input in the development, monitoring and evaluation of our national population policy and program. Her pioneering research and continuing work on Philippine as well as Southeast Asian demographic processes is recognized internationally.

**ERNESTO OCHOA DOMINGO, M.D.**

A.A. University of the Philippines, 1956

M.D. University of the Philippines, 1961

In recognition of his outstanding accomplishments in the study of the nature of schistosome granuloma and its role in hepatosplenic disease; the epidemiology and control of hepatitis B in the Philippines; and the pathophysiology, clinical behavior and treatment of hepatocellular carcinoma in Filipinos.

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**RAFAEL DINEROS GUERRERO, III, Ph.D.**

B.S. (Zoology) UP Diliman, 1964

M.S. (Applied Zoology) UP Los Baños, 1970

Ph.D. (Fisheries Management) Auburn University, 1974

In recognition of his scientific and technological contributions to the development of sex reversal and hatchery techniques that led to the commercial production of high yielding market-size tilapia in the Philippines and other countries.

**EVELYN MAE TECSON MENDOZA, Ph.D.**

B.S. (Chemistry) Mapua Institute of Technology, 1967

M.S.(Biochemistry) University of Massachusetts, 1971

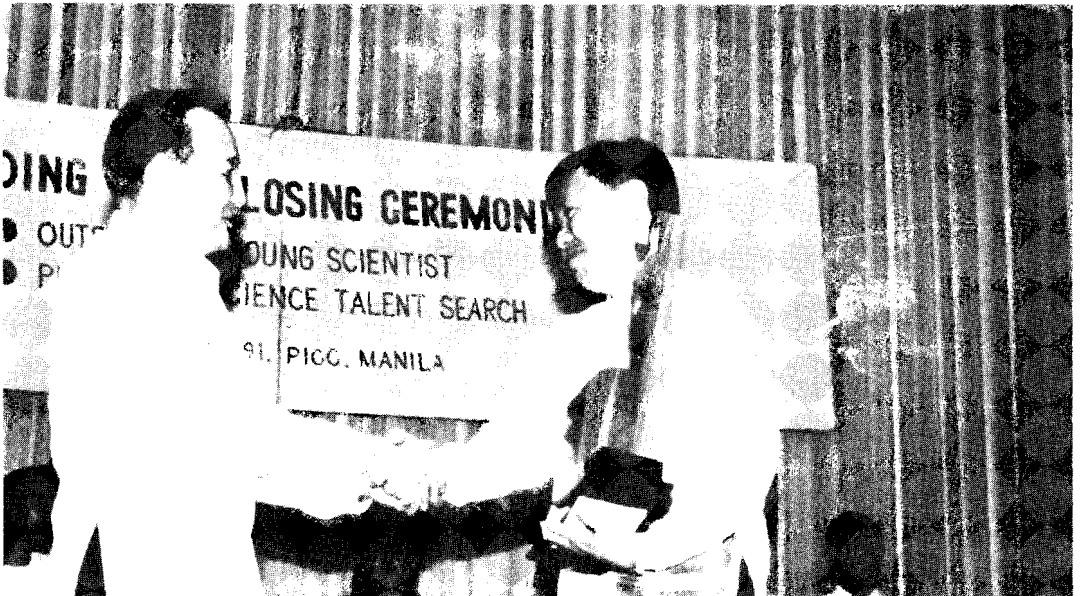
Ph.D. (Biochemistry) University of Massachusetts, 1975

In recognition of her sustained basic researches in plant biochemistry: (a) on the factors affecting the nutritional quality and acceptability of cowpea, mungbean and several underutilized Philippine indigenous legumes, cassava and sweet potato; (b) on the biochemical basis of resistance of selected plants to pest or disease; and (c) on the biochemical basis of the makapuno phenotype of coconut.

## 1990-91 in Pictures



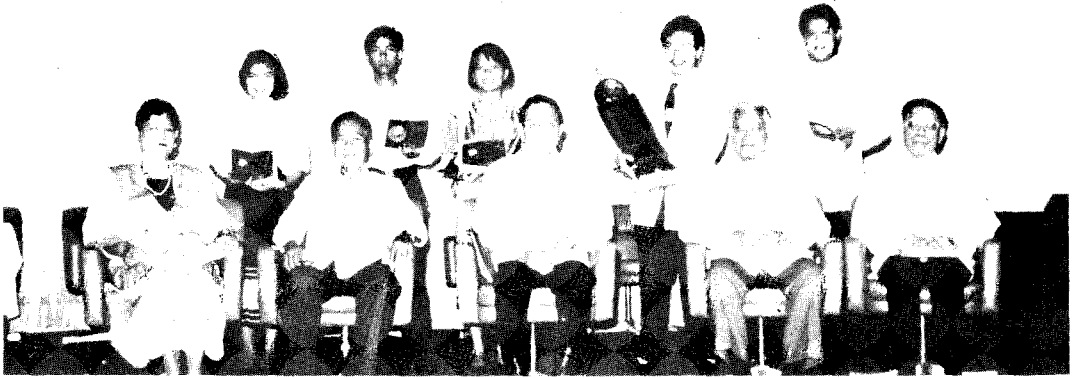
The 13th Annual Scientific Meeting of the Academy was held on July 9-10, 1991 at the Philippine International Convention Center (PICC), Roxas Boulevard, Manila with DENR Secretary Fulgencio S. Factoran (on the rostrum) as keynote speaker. The theme of the scientific meeting was "Managing Ecosystem for Long-Term Human Survival".



In the same occasion, nine were selected Outstanding Young Scientists (OYS) for exemplary contributions in their fields. They were: Victor B. Amoroso (Botany), Alberto T. Barrion (Entomology), Ma. Cecilia Gastardo-Conaco (Psychology), Emerenciana E. Ballelos-Duran (Bio-physics), Edwino S. Fernando (Plant taxonomy), Ma. Socorro H. Gochoco (Economics), Joseph Y. Lim (Economics), Florentino C. Sumera (Chemistry), and Violeta M. Villegas (Fruit breeding and genetics).

## AWARDING AND CLOSING CEREMONIES

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Philippine Talent Search prizes were given to Raul Francisco Roño (first prize) of the National Institute of Physics, UP Diliman. Vincent V. Hilomen (second prize) and Ms. Virginia P. Roxas (third prize). Special Citations were given to Mr. Lemnuel V. Aragones, Miss Maribel T. Joson, and Mr. Amir S. Lapiz.



The NAST-UPLB Rice Task Force, led by NAST President Umali, conducted an in-depth study and analysis of the rice industry to guide policymakers.



The Task Force on Botanical Garden held Roundtable Conferences to draft an Executive Order creating a body to coordinate the network of botanical gardens in the country. The Task Force will also prepare and identify the areas and priorities for the establishment of the national botanical garden.



One of the science literacy awareness fora held by the Academy at the Casiño Español, T.M. Kalaw Street, Manila was on the topic "Review of Foreign Investment Policy". Featured were experts from different agencies. The meeting was attended by representatives from the major newspapers.



## ACADEMICIANS

**Year  
Elected**

1978	Paulo C. Campos, M.D.	Medicine
1978	Alfredo V. Lagmay, Ph.D.	Experimental Psychology
1978	+ Cecilio F. Lopez, Dr. Phil.	Philippine Linguistics and Oriental Studies
1978	Tito A. Mijares, Ph.D.	Statistics
1978	+ Juan S. Salcedo, Jr., M.D.	Nutrition and Public Health
1978	+ Alfredo C. Santos, Dr. Phil.	Physical Chemistry
1978	+ Dioscoro L. Umali, Ph.D.	Genetics and Plant Breeding
1978	Carmen C. Velasquez, Ph.D.	Parasitology
1978	+ Gregorio T. Velasquez, Ph.D.	Phycology
1978	+ Gregorio Y. Zara, D. Sc.	Engineering and Inventions
1979	Encarnacion Alzona, Ph.D.	History
1979	+ Teodoro A. Agoncillo, Litt.D. (h.c.)	History
1979	Jose Encarnacion, Jr., Ph.D.	Economics
1979	Pedro B. Escuro, Ph.D.	Genetics and Plant Breeding
1979	Raymundo A. Favila, Ph.D.	Mathematics
1979	+ Francisco M. Fronda, Ph.D.	Animal Husbandry
1979	Bienvenido O. Juliano, Ph.D.	Organic Chemistry
1979	Melecio S. Magno, Ph.D.	Physics
1979	Fe del Mundo, M.D., M.A.	Pediatrics
1979	+ Geminiano T. de Ocampo, M.D.	Ophthalmology
1979	+ Eduardo A. Quisumbing, Ph.D.	Plant Taxonomy
1979	+ Jose N. Rodriguez, M.D.	Leprology
1979	+ Casimiro del Rosario, Ph.D.	Physics
1980	Luz Oliveros-Belardo, Ph.D.	Pharmaceutical Chemistry
1980	Magdalena C. Cantoria, Ph.D.	Botany
1980	+ Emerita V. de Guzman, Ph.D.	Plant Physiology
1980	Conrado S. Dayrit, M.D.	Pharmacology, Cardiology
1980	+ Francisco O. Santos, Ph.D.	Agricultural Chemistry
1980	Joventino D. Soriano, Ph.D.	Cytogenetics and Mutation Research
1980	Clara Y. Lim-Sylianco, Ph.D.	Biochemistry and Organic Chemistry
1981	Clare R. Baltazar, Ph.D.	Systematic Entomology
1981	+ Julian A. Banzon, Ph.D.	Biophysical Chemistry
1981	+ Amando M. Dalisay, Ph.D.	Economics
1981	Benjamin D. Cabrera, M.D., M.P.H.	Medical Parasitology and Public Health
1982	Emil Q. Javier, Ph.D.	Genetics and Plant Breeding
1983	Gelia T. Castillo, Ph.D.	Rural Sociology
1983	Jose O. Juliano, Ph.D.	Nuclear Chemistry and Physics

+deceased

1983	+	Hilario D.G. Lara, M.D., Dr. P.H.	Public Health
1983		Bienvenido F. Nebres, S.J., Ph.D.	Mathematics
1983		Faustino T. Orillo, Ph.D.	Mycology
1983		Jose R. Velasco, Ph.D.	Plant Physiology
1985		Quintin L. Kintanar, M.D., Ph.D.	Environmental Medicine
1985		Quirino O. Navarro, Ph.D.	Nuclear Chemistry
1985	+	Gregorio F. Zaide, Ph.D.	History
1987		Solita Camara-Besa, M.D., M.S.	Biochemistry
1987		Filomena F. Campos, Ph.D.	Plant Breeding/Cytogenetics
1987		Lourdes J. Cruz, Ph.D.	Biochemistry
1987		Edito G. Garcia, M.D.	Medical Parasitology
1987		Carmen LI. Intengan, Ph.D.	Nutrition
1987		Dolores A. Ramirez, Ph.D.	Biochemical Genetics
1987		Benito S. Vergara, Ph.D.	Plant Physiology
1987		Prescillano M. Zamora, Ph.D.	Plant Anatomy-morphology
1988		Ricardo M. Lantican, Ph.D.	Genetics and Plant Breeding
1990		Leopoldo S. Castillo, Ph.D.	Animal Science
1990		Apolinario D. Nazarea, Ph.D.	Biochemistry
1990		Ruben L. Villareal, Ph.D.	Plant Breeding

### NATIONAL SCIENTISTS

#### Year Conferred

1978	+	Juan S. Salcedo, Jr., M.D.	Nutrition and Public Health
1978	+	Alfredo C. Santos, Dr. Phil.	Physical Chemistry
1978	+	Gregorio Y. Zara, Dr. Sc.	Engineering and Inventions
1980		Fe del Mundo, M.D., M.A.	Pediatrics
1980	+	Eduardo Quisumbing, Ph.D.	Plant taxonomy
1982	+	Geminiano T. de Ocampo, M.D.	Ophthalmology
1982	+	Casimiro del Rosario, Ph.D.	Physics
1982	+	Gregorio T. Velasquez, Ph.D.	Phycology
1983	+	Francisco M. Fronda, Ph.D.	Animal Husbandry
1983	+	Francisco O. Santos, Ph.D.	Agricultural Chemistry
1983		Carmen C. Velasquez, Ph.D.	Parasitology
1985	+	Teodoro A. Agoncillo, Litt. D. (h.c.)	History
1985		Encarnacion Alzona, Ph.D.	History
1985	+	Hilario D.G. Lara, M.D., Dr. P.H.	Public Health
1986	+	Julian A. Banzon, Ph.D.	Biophysical Chemistry
1986	+	Dioscoro L. Umali	Genetics and Plant Breeding
1987		Luz Oliveros-Belardo, Ph.D.	Pharmaceutical Chemistry
1987		Jose Encarnacion, Jr., Ph.D.	Economics
1988		Alfredo V. Lagmay, Ph.D.	Experimental Psychology
1989		Paulo C. Campos, M.D.	Medicine

+deceased

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### **NAST Executive Council**

Academician Conrado S. Dayrit - Acting President  
Academician Faustino T. Orillo - Acting Vice-President  
Academician Joventino D. Soriano - Secretary  
Academician Magdalena C. Cantoria  
National Scientist José Encarnación, Jr.  
Academician Bienvenido O. Juliano

### **Annual Scientific Meeting Committee**

Academician Joventino D. Soriano - Chairman  
Academician Solita Camara-Besa  
Academician Gelia T. Castillo  
Academician Conrado S. Dayrit  
National Scientist Alfredo V. Lagmay  
Academician Melecio S. Magno  
Academician Tito A. Mijares  
Academician Faustino T. Orillo  
Academician Dolores A. Ramirez  
Academician Prescillano M. Zamora





