



# **NAST**

## **Annual Report**

### **1991**

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

# **NAST**

## **Annual Report**

### **1991**

**NATIONAL ACADEMY OF SCIENCE AND TECHNOLOGY**  
**TAPI Bldg., DOST Compound**  
**Bicutan, Taguig, Metro Manila**

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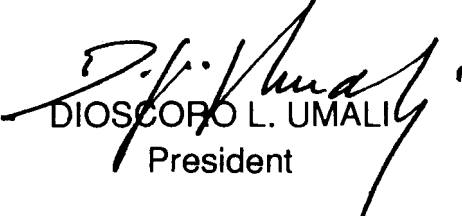




## FOREWORD

The National Academy of Science and Technology (NAST), in pursuance of its mandated functions as recognition and advisory body on science and technology, humbly presents this publication which highlights the Academy's programs and activities for Calendar Year 1991.

As we strive for more vigorous steps towards accelerating the advancement of science and technology in the country to keep pace with the emergence of industrialized countries in Asia, the Academy hopes to achieve more than what it is expected of her as we gear towards the end of the twentieth century.

  
DIOSCORO L. UMALI  
President

## **NATIONAL ACADEMY OF SCIENCE AND TECHNOLOGY 1991 Annual Report**

The Academy has been active in the pursuit of its functions as the country's premier science and technology collegial body.

NAST gave the 1991 Outstanding Young Scientists awards to nine promising scientists. On the collegiate level it awarded the first prize in the Philippine Science Talent Search competition to a professor of computer in UP Diliman.

NAST created several committees to aid in its advisory functions. These committees were: Biotech Committee, ASM Program Committee, Environmental Management Committee, NAST Rice Task Force and the National Botanic Garden Task Force. All of the recommendations gathered/formulated by these committees were presented to concerned agencies.

In the year under review, NAST members became more visible and active in attending to scientific and technological activities/endeavors such as the institution of the Scientific Career System (SCS) and Intellectual Property Rights. The SCS was established by DOST pursuant to Sec. 19 of E.O. No. 784 dated 17 March 1982 and implemented by E.O. No. 901 dated 19 July 1983. A Committee in the National Research Council of the Philippines (NRCP) headed by Dr. Virginia S. Cariño and Dean Roger Posadas is preparing a policy paper on the security aspects of Intellectual Property Rights.

Due to economic measures of the government, travels became limited. This also adversely influenced flows of visitors from the Philippines to other countries and vice versa. However, NAST maintained its linkages with other academies of science where it has memorandum of agreement.

### **NAST MANDATES**

Since its creation on 17 December 1976 through Presidential Decree No. 1003-A, the National Academy of Science and Technology (NAST or Academy) has been pursuing its mandates as an advisory and recognition body on science and technology. NAST is also tasked to undertake other activities expected of an academy of science such as the establishment of international linkages with other academies of science.

## **RECOGNITION FUNCTION**

### ***Outstanding Young Scientist***

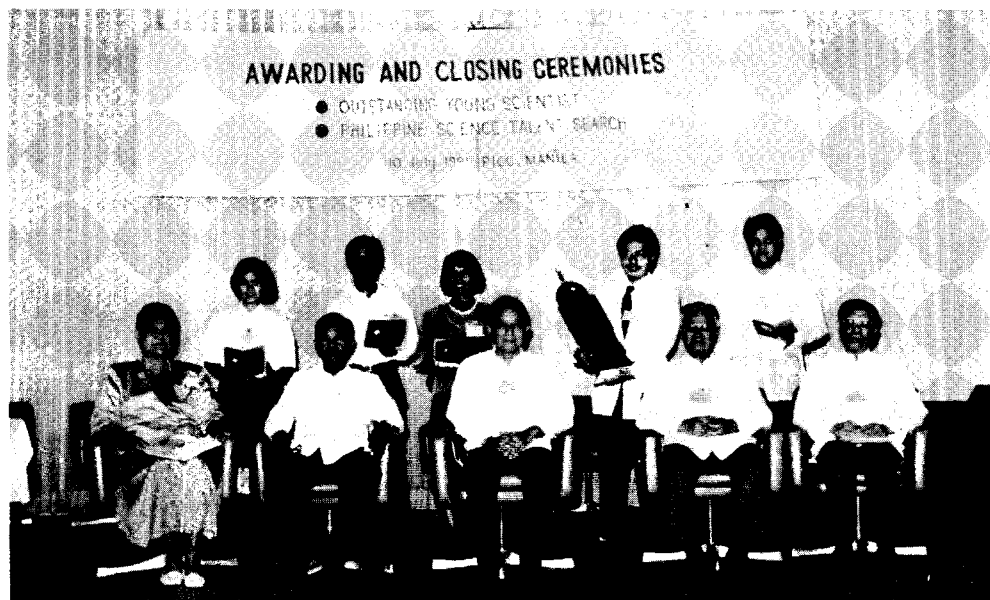
The Academy gave the 1991 Outstanding Young Scientist awards to nine promising scientists. The awardees were: Dr. Victor B. Amoroso (Botany), Mr. Alberto T. Barrion (Entomology), Dr. Ma. Cecilia Gastardo-Conaco (Psychology), Dr. Emerenciana E. Ballelos-Duran (Biophysics), Mr. Edwino S. Fernando (Plant taxonomy), Dr. Ma. Socorro H. Gochoco (Economics), Dr. Joseph Y. Lim (Economics), Dr. Florentino C. Sumera (Chemistry), and Dr. Violeta M. Villegas (Fruit breeding and genetics).



**OYS Awardees.** NAST President Dioscoro L. Umali congratulates one of the recipients of OYS award as other awardees (background) look on.

### ***Philippine Science Talent Search***

As part of its recognition functions, NAST continued the selection of candidates for the Philippine Science Talent Search awards. Mr. Raul Francisco Roño of the National Institute of Physics, UP Diliman won the first prize. Mr. Vincent V. Hilomen and Virginia P. Roxas won the second and third prizes, respectively. Special citations were given to Mr. Lemnuel V. Aragonés, Miss Maribel T. Joson, and Mr. Amir S. Lapiz. (Appendix A)



**Philippine Talent Search Awards.** NAST President Dioscoro L. Umali (center) and (from right) Acd. Tito A. Mijares, NAST Vice-President Conrado S. Dayrit, NAST Secretary Joventino D. Soriano, and Acd. Filomena F. Campos pose with the awardees. Mr. Raul Francisco Roño (with trophy) won the first prize.

Its pursuit of the NAST-Third World Academy of Sciences (TWAS) Science Prize for 1991 in the field of chemistry had been fruitless and so was its effort in electing new members into the Academy as well as conferring the rank and title of National Scientist.

### ***Benefits of Academicians***

The National Academy of Science and Technology supported nine Academicians as research fellows in 1991 ( Appendix B).

Under benefits to members of the Academy, NAST gave pre-departure expenses to Academician Filomena F. Campos who officially represented the Academy at the International Geosphere Biosphere Program (IGBP) Meeting on 12-14 December 1991 in Singapore.

Herewith is part of the report of Academician F. Campos on her travel concerning IGBP:

- \* The workshop strongly recommends the formulation of national IGBP committee which should be interdisciplinary including both natural and social sciences. Towards this recommendation, the Philippines, which does not have an IGBP National Committee, should strive in the shortest time possible to organize one in order that it can legitimately benefit from the

IGBP regional and international networking.

- \* It recommends that the countries involved in IGBP activities should have continuity in fund support and commitment from their respective governments.
- \* The meeting stresses the need for the scientific communities in the region to be fully involved in all aspects of global change research within the international research framework of IGBP, World Climate Research Programme (WCRP), Human Dimensions of Global Environment Change Programme (HD/GEC) taking national and available scientific expertise into consideration.
- \* Specific research topics which are of common interest to many countries such as "Methane emission studies from rice paddies" can be initiated at the national level without awaiting for external funding.

Database and information exchange, training, and use of existing facilities in research institutes of other countries should be availed of.

In this regard, it was recommended that an inventory listing of national institutes, local scientists, and line of expertise be prepared and sent to the IGBP Secretariat.

- \* To firm-up the regional research agenda, a workshop for specific topics be organized.

## **ON ADVISORY ACTIVITIES**

### ***NAST Rice Task Force***

The NAST Rice Task Force was created by NAST under the supervision of President Dioscoro L. Umali. It is being coordinated by Dr. Liborio Cabanilla and Dr. Bienvenido Saniano of UP Los Baños. The Task Force designed the action program presently being implemented in the provinces of Laguna and Camarines Norte. The initial step was the establishment of rice-farmers cooperatives. Upon the establishment of cooperatives, arrangements were made with the Provincial Agricultural Officers (PAO's) of the two provinces to mobilize all related efforts

of government agencies and nongovernmental organizations in support of the rice industry.

Clusters of rice producing towns of Laguna and Camarines Norte as well as the priority rice industry problems were identified in pursuit of the action program.

The Rice Task Force will further conduct an in-depth study and analysis of the rice situation in order to complete the report. This could be the basis for policy making by involved agencies especially PhilRice.



**Rice Task Force.** NAST President Dioscoro L. Umali discusses issues with the townfolks concerning rice problem in the country.

### ***Biotech Committee***

Following the Asian Regional Seminar/Workshop on Biotechnology held on 3-6 December 1990, NAST created a Biotech Committee to consolidate all ideas on the problem and formulate the needed action plan. The NAST Biotech Committee, chaired by National Scientist Paulo C. Campos, met and consolidated the resolutions and recommendations which can be classified into four areas: (1) policies affecting science and technology (S&T); (2) involvement of the private sector, (3) access to biotechnology and (4) sustainable development. The recommendations were forwarded to concerned government agencies such as the Department of Science and Technology (DOST), Science and Technology Coordinating Council (STCC), and the policy and decision makers. The Committee also met on 28 January 1991 with

the DOST Biotech Committee. Upon the recommendation of the Biotech Committee, NAST endorsed the biotech mega projects of DOST. Finally, NAST submitted the resolution addressed to the President, Cabinet members and Congress recommending that long-term and technology projects should not be co-terminous with the term of office of the national administration which initiated the projects. (Appendix C)

### ***13th Annual Scientific Meeting of the Academy (ASM)***

The Academy held its 13th ASM at the Philippine International Convention Center (PICC) on 9-10 July 1991 with Secretary Fulgencio S. Factoran, Jr. of the Department of Environment and Natural Resources as keynote speaker. The theme was "Managing Ecosystem for Long-Term Human Survival". (Appendix D)

The two-day meeting had three main events: plenary sessions, scientific sessions, and poster sessions. During the plenary sessions, four papers on Philippine ecosystems conservation and management were presented by invited environment experts. In the scientific sessions, 29 papers were presented by Filipino scientists. Thirty poster papers were presented during the two-day meeting. The awarding ceremony for the 1991 Outstanding Young Scientists and Philippine Science Talent Search winners capped the occasion. (Appendices E, F, & G)



**13th ASM.** DENR Secretary Fulgencio S. Factoran, Jr. delivers his keynote address during the plenary session.

### ***Environmental Management Committee Meeting***

Following the recommendations formulated in the 13th ASM, NAST created the Environmental Management Committee chaired by Academician Conrado S. Dayrit with the plenary speakers, rapporteurs, and moderators as members. The recommendations can be classified into four areas: marine ecosystem, freshwater ecosystem, terrestrial ecosystem, and urban ecosystem. The recommendations were forwarded and acted upon by the Philippine Council for Aquatic and Marine Research and Development, the agency concerned with marine resources and freshwater fisheries. Other concerned government agencies were given copies of the recommendations. (Appendix H)

### ***Speakers Bureau***

Only Academician Melecio S. Magno served in the Speakers Bureau this year. He went to Bicol as speaker during the Civil Service Week in July 1991.

Meantime, the Speakers Bureau listing is being updated and processed by the Secretariat.

### ***Roundtable Conference (RTC) on Environment***

Upon the recommendation of the 14th ASM Program Committee, NAST conducted an RTC on Mount Pinatubo on 4 November 1991 at Casino Español, T.M. Kalaw Street, Ermita, Manila. The topic was "A Situationer on Mount Pinatubo" with Dr. Raymundo S. Punongbayan, director of PHIVOLCS, as main speaker. Some 46 persons attended the conference representing the different sectors. (Appendix I)

***Roundtable Conference (RTC) on the Establishment of a National Botanical Garden Program***

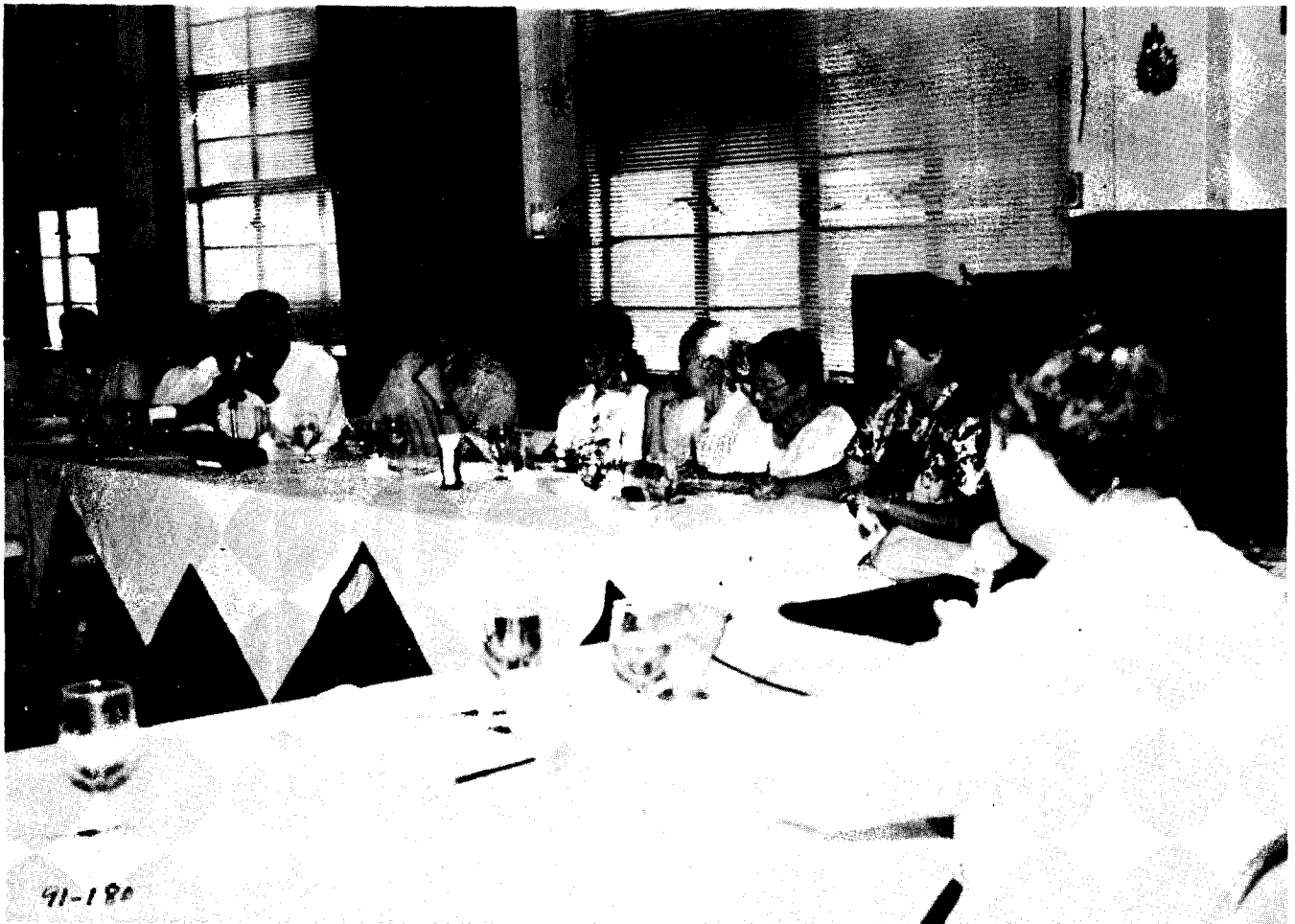
NAST conducted an RTC on the establishment of a national botanical garden program on 19 December 1991 at Casino Español, T.M. Kalaw Street, Ermita, Manila. During the conference, the Academy created a Task Force composed of Academicians Magdalena C. Cantoria and Carmen C. Velasquez, Drs. Domingo A. Madulid, Venus J. Calilung, Zenaida N. Sierra, Virginia S. Cariño, Rogelio C. Serrano, Ms. Luz C. Gonzales, Asst. Dir. Augusto Baluyot, Dean Geronimo V. Manahan, Dir. Cynthia Lazo and Mr. Dick Edwards as members. The Task Force will prepare the draft of an Executive Order creating a body to coordinate the network of botanical gardens under the office of the President. It will also prepare and identify the areas and priorities for the establishment of the national botanical garden as well as formulate an action plan. (Appendix J)



**RTC on National Botanical Garden.** The task force in one of their meetings at Casino Español, T.M. Kalaw, Ermita, Manila.

***Science Literacy Forum***

NAST held a Science Literacy Forum on 31 January 1991 at the Casino Español, T.M. Kalaw Street, Ermita, Manila under the topic "Review of Foreign Investment Policy". (Appendix K)



**Science Literacy Forum:** The meeting held at the Casino Español, T.M. Kalaw, Ermita, Manila with the representatives from the print media.

## **ACADEMICIANS ON THE MOVE**

National Scientist Luz Oliveros-Belardo found herself busy in 1991. She finished three publications that resulted from her NAST-assisted research projects. Her publications already printed are: "The Leaf Essential Oil of Wild *Cymbopogon martinii* (Roxb.) Wats. from Sorsogon, Philippines", "The Occurrence of Potassium Citrate in *Cymbopogon citratus* (DC) Stapf" and Volatile Oil of *Nothopanax fruticosum* (L.) Mig. as a Possible Pesticide". National Scientist Oliveros-Belardo still has two other publications being printed, namely: "Some Components of the Absolute of the Flowers of *Jasminum sambac* (L.) Ait.", and "Volatile Components of the Fruit Peeling of *Diospyros discolor* Wild".

Academician Clare R. Baltazar launched a new book on Inventory of Philippine Insects. The launching ceremony was held on 29 October 1991 at UP Los Baños with National Scientist Dioscoro L. Umali as guest speaker.

Another NAST member on the move is Academician Benjamin D. Cabrera who attended the 13th Asian Parasite Control Organization (APCO) meeting on 7-10 July 1991 in Tokyo, Japan. His travelling expenses were shouldered by a Japanese organization. At the meeting he reported the result of his project on "Control of *Trichuriasis* in Sablayan Island, Sorsogon Province, Philippines". Academician Cabrera was a guest in a telephone interview which received a nationwide broadcast for 45 minutes. He talked on diseases that could be contracted by people wading in flood water.

National Scientist Carmen C. Velasquez attended the XVIIth Pacific Science Congress on 27 May to 2 June 1991 at Honolulu, Hawaii as NAST official delegate. Her travel was supported by the organizer.

Academician Filomena F. Campos, in cooperation with the National Research Council of the Philippines (NRCP), initiated the organization of the IGBP National Committee in the Philippines.

Academician Magdalena C. Cantoria has a publication entitled "Isolation of 10-*O*-acyl iridoid glycosides from a Philippine medicinal plant, *Oldenlandia corymbosa* L. (Rubiaceae). She received several awards and attended international and local seminars and workshops such as the ZINGIBERACEAE WORKSHOP sponsored by UNESCO Botany 2000-Asia, held on 15-18 October 1991 at the Prince Songkla University at Hat Yai, Thailand. Academician Cantoria was a part-time researcher of an NRCP-assisted research project entitled "Investigation of the Poisonous Principles of *Euphorbia cotinifolia* L.

NAST Vice-President, Academician Conrado S. Dayrit was active in medical research

management and research in pharmacokinetics and effects of coconut oil and structured lipids on blood lipids and nutrition. He presented papers on those topics at the VI Asian Nutrition Conference at Kuala Lumpur last November.

Academicians Dayrit, Carmen Li. Intengan and Solita Camara-Besa were members of the Philippine research team in the Parallel Philippine-Harvard Research on Coconut Oil now on its fourth year of work. Academician Dayrit is over-all coordinator of the project funded by the United Coconut Association of the Philippines and Philippine Coconut Research and Development Foundation (UCAP and PCRDF). Studies on coconut oil and structured lipids fed to malnourished children and seriously stressed patients in the Intensive Care Units of Philippine General Hospital (PGH) are being done to determine the comparative beneficial effects versus polyunsaturates. Academician Clara Y. Lim-Sylianco on the other hand, studied the protective effects against mutagenicity of coconut oil versus soybean oil. Her research was PCRDF funded.

Another busy personality at NAST is National Scientist Fe del Mundo. She has been engaged in many projects concerning pediatrics. Her works have received admiration from a number of people including her peers. One of the projects is the "Mother and Child Health Care in Underserved Philippine Communities through an Itinerant Facility (a Tiangge)". Some of the project's significant accomplishments are: (a) Augmented, complemented and supplemented health services of the local health staff in remote or inaccessible barangays, (b) Helped provide a medical service mechanism to deliver in these remote areas, (c) Helped in the prevention of health and enhanced community participation in its implementation, and (d) Trained community health workers to take over in the absence of health staff and personnel. She received several awards to her credit such as the Rafael Salas Foundation Award.

Academician Tito A. Mijares was involved as the Chairman of the Technical Committee of Experts formed by the Senate Committee on Electoral Reforms and People's Participation to study and evaluate the Tancangco Report on fraudulent electoral practices and processes in the country. Academician Mijares also participated at the council meeting and scientific sessions in the 48th Session of the International Statistical Institute held from 31 August to 12 September 1991 in Cairo, Egypt. His four-year term (1987-1991) as member of the 16-man council ended at the end of the session.

Academician Dolores A. Ramirez together with Academicians Ricardo M. Lantican and Quintin L. Kintanar became members of the National Committee on Biosafety which is the monitoring and approving body on researches/projects directly or indirectly concerning biotechnology.

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During the fourth quarter, Academician Ramirez launched a new book entitled "Genetics." She has eight other new papers published in the *Philippine Agriculturist* and the *Philippine Journal of Crop Science*. She is a member of the Board of Trustees of the International Maize and Wheat Improvement Center in Mexico. She was a speaker in international conferences such as the Biotech Seminar Series at Cornell University.

Academician Joventino D. Soriano completed and published for general reading in the *Manila Bulletin* on 23 October 1991, the results of his research project on the frequency of chromosomal breakage in onion root-tip immersed in various concentrations of volcanic ash from Mount Pinatubo eruption in June 1991. World-wide interest in the work is shown by inquiries from scientists in different parts of the world.

Academician Clara Y. Lim-Sylianco conducted a training-workshop on mutagenicity testing methods and gave a lecture on genetic toxicology to a group attending a training program on the validation of herbal medicine for primary health care sponsored by the Bureau of Food and Drugs (BFAD). She conducted a series of lectures for crash courses on "Molecular Aspects of Biotechnology" on 18-30 October 1991 at the University of San Carlos, Cebu City. Academician Lim-Sylianco was a guest speaker during the 10th biennial convention of the Organic Chemistry Teachers Association of the Philippines. She conducted under the auspices of the Philippine Coconut Research Foundation and the University of the Philippines (Office of Research Coordination) a research project on "Anticancer Activity of Coconut Oil, Non Dietary and Dietary". Her study showed that non dietary and dietary coconut oil inhibit the chromosome breaking effects of the six carcinogens in bone marrow cells. Coconut oil also inhibited germ genotoxicity of these carcinogens. Inhibition by coconut oil was far superior to that by soybean oil.

Academician Jose R. Velasco's article on cadang-cadang was published in a belated issue of the *Philippine Journal of Coconut Studies*. He also submitted to the *Philippine Technology Journal* a paper entitled "Exploring the Feasibility of Using the Rare Earths in Bicol".

National Scientist Carmen C. Velasquez received several awards, namely: member Emeritus Award of the NRCP, Gintong Ina Official Awardee for Medicine and Allied Sciences, and Distinguished Parasitology Award. She became a member of the Executive/Advisory Board of the Science Communication and Education Committee of the Pacific Science Association.

Academician Ruben L. Villareal has been involved in two major activities: the rationalization of agricultural education campaign to promote the vegetable and, food processing

industries in the Philippines. He also accepted invitations to participate and present papers in a number of symposia and workshops such as the International Seminar on Agribusiness and the Role of Farmers' Organizations on 10-13 April 1991 in Seoul, Korea.

National Scientist Dioscoro L. Umali, NAST President received many awards and distinctions in the past year especially after his much-admired inspirational speech addressed to the youth exhorting them to "be heroes we never were" during the commencement exercises in UP Diliman. He was acclaimed both here and abroad wherever he was invited as guest speaker at many conferences/seminars. Through him and with the assistance of other NAST members and Secretariat, the Academy offered advice and recommendations to the policy makers, to name a few, Congresswoman Hortensia Starke, Senator Jovito R. Salonga, Senator Heherson T. Alvarez and others not only on agriculture and environment but also in other fields.

NAST members participated in the activities concerning the scientific career system. National Scientist Umali is a member of the Scientific Career System Council of the DOST. (Appendix L.)

Mostly in coordination with DOST, NAST through its Academicians were involved in the screening and selection of nominees for international and national awards in science and technology such as the ASEAN Young Scientists and Technological awards, Albert Einstein awards and others.

## **PROMOTION AND DEVELOPMENT OF INTERNATIONAL LINKAGES**

The Academy continues its linkages with different academies of science, namely: Third World Academy of Sciences (TWAS), Federation of Asian Scientific Academies and Societies (FASAS), International Network of Scientific Organizations (INSO), Chinese Academy of Sciences (CAS), Indian National Science Academy (INSA), German Research Society (DFG), and Royal Society of London (RSL).

Academician Apolinario D. Nazarea attended the FASAS Council meeting on 19-22 November 1991 at Kuala Lumpur, Malaysia. He was the official representative of NAST in the meeting as well as in the 2nd International Symposium on Technology Education and Training for Research and Development.

## **PUBLICATIONS**

The Academy produced four publications, namely: **1990 Annual Report, 1989 NAST Transactions, Proceedings of the Asian Regional Seminar/Workshop on Biotechnology, and RTC on Priority Pediatrics Health Concerns.**

## **EXCHANGES**

NAST continues to exchange scientific materials with various local and foreign agencies/institutions. The DOST regional offices and many libraries of universities nationwide received NAST publications.

## **LIBRARY SERVICES**

The NAST library was moved again from the TAPI annex building back to the NAST Conference Room and the nearby vacant space being used as corridors. As of December 1991, NAST received at least 1,000 documents such as magazines, journals, and books from local and international offices including those given as exchange (700 copies) and those that NAST acquired/bought/ordered (350 copies). The list of new acquisitions is included in Appendix N.

## **ON ADMINISTRATIVE MATTERS**

Miss Luningning E. Samarita's term as Officer-in-Charge of the Secretariat ended on 31 May 1991. Dr. Edwin A. Benigno, a biometrician from UP Los Baños started his duty as NAST Executive Director on June 1, 1991. Mr. Ferdinand C. Gutlay was appointed as Clerk (casual) on 9 October 1991. Mr. Angelito N. Medina was appointed as driver (casual) while Mrs. Rowena V. Briones was appointed as Stenographer on 4 November 1991

Miss Luningning E. Samarita, Mr. Fulgencio DL. Mojica and Mr. Abdulrackman E. Mama attended the science and technology information training course on 13-15 May 1991 at the DOST Executive Lounge.

Dr. Edwin A. Benigno and Mr. Mama attended the AppleWorld Computer Seminar on 13-15 November 1991 at the Manila Peninsula Hotel, Makati, Metro Manila.

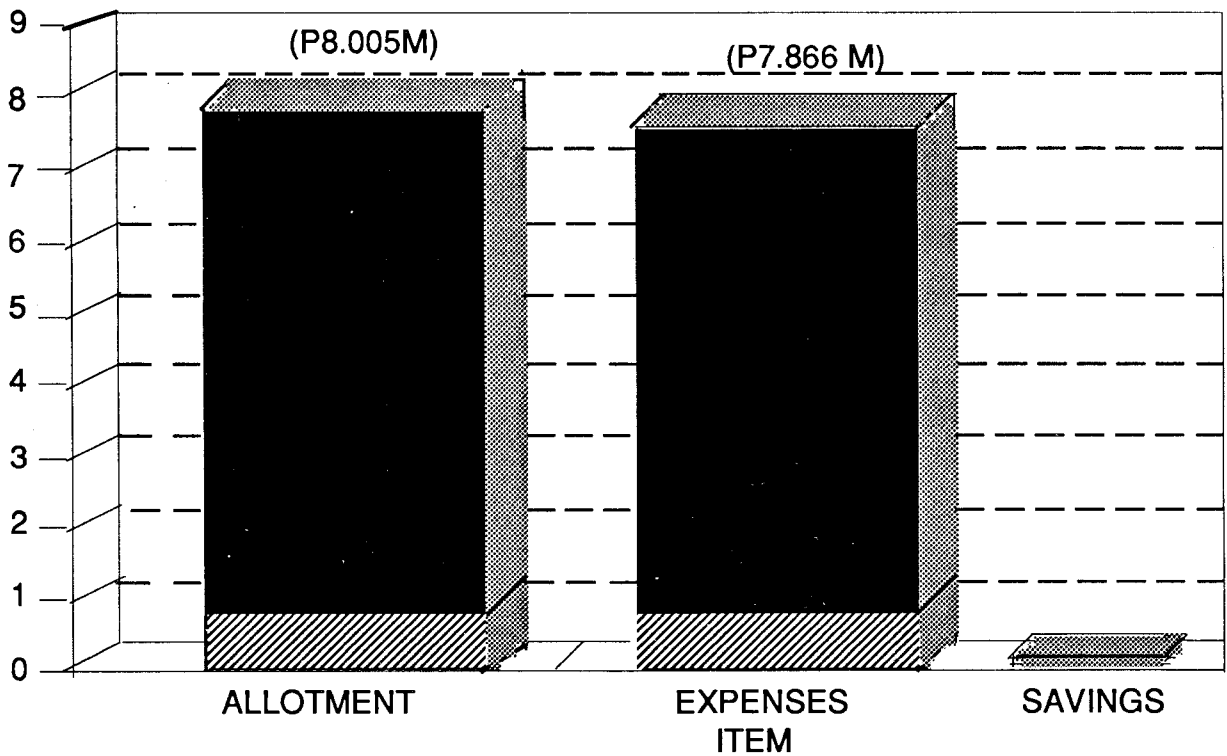
The Secretariat attended the management review seminar held on 25-26 October 1991 at the TAPI Conference Room. The problems identified were as follows:

<b>Problems</b>	<b>Constraints</b>	<b>Recommendations</b>
1. Inadequate personnel	1. NAST is limited by the plantilla personnel approved by the Civil Service	1. Increase staff complement to include: <ul style="list-style-type: none"> <li>- driver (permanent)</li> <li>- researcher</li> <li>- librarian</li> <li>- secretary to the Director</li> </ul>
2. Overworked staff	-do-	1. Job audit to clarify responsibilities of each staff member and identify needs  2. Hire additional contractual personnel to meet needs  3. Closer coordination among staff members and more efficient time management
3. Underpaid staff		1. Upgrade salary scale 2. Provide incentives
4. Need for training		1. Strengthen the program on staff development  2. Provide rules concerning issuances of checks

# FINANCIAL REPORT

## NAST BUDGET CY 1991

PESOS (Millions)



**APPENDIX A**

**Board of Judges for the 1991 Philippine Science Talent Search**

<b>Names</b>	<b>Positions</b>
Acad. Tito A. Mijares	Chairman
Acad. Dolores A. Ramirez	Vice-Chairman
Acad. Solita F. Camara-Besa	Member
Dr. Angelito Lazaro	Member
Acad. Joventino D. Soriano	Member
Dr. Danilo M. Yanga	Member

**APPENDIX B**

**1991 Research Fellows and Their Projects**

<b>Research Fellows</b>	<b>Title of Projects</b>	<b>Periods</b>
Clare R. Baltazar	"An inventory of Philippine insects Vol. II Order Lepidoptera"	05.01.90-04.30.91
Clare R. Baltzar	Extension to continue the write-up of her project on "An inventory of Philippine insects Vol. II Order Lepidoptera"	05.01.91-04.03.92
Luz Oliveros-Belardo	"The occurrence of potasssium citrate in <i>Cymbopogon citratus</i> (DC) Stapf."	06.15.91-05.31.92
Luz Oliveros-Belardo	"Volatile oil of <i>Nothopanax fruticosum</i> (L.) Miq. as a possible pesticide"	06.15.91-12.14.91
Magdalena C. Cantoria	"Study on the morphological and anatomical features of botanical drugs yielding volatile oils"	12.01.91-11.30.92
Melecio S. Magno	"The greenhouse effect and climate change"	04.01.91-03.31.92
Tito A. Mijares	"To test the linear hypothesis in multivariate problems, functions of relevant matrices"	08.01.90-07.31.91
	"To solve problems fundamental in the distributions of random variables"	
Faustino T. Orillo	"Study on the implementation of the rice self-sufficiency"	11.15.90-12.31.91
Dolores A. Ramirez	"A study on the implementation of the rice self-sufficiency"	11.15.90-12.31.91
Clara Y. Lim-Sylianco	"Molecular biochemistry"	04.01.91-03.31.92
Dioscoro L. Umali	"Program of improved instructions in science and mathematics"	11.01.90-06.30.91

APPENDIX C

NAST Biotech Committee Members

Names	Positions
Dr. Ester Albano-Garcia	Vice-President for Academic Affairs, UP Diliman
Acd. Paulo C. Campos	National Scientist
Acd. Conrado S. Dayrit	Academician
Dr. Lydia Josen	Division Head, ITDI, DOST
Acd. Jose O. Juliano	Academician
Dr. Cesar P. Madamba	Professor, UPLB
Acd. Apolinario D. Nazarea	Academician
Dr. William G. Padolina	Professor, UPLB
Dr. Rogelio A. Panlasigui	Exec. Dir., PCASTRD, DOST
Acd. Dolores A. Ramirez	Academician
Mrs. Beatriz del Rosario	Scientist, PCARRD
Miss Luningning E. Samarita	NAST
Acd. Benito S. Vergara	Academician
Acd. Ruben L. Villareal	Academician
Acd. Prescillano M. Zamora	Academician

**APPENDIX D  
13th ASM Program Committee**

<b>Names</b>	<b>Positions</b>
Acad. Joventino D. Soriano	Chairman
Acad. Solita F. Camara-Besa	Member
Acad. Gelia T. Castillo	Member
Acad. Conrado S. Dayrit	Member
Acad. Alfredo V. Lagmay	Member
Acad. Melecio S. Magno	Member
Acad. Tito A. Mijares	Member
Acad. Dolores A. Ramirez	Member
Acad. Faustino T. Orillo	Member
Acad. Prescillano M. Zamora	Member

**APPENDIX E**

**Plenary papers presented in the 13th ASM**

**Paper Readers**

**Titles of Papers**

Dr. Edgardo D. Gomez  
Marine Science Institute  
University of the Philippines Diliman  
Quezon City

Conservation and Management of the  
Philippine Marine Ecosystem

Dr. Rafael D. Guerrero III  
Philippine Council for Aquatic and  
Marine Research and Development  
Los Baños, Laguna

Conservation and Management of the  
Philippine Freshwater Ecosystem

Dr. Enrique P. Pacardo  
Institute of Environmental Science  
and Management  
University of the Philippines Los Baños  
College, Laguna

Conservation and Management of the  
Philippine Terrestrial Ecosystem

Dr. Manuel M. Dayrit  
Field Epidemiology Training Program  
Department of Health

The Conservation and Management of the  
Urban Ecosystem

**APPENDIX F**

**Scientific papers presented in the 13th ASM**

<b>Authors</b>	<b>Titles of Papers</b>
<p>Fortunato Sevilla III and R.T. Andres                      Research Center for Natural                      Sciences                      University of Santo Tomas                      España, Manila</p>	<p>Fiber-Optic Reflectometric Investigation                      of Acid-Base Equilibria in Immobilized                      Indicators: Effect of the Nature of the                      Immobilizing Agent</p>
<p>Caesar Saloma, M. Soriano                      and G. Gerella                      National Institute of Physics                      College of Science                      University of the Philippines Diliman                      Quezon City</p>	<p>Calculating Two-dimensional Fourier                      Transforms: I. Performance II. Normalization                      III. Graphics</p>
<p>Ibarra E. Cruz                      Dept. of Mechanical Engineering                      College of Engineering                      University of the Philippines Diliman                      Quezon City</p>	<p>Studies on the Gasification of Biomass                      Fuels with Oxygen-Enriched Air</p>
<p>Edgar E. Escultura                      IMSP, College of Arts and Sciences                      University of the Philippines Los Baños                      College, Laguna</p>	<p>The Geometry of Uncontrolled                      Probabilistic Motion</p>
<p>Severino V. Gervacio                      MSU Iligan Institute of Technology                      Mindanao State University                      Tibanga, Iligan City</p>	<p>Singularity of Graphs in Some                      Special Classes</p>
<p>Florentino C. Sumera and N. Ogata                      Institute of Chemistry                      College of Science                      University of the Philippines Diliman                      Quezon City</p>	<p>Electrochemical Synthesis of                      Electronic and Ionic Conductive                      Polymer Composite                      Polyaniline/PEO Network</p>
<p>Danilo M. Yanga and C. Navarro                      National Institute of Physics                      College of Science                      University of the Philippines Diliman                      Quezon City</p>	<p>A Mean Field RVB Theory Copper                      Oxide-Based High T Superconductors                      in Terms of Auxilliary Bosons</p>

## NAST 1991 Annual Report

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### Authors

Ronald E. Matias, G.L. Enriquez  
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L.SP. Tolentino, and V.T. Capuno  
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College of Science  
University of the Philippines Diliman  
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Chay B. Pham and W.G. Padolina  
BIOTECH  
University of the Philippines Los Baños  
College, Laguna

### Titles of Papers

Cell Biology of the Philippine  
Amoeboflagellate-*Naegleria* sp.

Multiproduct Fermentation:  
Production of Gluconic Acid and  
Glucose Oxidase by *Penicillium*  
*funiculosum* 4072

Histopathological Effects of  
Manganese Intoxication

Studies on the Effects of Gamma  
Radiation on *Kalanchoe pinnata*  
(Pers.), Kataka-taka (Tag.),  
Life Plant (Eng.)

Metazoan Ectoparasites of some  
Cultured Fishes from Laguna Lake  
and Vicinities

Heavy Toxic Metal Resistance of  
Selected *Rhizobium* Strains

The Reproductive Biology and  
Laboratory Maintenance of  
*Vivipara angularis* Muller  
(Prosobranchia: Viviparidae)

Microbial Production of  
L-Methionine Using Carbohydrates  
of Agricultural and Industrial  
By-products

**Authors**

**Titles of Papers**

Gloria D. Reyes and A.K. Raymundo  
Institute of Biological Sciences  
University of the Philippines Los Baños  
College, Laguna

Toxicity and Mutagenicity Testing  
of Selected Herbal Drugs

Gilda C. Rivero and D.M. Orcutt  
Institute of Biology  
College of Science  
University of the Philippines Diliman  
Quezon City

Diniconazole Effects on Water  
Relations, Photosynthesis, and  
Tocopherol Levels in Peanut

Claro M. Santiago, Jr., R. de la Peña  
G.P. Reyes and E. Adriano  
Industrial Technology Development  
Institute  
DOST, Bicutan, Taguig, Metro Manila

Intraspecific Hybridization  
between *Penicillium aurantio-  
brunneum* by Fusion of Somatic  
Protoplast

Dilberto C. Ferraren  
PRCRTC  
Visayas State College of Agriculture  
Baybay, Leyte

Control of Flowering, Seed  
Germination, and Progeny  
Evaluation of Taro, *Colocasia  
esculenta* (L.) Schott

Ruben M. Gapasin and S. Fernandez  
Department of Plant Protection  
Visayas State College of Agriculture  
Baybay, Leyte

Efficacy of *Trichoderma  
aureoviride* Rifai as Biocontrol  
Agent for *Sclerotium rolfsii* Sacc.  
Causing Stem Rot in Peanut  
(*Arachis hypogaea* L.)

Plutomeo M. Nieves and R.V. Barro  
Department of Aquaculture  
Regional Institute of Fisheries  
Technology  
Bicol University  
Tayhi, Tabaco, Albay

Evaluation of Local Ingredients  
(Fish, Shrimp, Snail and Leaf Meals  
and Ricebran) for Feeding Nile  
Tilapia (*Oreochromis niloticus*)  
Fingerlings

Victor S. Soliman  
College of Fisheries  
Bicol University  
Tayhi, Tabaco, Albay

Exploitation Rate, Yield-per-  
recruit, and Virtual Population of  
Sinarapan (*Mistichthys luzonensis*  
Smith) in Lake Manapao, Buhi,  
Camarines Sur

Jocelyn D. Tambalo-Zarate and R.E. de la Cruz  
BIOTECH  
University of the Philippines Los Baños  
College, Laguna

Inoculation of VA Mycorrhiza for  
the Improvement of Growth and  
Yield of Agricultural Crops, Fruit  
Trees, and Forest Tree Species in  
Grassland Soil

### Authors

Le Trong Trung  
Dairy Training and Research Institute  
College of Agriculture  
University of the Philippines Los Baños  
College, Laguna

Dai Quijie, V.P. Coronel and B.S. Vergara  
International Rice Research Institute  
College, Los Baños, Laguna

Gisela P. Concepcion, A.R. Camus  
and G.B. Caraan  
Marine Science Institute  
College of Science  
University of the Philippines Diliman  
Quezon City

Beatrice Q. Guevara, A.M. Aguinaldo, E.I. Esposito  
C.P. Garcia, M.G. Nonato, and B.V. Recio  
Research Center for Natural Sciences  
University of Santo Tomas  
España, Manila

Clara Y. Lim-Sylianco, J. Balboa, R. Casareno  
R. Mallorca and E. Serrano  
Institute of Chemistry  
College of Science  
University of the Philippines Diliman  
Quezon City

Evelyn Mae T. Mendoza  
Institute of Plant Breeding  
University of the Philippines Los Baños  
College, Laguna

### Titles of Papers

Urea-Treated Straw With Limited  
Supplementation for Sustained  
Ruminant Production in the  
Developing Countries

Response of Crop Plants to Enhanced  
UV-B Radiation and Possible  
Implications to the Rice Crop

Antimicrobial Activity,  
Antimutagenicity, Cytotoxicity,  
and Neuroactivity of Some  
Philippine Marine Sponges  
and Tunicates

Alkaloid Studies on Selected  
Philippine Plants

Antigenotoxic Effects on Bone  
Marrow Cells of Refined Coconut  
Oil Administered Simultaneously  
with Azaserine, Dimethylhydrazine,  
Dimethylnitrosamine, Benzo - (a),  
Pyrene, Methylmethanesulfonate  
and Tetracycline

Biochemical and Nutritional  
Qualities of Several Philippine  
Indigenous Food Legumes

APPENDIX G

Poster papers presented in the 13th ASM

Authors	Title of Papers
Roberto T. Andres, N.V. Rodriguez, and F. Sevilla III Research Center for the Natural Sciences University of Santo Tomas, España, Manila	Optical Fiber Biosensors Based on Plant Tissue
Vicente S. del Pilar National Food Authority, Quezon City	Milling of High Moisture Paddy Using Rubber Roll Ricemill
Samuel S. Franco and J.L. Woods Philippine Tobacco Authority Batac, Ilocos Norte	Energy Analysis of a Proposed Model of a Natural Convection Flue-curing Barn
Ma. Theresa Isabales National Food Authority, Quezon City	Determination of Milling Degree Using the Alcohol Alkali Bran Staining Method
Walden S. Ric College of Engineering Central Philippine University Iloilo City	Aerial Photogrametry for Land Planning and Development
Vicente del Pilar National Food Authority, Quezon City	Development of Palay Purity Tester
Wilfredo I. Jose and J.S. Tio Dept. of Chemical Engineering College of Engineering University of the Philippines Diliman Quezon City	A Proposed Model for the Waste Utilization Value
Jose T. de Luna Department of Mathematics Mindanao State University Marawi City	On the Dynamic of Resource- Consumer-Toxicants Systems: Models of the Reproductive Effort and Resulting Offspring of an Individual Organism
Victor B. Amoroso Central Mindanao University Musuan, Bukidnon	Morpho-Histochemical Studies of Some Medicinal Ferns
Virgina S. Cariño and N.N. Cruz Institute of Biology College of Science University of the Philippines Diliman Quezon City	Localization of Zinc in the Gonadal Tissue of <i>Oreochromis niloticus</i>

## NAST 1991 Annual Report

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### Authors

### Title of Papers

Saturnina C. Halos, E. Nancy and A. Anacleto  
Natural Sciences Research Institute  
University of the Philippines Diliman  
Quezon City

*In Vitro* Selection and Propagation  
of Shoot Moth Resistant Pines

Desiree M. Hautea, C.J. Mendoza,  
and R.N. Garcia  
Institute of Plant Breeding  
University of the Philippines  
Los Baños, College Laguna

Interspecific Hybridization Between  
*V. radiata* (L) Wilczek and *V. glabrescens*  
(M.M. & S) through Embryo Culture

Claro M. Santiago, Jr.  
Industrial Technology Development  
Institute  
DOST, Bicutan, Taguig, Metro Manila

Competition of Water Hyacinth with  
*Hydrilla verticillata* Royle and  
*Pistia stratiotes* L.

Claro M. Santiago, Jr., B.B. Mercado  
E.D. de Leon, R.P. Flores, R.P. Garcia,  
and M.B. Bigol  
Industrial Technology Development  
Institute  
DOST, Bicutan, Taguig, Metro Manila

Strain Improvement in Selected  
Strains of Edible Fungi

Claro M. Santiago, Jr., D.B. Isaac, P.G. Anglo  
B.M. Garcia, C.M. Silverio, R.L. Esguerra  
F.C. Rodillo, and M.B. Bigol  
Industrial Technology Development  
Institute  
DOST, Bicutan, Taguig, Metro Manila

Recovery of Chromium from  
Leather Tanning Effluent

D.L. Binlayo, C.H. Viernes, L.C. Hermosura,  
S.B. Tan, B.L. Roan, Y. Valderrama  
A.L. Gonzales, and V.P. Arida  
Industrial Technology Development Institute  
DOST, Bicutan, Taguig, Metro Manila

Development of a Process in the  
Production of Medium Chain  
Triglycerides (MCT) from  
Coconut Oil Fatty Acids

Renato A. Avenido and D.D. Menancio-Hautea  
Institute of Plant Breeding  
University of the Philippines Los Baños  
College, Laguna

Organogenesis from Leaf Callus  
of Mung Bean (*Vigna radiata* (L.)  
Wilczek) and Moth Bean (*Vigna  
aconitifolia* (Jacq.) Marechal)

Ramon C. Barba  
Institute of Plant Breeding  
University of the Philippines Los Baños  
College, Laguna

Development of Tissue Culture  
Techniques for Woody Species

Authors	Title of Papers
Merdelyn Caasi Lit and E.N. Bernardo Institute of Plant Breeding University of the Philippines Los Baños College, Laguna	Mechanism of Resistance of Eggplant ( <i>Solanum melongena</i> L.) to the Cotton Leafhopper, <i>Amrasca biguttula</i> (Ishida)
Manuel L. Castillo College of Forestry University of the Philippines Los Baños College, Laguna	Branch Cutting Propagation of <i>Bambusa blumeana</i> , <i>B. vulgaris</i> , <i>B. vulgaris</i> var. <i>striata</i> , <i>Dendrocalamus merrillianus</i> , <i>Gigantochloa levis</i> Using Indolebutyric Acid
Carmen LI. Intengan and C.S. Dayrit National Academy of Science and Technology Bicutan, Taguig, Metro Manila	Structured lipid Strain of Coconut and Corn Oil vs. Soybean Oil in the Rehabilitation of Malnourished Children - A Field Study
Lilian F. Pateña and R.A. Avenido Institute of Plant Breeding University of the Philippines Los Baños College, Laguna	Micropropagation of Banana and Rattan for Mass Distribution
Lilian F. Pateña and R.C. Barba Institute of Plant Breeding University of the Philippines Los Baños College, Laguna	Endosperm Culture of Calamansi ( <i>Citrus fortunella mitis</i> )- A Progress Report
Lilian F. Pateña, B.A. de la Rosa and T.L. Rosario Institute of Plant Breeding University of the Philippines Los Baños College, Laguna	Tissue Culture of Garlic and Shallot
Lilian F. Pateña, Ma. A.A. Punzalan E.A. Sana, R.C. Barba, and C. Abella Institute of Plant Breeding University of the Philippines Los Baños College, Laguna	Somaclonal Variation and Induced Mutation in Ramie
Eden A. Perez, O.P. Damasco, and A.B. Zamora Institute of Plant Breeding University of the Philippines Los Baños College, Laguna	Tissue Culture of Mature and Immature Embryo of Corn

### Authors

### Title of Papers

A.C. Pizzaro and N.G. Fabellar  
Gregorio Araneta University Foundation  
Malabon, Metro Manila

Reaction of Recovered Tungro-  
Infected Rice Plants to  
Eliza Test

Soliman Victor  
College of Fisheries  
Bicol University  
Tayhi, Tabaco, Albay

Growth and Mortality of Blood  
Cockle (*Anadara granosa* L.)  
in Mambulao Bay, Camarines Norte

Alfinetta B. Zamora, S.Sm. Gruezo,  
and O.P. Damasco  
Institute of Plant Breeding  
University of the Philippines Los Baños  
College, Laguna

Tissue Culture of Bamboo

Alfinetta B. Zamora, V.C. Lapitan, E.A. Perez  
D.A. del Rosario, A.C. Sumague, and V.P. Roxas  
Institute of Plant Breeding  
University of the Philippines Los Baños  
College, Laguna

*In Vitro* Selection of Salinity  
Resistance in Tomato

Alfinetta B. Zamora, K.P. Baradas,  
and E.S.S Estano  
Institute of Plant Breeding  
University of the Philippines Los Baños  
College, Laguna

Conservation of Abaca and  
Root Crops *in Vitro*

**APPENDIX H**

**Environmental Management Committee**

<b>Names</b>	<b>Positions</b>
Acad. Conrado S. Dayrit	Chairman
Acad. Prescillano M. Zamora	Vice-Chairman
Acad. Carmen C. Velasquez	Member
Acad. Leopoldo S. Castillo	Member
Dr. Edgardo D. Gomez	Member
Acad. Magdalena C. Cantoria	Member
Acad. Clare R. Baltazar	Member
Dr. Rafael D. Guerrero III	Member
Acad. Ruben L. Villareal	Member
Acad. Benito S. Vergara	Member
Dr. Enrique P. Pacardo	Member
Acad. Solita F. Camara- Besa	Member
Acad. Carmen LI. Intengan	Member
Dr. Manuel M. Dayrit	Member

**APPENDIX I**

**Speakers in the round table conference on Mt. Pinatubo**

<b>Names</b>	<b>Title of Papers</b>
Dr. Raymundo S. Punongbayan	Situationer on Mount Pinatubo
Dr. Ricardo M. Lantican	Views of the academe and science community
Atty. Manuel P. Santiago	Views from the government sector
Mr. Juan Blenn Huelgas	Views of the nongovernmental organizations

**APPENDIX J**

**Speakers at the RTC on the establishment  
of a National Botanical Garden**

<b>Speakers</b>	<b>Title of Papers</b>
Dr. Domingo A. Madulid	Review of Past Activities on the Establishment of a National Botanic Garden
Hon. Heherson T. Alvarez	Presentation of a Proposal for the Establishment of a National Botanic Garden
Dr. Ben C. Stone	Botanical Gardens in Southeast Asia: A Perspective

**Reactions from representatives of:**

Haribon Foundation  
Metro Manila Authority  
Department of Tourism  
Travel Agencies  
Philippine Orchid Society  
Philippine Horticultural Society  
Department of Environment and Natural Resources  
Environmental Management Bureau  
National Research Council of the Philippines  
University of the Philippines Los Baños  
National Academy of Science and Technology

**APPENDIX K**

**Speakers at the Science Literacy Forum**

<b>Names</b>	<b>Title of Paper</b>
Prof. Melito Salazar, Jr. Mr. Gil Beltran (discussant) Ms. Cynthia Reyes (discussant) Meneleo Carlos, Jr. (discussant)	Review of Foreign Investment Policies

**APPENDIX L**

**Members of the Scientific Career System Special Task Force**

<b>Names</b>	<b>Areas</b>
Acad. Bienvenido F. Nebres	Natural Sciences
Acad. Bienvenido O. Juliano	Natural Science
Acad. Melecio S. Magno	Engineering and Technology
Acad. Paulo C. Campos	Medical Sciences
Acad. Fe del Mundo	Medical Sciences
Acad. Quintin L. Kintanar	Medical Sciences
Acad. Magdalena C. Cantoria	Medical Sciences
Acad. Ricardo M. Lantican	Agricultural Sciences
Acad. Faustino T. Orillo	Agricultural Sciences

**APPENDIX M**

**The Executive Council**

<b>Names</b>	<b>Positions</b>
Acad. Dioscoro L. Umali	President
Acad. Conrado S. Dayrit	Vice-President
Acad. Joventino D. Soriano	Secretary
Acad. Magdalena C. Cantoria	Member
Acad. José Encarnación, Jr.	Member
Acad. Bienvenido O. Juliano	Member
Acad. Faustino T. Orillo	Member

**APPENDIX N**

**Library Acquisitions/Materials**

Compact for a New World	COSTED News September 1991
ENHR Forum Vol. 1, No. 2	DFG Collaborative Research Centers 1969-89
Faculty Directory Berkeley Engineering 1990, 1991	Energy Spectrum 1991
Global Change No. 1	ENHR Forum 1991
Information on the 1992 Global Forum	Far Eastern Agriculture
LBL Research Review Vol. 12 Nos. 1-4; Vol. 13, Nos. 1-4; Vol. 14, Nos. 1-4 Vol. 15, Nos. 1-4; Vol. 16, Nos. 1	Final Circular, The Chemistry of Atmosphere, Its Impact on Global Change
Network '92 No. 11	Journal of the Iowa Academy of Science June 1991
Philippine Journal of Science Vol. 118 No.1	Kinaadman April-June 1991
Science News Vol. 140, Nos. 7,8	Look Japan September 1991
Wydah Vol. 2, No.7	Network '92 September 1991
Year Book TWAS 1991	PCARRD Monitor January-February, March-April 1991
American Association for the Advancement of Science Directory 1991	Science News August 1991
An Inventory of Philippine Insects Part II	Scientific American September 1991
Assessment of ADB-funded Reforestation Program in the Philippines	State Employee September 1991
Compiler September 1991	Tekno-Tulong Aklat 1 And Tagamasid
Comptes Rendus Nos. 4,5, 1991	Asian Livestock Nos. 4,5,6,7,8,9,10,11
	Australian Academy of Science Newsletter October-December 1992

- Comptes Rendus No. 6  
Economic and Social Science Research  
Methodologies in Agriculture  
Environment and Development  
Feedback Vol. 2, No. 4  
Financing Public Sector Development  
Expenditure in Selected  
Countries: An Overview  
Financing Public Sector Development  
Expenditure in Selected  
Countries: Bangladesh  
Financing Public Sector Development  
Expenditure in Selected  
Countries: India  
Financing Public Sector Development  
Expenditure in Selected  
Countries: Indonesia  
Financing Public Sector Development  
Expenditure in Selected  
Countries: Pakistan  
Financing Public Sector Development  
Expenditure in Selected  
Countries: Philippines  
Financing Public Sector Development  
Expenditure in Selected  
Countries: Thailand  
Geology and Physics Vol. 34, No.4  
Integrated Crop-Livestock Fish  
Farming System No. 6 , 1990  
KORDI Annual Report  
International Atomic Energy Agency  
Publications 1980-1991
- Manual for Performance Trials of  
Forage and Pasture Crops  
Series 114, 1991  
Mc Graw Hill  
Network 1992  
Pag-Uswag DOST Region 8  
PCASTRD Access  
Philippine Recommends for Grain-  
Legume Postproduction  
Operations Series 73  
Philippine Recommends for Duck  
Raising Series 22 -A  
Philippine Recommends for Mangrove  
Production and Harvesting Series 74  
Rehad Newsletter  
Report on IT Resources in the  
Government 1990  
RSS News  
Science News Vol. 140, Nos. 16,18,19  
South Letter No. 11  
State Employee  
State-of-the-Art and Abstract  
Bibliography Agroforestry  
Research in the Philippine  
Series 8, 1991  
Super Collider News  
Technology-Overseeding Native  
Pasture with Legumes for  
Increased Beef Production 1991  
TAB Books  
WRI Publications Brief

**APPENDIX O**

**The Secretariat**

<b>Names</b>	<b>Positions</b>
<b>Office of the Director</b>	
Dr. Edwin A. Benigno	Director IV
Mrs. Rowena V. Briones	Secretary (Stenographer)
Mr. Angelito N. Medina	Driver (Casual)
Mr. Redocindo L. Santillan	On Detail
<b>Technical Services Division</b>	
Miss Luningning E. Samarita	Information Officer V
Mr. Fulgencio DL. Mojica	Information Officer III
Mr. Abdulrackman E. Mama	Information Officer II
Mr. Ferdinand C. Gutlay	Clerk (Casual)
<b>Administrative Services Division</b>	
Miss Rosemarie S. Espino	Administrative Officer V
Miss Belinda M. Bermejo	Accountant III
Miss Marissa C. Camposano	Cashier III
Mr. Eliseo D. Raganit	Utilityman

**APPENDIX P**

**PRESEDENTIAL DECREE NO. 1003-A\***

**CREATING THE NATIONAL ACADEMY OF SCIENCE AND TECHNOLOGY**

WHEREAS, Section 9 (1), Article IV of the Constitution provides that "(T)he State shall promote scientific research and invention," and enjoins that "(T)he advancement of science shall have priority in the national development."

WHEREAS, in the implementation of the foregoing constitutional mandate, there is need to provide meaningful incentives to those engaged in scientific and technological research, as well as to give recognition to outstanding achievements in technology and the sciences;

WHEREAS, the development of science and technology has largely brought about the material progress of the country;

WHEREAS, the professionalization of the government scientific and technological research services will contribute to a large extent in effecting the constitutional objectives of promoting scientific research and invention and the advancement of science and technology for national development.

NOW, THEREFORE, I, FERDINAND E. MARCOS, President of the Philippines, by virtue of powers vested in me by the Constitution, do hereby decree and order;

SECTION 1. There is hereby created the National Academy of Science and Technology, hereinafter referred to as the Academy, which shall be composed of outstanding scientists to serve as reservoir of competent scientific and technological manpower for the country. The Academy shall be attached to the National Science Development Board (NSDB) for general coordination. The Secretariat of the Academy shall be provided by the NSDB.

SECTION 2. For the purpose of this Decree, a scientist shall be defined as an individual who has earned a doctoral degree in any field of the sciences in an accredited University and has demonstrated and earned distinction in independent research or significant innovative achievement in the basic and applied sciences, including agricultural, engineering, and medical sciences, in mathematics and in the social sciences as manifested by his published works in recognized scientific and technological journals. Provided, that, in highly meritorious and extremely exceptional cases the foregoing doctoral degree requirement may be waived.

SECTION 3. The general administration and direction of the affairs of the Academy shall be vested in an Executive Council of seven (7) members who shall be appointed by the President of the Philippines from among at least ten members nominated by the Academy.

SECTION 4. The members of the Executive Council shall serve for a term of three (3) years; Provided, That, in case of any vacancy, the appointee thereto shall serve only the unexpired term.

SECTION 5. A scientist who is a Filipino citizen and who is in sympathy with the purpose of the Academy may become a member therein when his nomination for membership, which shall be made by at least three (3) members of the Academy who shall certify that the nominee is qualified under the provisions of Section 2 of this Decree, is formally approved by a majority of the full membership of the Academy.

Membership in the Academy shall carry with it the title of 'Academician', and shall be for life

except when terminated for cause or by voluntary resignation.

SECTION 6. The Academy shall be initially composed of scientists who shall be nominated by different national scientific societies and recognized research and academic institutions of higher learning screened by a temporary Committee of ten (10) members to be appointed by the President of the Philippines upon recommendation of the Board of Governors of the National Science Development Board. This Committee shall be representative of five (5) major fields of sciences, including basic and applied biological, physical, mathematical; engineering and social sciences.

The temporary Committee shall screen and evaluate the nominee pursuant to the provisions of Section 2, and may confer membership by a favorable vote of at least eight (8) members.

The temporary screening Committee shall exist for a period of not more than twenty-four (24) months after promulgation of this Decree.

SECTION 7. The Academy may provide its members the following benefits and privileges:

- a. Free publication of scientific and technological works;
- b. Travel support for attendance and participation in international conferences; and
- c. Such other incentives, financial or otherwise, designed to promote scientific and technological effort and achievement.

SECTION 8. The Academy may recommend annually for Presidential awards not more than ten (10) scientists for distinguished individual or collaborative achievement in science and/or technology who shall be accorded by the President the rank and title of "National Scientist". Said "National Scientist" shall each be given a gratuity in such amount to be fixed by the Academy and shall be entitled to other privileges as are enjoyed by the "National Artist."

SECTION 9. Members of the Executive Council and the temporary screening Committee shall be entitled to reasonable allowances for attendance at Council and Committee sessions, at the same rate as members of the Board of Governors of the NSDB, in addition to the reimbursement of actual reasonable travelling expenses.

Initially, each member of the Academy shall receive a gratuity of Six Thousand Pesos (P6,000.00) per annum subject to adjustment of resolution by the membership, provided that such adjustment shall be approved by the NSDB Board of Governors.

SECTION 10. The total membership of the Academy shall not exceed Fifty (50) at any one time. This number may be increased by two-thirds vote of all members and approval thereof by the President.

SECTION 11. The Academy shall promulgate rules and regulations to carry out the provisions and objectives of this Decree.

SECTION 12. To implement this Decree, the amount of Two Million Pesos (P2,000,000.00) is hereby authorized to be appropriated out of any funds in the National Treasury not otherwise appropriated.

SECTION 13. All laws, executive orders, decrees, instructions, rules and regulations contrary to or inconsistent with the provisions of this Decree are hereby repealed, amended or modified accordingly;

Done in the City of Manila this 17th day of December in the year of Our Lord, nineteen hundred and seventy six.

(Sgd.) FERDINAND E. MARCOS  
President of the Philippines

\*As amended by P.D. 1557

**APPENDIX Q**

**PRESIDENTIAL DECREE NO. 1557**

**AMENDING SECTIONS 5 AND 6 OF PRESIDENTIAL DECREE NO. 1003-A CREATING  
THE NATIONAL ACADEMY OF SCIENCE AND TECHNOLOGY**

WHEREAS, Presidential Decree No. 1003-A established the National Academy of Science and Technology to be composed of outstanding scientists in the country; and

WHEREAS, certain amendments are necessary in order to carry out more effectively the objectives of the Decree;

NOW, THEREFORE, I, FERDINAND E. MARCOS, President of the Philippines, by virtue of the powers vested in me by the Constitution, do hereby order and decree:

SECTION 1. Section 5 of Presidential Decree No. 1003-A is hereby amended to read as follows:

SECTION 5. A scientist who is a Filipino citizen and who is in sympathy with the purposes of the Academy may become a member therein when his nomination for membership, which shall be made by at least three (3) members of the Academy who shall certify that the nominee is qualified under the provisions of Section 2 of this Decree, is formally approved by a majority of the full membership of the Academy.

"Membership in the Academy shall carry with it the title of 'Academician' and shall be for life except when terminated for cause or by voluntary resignation."

SECTION 2. Section 6 of the same Decree is hereby amended to read as follows:

SECTION 6. The Academy shall be initially composed of scientists who shall be nominated by different national scientific societies and recognized research and academic institutions of higher learning and screened by a temporary Committee of ten (10) members to be appointed by the President of the Philippines upon the recommendation of the Board of Governors of the National Science Development Board. This Committee shall be representative of five (5) major fields of sciences, including basic and applied biological, physical, mathematical, engineering and social sciences.

"The temporary screening Committee shall screen and evaluate the nominee pursuant to the provisions of Section 2, and may confer membership by a favorable vote of at least eight (8) members.

"The temporary screening Committee shall exist for a period of not more than twenty-four (24) months after promulgation of this Decree."

SECTION 3. This Decree shall take effect immediately.

Done in the City of Manila, this 11th day of June, in the year of Our Lord, nineteen hundred and seventy-eight.

(Sgd.) FERDINAND E. MARCOS  
President of the Philippines

By the President  
(Sdg.) JACOBO C. CLAVE  
Presidential Executive Assistant

**APPENDIX R**

**BY THE PRESIDENT OF THE PHILIPPINES  
EXECUTIVE ORDER NO. 818**

**AMENDING PRESIDENTIAL DECREE NO. 1003-A, CREATING THE  
NATIONAL ACADEMY OF SCIENCE AND TECHNOLOGY AND FOR  
RELATED PURPOSES**

WHEREAS, it is desirable to make more efficient the administrative functions and operations of the National Academy of Science and Technology;

WHEREAS, it is necessary for the Academy to embark on programs traditionally and internationally expected of a national academy of science;

WHEREAS, the constitutional mandate that the "State shall promote scientific research and inventions" and that the "advancement of science shall have priority in the national development." requires that the Academy be made explicitly closer as advisers on science and technology to the President and his ministers;

WHEREAS, under Presidential Decree No. 1416, as amended, the President is empowered to undertake such organizational and related improvements as may be appropriate in the light of changing circumstances and new developments;

NOW, THEREFORE, I, FERDINAND E. MARCOS, President of the Republic of the Philippines, by virtue of powers vested in me by Presidential Decree No. 1416 as amended, do hereby order and direct:

SECTION 1. Section 1 of Presidential Decree 1003-A is hereby amended to read as follows:

"SECTION 1. There is hereby created the National Academy of Science and Technology, hereinafter referred to as the Academy, which shall be composed of outstanding scientists to serve as a reservoir of competent scientific and technological manpower for the country. The Academy shall be attached to the National Science and Technology Authority (NSTA) for general coordination. THE ACADEMY SHALL HAVE ITS OWN SECRETARIAT/ADMINISTRATIVE STAFF."

SECTION 2. The second paragraph of Section 9 of the same Decree is hereby amended to read as follows:

"Initially, each member of the Academy shall receive a gratuity of Six Thousand Pesos (P6,000.00) per annum. THE ACADEMY MAY DETERMINE STIPENDS, INCENTIVES AND/OR RECOMMEND ADJUSTMENT OF GRATUITY TO/OR OF ITS MEMBERS SUBJECT TO THE APPROVAL OF THE NATIONAL SCIENCE AND TECHNOLOGY AUTHORITY."

SECTION 3. The Academy may engage in projects or programs designed to recognize outstanding achievements in science and to promote scientific productivity.

SECTION 4. To carry out the purposes of this Executive Order, the Office of the Budget and Management is hereby authorized to provide such amounts as may be necessary from available or applicable funds of the government.

SECTION 5. All provisions of Presidential Decree No. 1003-A not otherwise affected by this Executive Order shall remain in force and all laws, decrees, orders, proclamation, rules, regulations, or parts thereof, which are inconsistent with any of the provisions of this Executive Order are hereby repealed or amended accordingly.

SECTION 6. Any portion or provision of this Executive Order that may be declared unconstitutional shall not have the effect of nullifying the other provisions thereof, provided that such remaining portions can still be given effect in their entirety to accomplish the objectives of this Executive Order.

SECTION 7. This Executive Order shall take effect immediately.

Done in the City of Manila, this 16th day of July, in the year of Our Lord, nineteen hundred and eighty-two.

(Sgd.) FERDINAND E. MARCOS  
President of the Philippines

By the President:

(Sgd.) JUAN C. TUVERA  
Presidential Executive Assistant

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