

The SEARCA DIARY



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HOW DO WE ADAPT?

Climate change is a serious worldwide issue. We must find ways to adapt to the ever changing environmental conditions. Now is the time for action.

Photo by: Vinai

8th Policy Roundtable on Climate Change: Chaos or Community?

“Where do we go from here: chaos or community?” Mr. Aung Hlaing, Deputy Director of the Department of Agricultural Planning, Ministry of Agriculture and Irrigation, Myanmar, quoted Martin Luther King at the end of his country presentation.

Mr. Aung Hlaing is one of the four country representatives who presented their nation’s plan of action to counteract the effects of climate change at the Eighth Policy Roundtable on Building Capacities for Agricultural Competitiveness of Transition Countries in Southeast Asia held in Mandalay, Myanmar on 29-30 April 2010. The theme for this roundtable was *Climate Change: Impact, Challenges, and Responses toward Strengthening Agriculture and Food Security in Transition Southeast Asia*.

Cambodia, Lao PDR, Myanmar, and Vietnam (CLMV) presented their country reports and proposed action plans in adapting and mitigating the effects of climate change. The reports showed the impacts that climate change have had on the countries’ agriculture, forestry, ecosystem, irrigation, infrastructure, livelihood, and food security. They also presented the adaptation strategies employed to cope with these challenges, such as the development of national programs

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and strategies, information dissemination, use of more resistant crop varieties, and capacity-building.

Two keynote speakers provided tools that transition countries may use to build climate change impact resistance, adaptation, and mitigation. Dr. Mohammed Mainuddin of the Commonwealth Scientific and Industrial Research Organization (CSIRO) illustrated the impact of climate change on agriculture using the AquaCrop model. Dr. Kay Sumfleth of the Centre for International Migration and Development, German Technical Cooperation, and the International Rice Research Institute (IRRI), showed the role of crop simulation models and crop monitoring systems in addressing future food security and climate change. Such models, said the presenters, are not intended to be stand-alones but are tools that experts can use to strengthen their strategies in lessening the impacts of climate change, thereby enabling the nations to achieve their more encompassing goals of food security and poverty alleviation.

Such technologies will be highly valuable in disaster risk management of vulnerable communities, helping communities become more resilient to incumbent disasters in Southeast Asia, said Dr. Donato Antiporta, formerly of the UN Food and Agriculture Organization. Information generated from such technologies can improve surveillance and warning systems, allowing communities to anticipate and prepare for natural disasters. Such preparation can help minimize and control damage, making it easier for communities to cope and restore agricultural livelihoods and build back what they lost.

A key issue raised during the roundtable was the urgency in transition countries such as CLMV to prioritize the issue of climate change over other more pressing development issues their respective countries are grappling with. Should transition economy countries ride the bandwagon with the developed countries and use part of their meager resources in dealing with the problem of climate change, a problem they have a very little part in starting? Yes, according to Deputy

Director Aung Hlaing. He explained, "Myanmar does not have a carbon debt to the world that the rich countries have accumulated, and we are still one of the lowest emitters in capita terms. But we do have a shared responsibility for the world." Considering that most of the CLMV do not have a huge carbon emission problem, responding to climate change has to be focused more on adaptation measures. And with the budgetary constraints faced by national governments, the appropriate adaptation measures have to be mainstreamed in their respective development agenda.

In the summary given by Dr. Arsenio M. Balisacan, former SEARCA Director, he stressed the urgency of a follow-up technical workshop to level off the needs and expectations of different countries as regards climate change responses and adaptation measures. The workshop would also allow CLMV to identify the analytical tools that are appropriate in their contexts and, at the same time, determine the capacity-building support they need to be able to efficiently implement such tools. Strategic and high priority collaborative studies can also be identified in the workshop.

U Than Aye, Director General of the Department of Agricultural Planning, Ministry of Agriculture and Irrigation, Myanmar, highlighted the need to proceed with the development of a plan for action to mitigate climate change impacts on agriculture and food security. He called on participating agencies and organizations to coordinate activities to strengthen agriculture and food security in Southeast Asia.

The Eighth Policy Roundtable, according to Dr. Mercedita Sombilla, Manager for R&D of SEARCA, aims to "develop an action plan to strengthen agriculture in CLMV amidst climate change; and explore possible partnerships between and among SEARCA, CLMV governments, the Korea FAO Association, and other organizations from East Asian countries to actively collaborate in the capacity-building of these transition countries to overcome the impact of climate change." By sharing information with each other on the

impacts of climate change in food production and security, as well as measures undertaken by country governments to build resilience against climate change impacts, the policy roundtable hoped to be able to identify an action plan for climate change adaptation and mitigation.

Southeast Asia is considered one of the most vulnerable regions to climate change. A 2009 report of the Asian Development Bank indicates that 563 million people live along 173,251 kilometers of coastline exposed to rising sea levels. Moreover, the region's heavy dependence on agriculture makes it extremely vulnerable to climate change-induced calamities such as floods, drought, and tropical cyclones. Climate change is a very real and urgent global concern that, if not addressed, could lay to waste all efforts of transition countries in Southeast Asia on food security and poverty reduction.

SEARCA has been conducting the Policy Roundtable Series since 2004 in response to the need to strengthen human resource capabilities of CLMV in dealing with emerging issues in agriculture and related fields through technical cooperation among developing countries in Southeast Asia. (CSZ Cabrera)



H.E. U Ohn Myint, Deputy Minister of Agriculture and Irrigation, Myanmar, welcomes the participants of the Eighth Policy Roundtable in Mandalay, Myanmar.

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Keynote presenters Dr. Muhammed Mainuddin (left) of CSIRO and Dr. Kay Sumfleth (center) of IRRI address queries during the open forum. Photo also shows Dr. Mercedita A. Sombilla of SEARCA.

SEARCA, UHM Co-organize Pre-conference Meeting on Sustainability Science

Twenty-six experts from various organizations convened on 27-28 May 2010 in University of Hawaii at Manoa (UHM), Hawaii, USA, to discuss sustainability science in watershed-related issues. The meeting titled *Sustainability Science for Food, Forests, and Floods: Integrating Climate Adaptation and Pro-Poor Resource Management*, focused on strengthening the foundations and practice of sustainability science by informing general and specific instruments of public policy concerning forest, food, water, watershed, and coastal ecosystem management.

The meeting and the planned succeeding activities aim to bring together ongoing and new partners to promote sustainability science and pro-poor resource management in public policies. Dr. James Roumasset, Professor of Economics, UHM, during the meeting's opening said, "one of the greatest dilemmas facing today's educators is how to engage sustainability. Many college students are passionate about the environment and the use of natural resources... The challenge is how to nurture the passion without enabling the self-righteous blame-game that often goes with it. Sustainability science offers the potential to combine the passion with evidence and reason – the lifeblood of universities and the best hope for civil discourse."

He added that in sustainability science, one must: do groundtruthing (basic monitoring); feed scientific data into integrated resource/ecological management models that balance tradeoffs over time and space; and provide policy/resource management recommendations.

The two-day meeting featured presentations on the following topics:

- Climate Change and Ecosystem Services: Impacts and Adaptation
- Climate Change and Agriculture: Impacts and Adaption
- Making Agriculture and Environment Work Together
- Landscape Heterogeneity and the Power of Agricultural Growth as an Engine for Poverty Reduction
- Resource Management at the Margins: Implications for Policy and Institutional Development
- REDD Policies for Greenforests: Integrating Sequestration, Emissions, and Adaptation
- The Potential of REDD in the Philippines
- Parks, Buffers, and REDD Instruments in an Ecological-socioeconomic Setting
- Climate Policy, Ecosystem Services, and Land Use

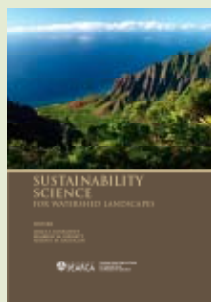


Participants of the meeting and some guests of the book launch pose for posterity with the book editors: Dr. James Roumasset (back row, rightmost), Dr. Kimberly Burnett (back row, third from right), and Dr. Arsenio M. Balisacan (back row, fourth from right), as well as Dr. Gil C. Saguiguit, Jr. (back row, second from right), SEARCA Director.

- Climate Change Mitigation Policies: Some International Aspects
- Coupled Natural-Human Systems and Emerging Infectious Diseases: Anthropogenic Environmental Change and Avian Influenza in Vietnam
- Managing Coastal Marine Nutrient Loads: Point and Non-point Sources in West Hawai'i
- Optimal Policies for Terrestrial and Coastal Ecosystems
- Watershed Conservation as Climate Adaptation
- Integrated Flood Management: Urban Dimensions of Watershed Systems
- Urban Flood Control Options Under Climate Change for Asia Pacific Region
- Managing Climate Risks in Flood-Prone Areas of Watersheds

During the meeting, a new SEARCA book, *Sustainability Science for Watershed Landscapes*, was launched (see sidebar for details). The editors of the book are: Dr. Roumasset; Dr. Kimberly Burnett, Assistant Specialist, University of Hawai'i Economic Research Organization; and Dr. Arsenio Balisacan, Professor, University of the Philippines School of Economics, and former SEARCA Director. The publication is jointly published by SEARCA and the Institute of Southeast Asian Studies (ISEAS). (MJRavago)

ABOUT THE BOOK



Sustainability science integrates traditional interdisciplinary environmental studies with policy science. In this new volume, authors go beyond the application of scientific knowledge to specific problems and develop new methods in dealing with interacting resource systems. In the case of watershed-related issues, sustainability science begins with questions regarding the targets and instruments of watershed management, including forest and watershed conservation, ground and surface water management, flood risk reduction, and food system management. As Stanford University's Peter Vitousek notes on the back cover, "Sustainability Science can be both fundamental and practical, both deep and interdisciplinary. This application of Sustainability Science to Pacific watersheds illustrates its promise."

SEARCA, DA-BAR Hold Training in Profitability of Agricultural Technologies

SEARCA, in partnership with the Bureau of Agricultural Research of the Philippine Department of Agriculture (DA-BAR), conducted the *Fourth Training Course on the Profitability of New Production and Processing Technologies* on 17-20 May 2010. It had 27 participants representing 11 institutions.

The course aimed to equip technology generators and proponents of DA-BAR-funded projects under the National Technology Commercialization Program (NTCP) with skills and financial tools needed to determine the profitability of agricultural technologies. Likewise, it aimed to improve the packaging of agricultural technologies and encourage innovation.

Dr. Gil C. Saguiguit, Jr., SEARCA Director, in his welcome remarks, expressed the hope that

“through this learning exercise, you [participants] will be able to ensure that the outputs of your respective research/projects have potential for commercialization and are able to address the technical needs of your target clientele.”

The course’s resource persons were Dr. Corazon T. Aragon, Prof. Antonio Jesus A. Quillooy, and Dr. Cesar B. Quicoy. All of them are with the Department of Agricultural Economics, College of Economics and Management, University of the Philippines Los Baños (UPLB).

Mr. Nicomedes P. Eleazar, DA-BAR Director, in a message read by Mr. Anthony B. Obligado, Officer in Charge of DA-BAR’s Technology Commercialization Unit, said that after this course, the fourth in a series, he hopes DA-BAR will be able to publish the second part of the book titled

“*Financial Viability of Agricultural Commodities*,” which featured the 13 technologies highlighted in the past three runs of the training.

The featured technologies were cacao production, citrus planting materials, garlic production with Gibborelic Acid 3, organic lettuce production, organic vegetables production, ube production, and other agricultural processes. The book, jointly published by SEARCA and DA-BAR, was launched during the National Technology Forum in August 2009. This knowledge product is a must-read for farmers, investors, entrepreneurs, and researchers.

Since 2005, DA-BAR has been strengthening its endeavors in technology transfer, promotion, utilization, and commercialization through the NTCP. Seventy technologies have already been marketed since the program started. SEARCA and DA-BAR have been collaborating on several projects that aim to develop and manage capability-building programs for the DA and its partner institutions. (VElla and LDPadilla)

Philippine Agri Officials, Staff Learn More About Climate Change

Two capability-building activities focused on climate change were coordinated by SEARCA for selected officials, staff, and partners of the Philippine Department of Agriculture for the period April to June 2010. These activities were geared toward strengthening their knowledge and understanding of climate change in order for them to respond appropriately and adequately to the challenges brought about by this phenomenon.

The first activity was the conduct of an overseas exposure visit to France, Belgium, and Italy from 27 April to 6 May 2010. Exposure visits are also scheduled for Indonesia, Thailand and Vietnam later in 2010. The visits aim to provide the participants with first-hand knowledge on the development and implementation of climate change-focused research, development, and extension (RDE) programs and activities, including information on available funding facilities and mechanisms for climate change adaptation and mitigation RDE.

The visit to Europe was participated in by Ms. Salvacion M. Ritual, Officer-in-Charge of the Research Coordination Division, and Ms. Judith A. Maghanoy, Budget/Project Finance Officer, both of DA-BAR; and Dr. Bessie M. Burgos, Manager for Project Development and Management of SEARCA. Among the institutions they visited were the French Agricultural Research Center for International Development (CIRAD) and Agropolis Foundation in Montpellier, France; the European Commission (EU) in Brussels, Belgium; and EU Joint Research Center (JRC) and the EU-JRC in Ispra, Italy.

The other activity was the conduct of the second in-country training in *Responding to Climate Change through Research and Development in Agriculture* from 15-18 June 2010 at SEARCA (see story on page 8). It was attended by 27 participants coming from various state universities and colleges (SUCs), bureaus and attached agencies of the DA, local government units (provincial and municipal LGUs), and member-agencies of



The exposure visit participants pose for a photo with Mr. Florimond Van de Velde, Directorate-General for External relations of EU’s Joint Research Center in Belgium.

the Los Baños Science Community (UPLB and PCARRD). The first training was conducted in March 2010.

The training activities aimed to provide participants with core climate science concepts so they have a clearer understanding of the climate change phenomenon and its impact on agriculture, forestry, and fishery; to guide participants in identifying areas vulnerable to climate change; to provide tools to measure the extent of risks these areas are exposed to; to discuss the concepts, methods, and procedures in responding (primarily adapting) to climate change; to identify mitigation or adaptation measures to overcome climate change impacts; and to provide guidance in consolidating the identified measures into appropriate action plans for implementation.

The capability-building activities are part of the DA-BAR-SEARCA Capability Building Program on Responding to Climate Change through Research and Development in Agriculture. The program aims to enhance the capacity of R&D managers, researchers, and other key people of the Department of Agriculture and its partners in proactively addressing RDE concerns related to climate change in the agriculture sector. Through this initiative, the DA-BAR seeks to contribute to the national efforts to combat the negative impacts of climate risks and uncertainties. (SPBatoon)

Capacity-building and Comparative Study on Technology Management in Southeast Asia Commences

SEARCA recently started implementing the major activities of the *Capacity-building and Comparative Study on Technology Management in Southeast Asia* project, which is funded by the Philippine Department of Agriculture-Bureau of Agricultural Research (DA-BAR) and spearheaded by SEARCA's Project Development and Management Department (PRODEV).

The project is aimed at strengthening the capacity of DA personnel from the national, regional, and field units in managing technology transfer and commercialization projects in support of DA's National Technology Commercialization Program (NTCP). Began in January 2010, the project has undertaken a *Training Course on Profitability of New Production and Processing Technologies* as well as benchmarking visits to Singapore, Malaysia, South Korea, and Vietnam.

The *Training Course on Profitability of New Production and Processing Technologies* was conducted on 17-20 May 2010 at SEARCA. PRODEV, in partnership with the Technology Commercialization Unit (TCU) of DA-BAR, implemented this training course which had 27 participants. They came from DA-BAR and consortium members, and partner institutions, which include local government units and members of the private sector (see full story on page 4).

On the other hand, selected DA personnel made three benchmarking visits in different Southeast Asian countries. The first team, composed of Mr. Anthony Obligado, Ms. Evelyn Juanillo, Ms. Ma Elena Garces and Mr. Roberto Quing, Jr. all of DA-BAR, and Ms. Edna Lisa Albufera of SEARCA, visited Singapore and Malaysia on 24-29 May 2010. The second team, composed of Ms. Leoncia Del Mar, Mr. Joell Lales, Mr. Tito Arevalo and Mr. Patrick Cabrera, all of DA-BAR, and Ms. Imelda Batangantang of SEARCA, visited South Korea on 11-17 June 2010. The third team, composed of Ms. Melissa Resma, Mr. Amado Macabeo, Ms. Eloisa Hernandez, and Ms. Miko Jazmine Mojica, all of DA-BAR, and Ms. Nova A. Ramos of SEARCA, visited Vietnam on 20-27 June 2010.

The visits aimed to provide the participants first-hand knowledge and information on the different aspects of and best practices in technology transfer and commercialization in the agriculture sector. The three teams altogether visited 20 institutions from both the public and private sectors.

The visits gave the participants the opportunity to interact with key persons from each institution. They were able to discuss with academic professors, researchers, farmers, and entrepreneurs, who were involved in commercializing, packaging, and transferring technologies. Moreover, they were able to gather information on the country's policies on technology

generation, transfer, and commercialization. They also shared information on DA-BAR's programs on technology commercialization as well as the state of technologies in the Philippine agriculture sector. The three teams are scheduled to convene in a workshop in September 2010, during which they will present the best practices and lessons they have learned from the study visits. (SGLQuiñones)



Members of the team (left side) that visited Vietnam discuss with officials of the Ho Chi Minh City Farmers' Association the policy and institutional environment for technology transfer and commercialization in the country's agriculture sector.



The Philippine delegation together with officials of the Research and Development Association (RDA) of Korea discussed the initiatives being undertaken by the different sectors for the improvement of their agricultural technologies.



Officials of Farmer's Organization Authority in Malaysia welcome the Philippine Delegation before discussing their technology transfer and commercialization practices.

ICRAF Official Talks on Agroforestry and Development

Agroforestry has a critical role in development, said Dr. Tony Simons, Deputy Director General of the World Agroforestry Centre, International Centre for Research in Agroforestry (ICRAF).

Agroforestry, the “integration of trees into agriculturally productive landscapes,” is said to have dual roles: it helps improve food security and biomass, and aids in the sustainable management of agricultural landscapes.

Recognizing these roles, Dr. Simons showed that ICRAF has crafted a new strategy to address several development challenges such as poverty, hunger, human health, energy scarcity, inequity (livelihood problems), biodiversity loss, habitat loss, land degradation, water scarcity, and climate change (landscape problems). The strategy includes the following six global research priorities (GRP) on agroforestry:

1. Domestication, utilization, and conservation of superior agroforestry germplasm

2. Maximizing onfarm productivity of trees and agroforestry systems;
3. Improving tree product marketing for smallholders
4. Reducing risks to land health and targeting agroforestry interventions to enhance land productivity and food availability
5. Improving the ability of farmers, ecosystems, and governments to cope with climate change
6. Developing policies and incentives for multifunctional landscapes with trees that provide environmental services

Inventories of natural seed sources and seed orchards, and tree seed suppliers directories are part of GRP 1.

Some possible research questions for the first three GRPs are: Can sustainable tree germplasm supply be achieved through building farmers capacity? (2) What are the tradeoffs in the different tree germplasm supply models for scaling up agroforestry? (individual farmer, farmer group,

contract farmer, private sector, public, private public collaboration, etc.) (3) Can networking and linking producer groups to markets improve their performance, profitability, and sustainability of germplasm supply? and (4) What are the best extension approaches?

The fourth GRP includes developing land health surveillance to identify health risks, and the fifth intends to enhance the stability of farming systems, which have been affected by the impacts of climate change.

Dr. Simons notes that the sixth GRP aims to address the lack of conducive policy, which is the cause for the Central Agroforestry Hypothesis. The hypothesis states that the current use of trees on farm and in the landscape remains below its potential of providing local, national, and global benefits through supply of goods and services.

Dr. Simons proposes that cocoa science be studied more, because, “without new science, the industry will stagnate.” (VJRElla)

Philippine Official Sheds Hope amidst Changing Climate Threats



Commissioner Naderev Saño

This is a war and we will survive because there is no choice.”

These were the strong words of Mr. Naderev Saño, Commissioner of the Philippine Climate Change Commission, during the third Department of Agriculture (DA) lecture forum held last May 26 at the DA in Quezon City. This lecture falls under the *Umbrella Capacity Development Program on Strategic Management and Policy for Agriculture Professionals and Executives* being implemented for DA by SEARCA in partnership with Ateneo School of Government, University of Asia and the Pacific School of Management, and UPecon Foundation, Inc.

Titled *Planting the Seeds of Change: The Philippines and the Climate Change Challenge*, Mr. Saño’s lecture explored how the world and the Philippines respond to climate change. Likewise, he discussed the general context and implications of climate change in the Philippines.

“Climate change is our opportunity to make the Philippines a better nation. Even if it is a huge problem, it has a positive side to it because it can change the way we govern our country...”

Mr. Saño noted that like any topic, climate change has poetic and practical aspects. “In the practical sense, we discuss the impacts of climate change, such as environmental destruction, economic disruption, social dislocation, political destabilization, and food scarcity. However, climate change has a poetic side – it is a manifestation of how people have been treating or exploiting nature,” he explained.

He emphasized that it is wrong to blame climate change for every disaster that strikes the country. Citing the disaster surrounding 2009 Typhoon Ondoy (International Name: Ketsana), he said it was a result of lack of preparation, poor governance and many decades of abuse of the natural resources. He noted how the country is losing its forest cover and coastal resources at an alarming rate.

The worst part, however, is that climate change will exacerbate the impacts of existing non-climate stressors and institutional challenges on all sectors.

The Philippine government’s response was the passing in late 2009 of Republic Act (RA) 9729, an act mainstreaming climate change into government policy formulations. The said Act allowed the creation of the Climate Change

Commission, the sole policymaking body tasked to coordinate, monitor, and evaluate climate change programs and action plans. The Commission has two main deliverables: (1) National Framework Strategy on Climate Change (approved as of April 2010) and (2) National and Local Climate Change Action Plan (due one year after approval of the framework).

To respond appropriately to climate change, he said that it is necessary to bring about a profound shift away from a business- and profit-oriented approach in all aspects of society, including energy, industry, international treaties, and most especially in agriculture. Likewise, he recommended that the world should pursue solutions with communities and other vulnerable sectors in mind and at the same time, adopt a paradigm that works in harmony with nature.

Mr. Saño called for national action in battling the adverse effects of climate change. “The solutions are in our hands. We cannot wait for international agreements to take action. We should protect our people and resources because these translate to protecting our future. More than being a biophysical issue, climate change is a social issue,” he underscored. (RMMDedicatoria)

SEARCA Holds Back-to-Back Activities on Climate Change

Southeast Asia is already experiencing the negative consequences of a changing climate: rising temperature, decreasing rainfall, rising sea levels, increasing frequency and intensity of extreme weather events leading to massive flooding, landslides, and drought causing extensive damage to property, assets, and human life. Moreover, climate change aggravates the problem of water stress, which causes problems for agriculture production, according to a study made by the Asian Development Bank in 2009.

To contribute scientific efforts to address the effects of climate change particularly on poverty and food security, SEARCA launched on 4 May 2010 a new publication on biodiversity-climate change link. The book launch was held back-to-back with a signing ceremony between SEARCA and its new partners for the Knowledge Center on Climate Change Adaptation in Agriculture and Natural Resource Management for Southeast Asia (KC3).

BOOK LAUNCH



SEARCA's newest book titled *Moving Forward: Southeast Asian Perspectives on Climate Change and Biodiversity* draws from the experience and lessons gained from a five-year Biodiversity Research Programme implemented by SEARCA with a funding support from the Netherlands' Ministry of Development Cooperation.

Edited by Dr. Percy E. Sajise, Dr. Mariliza V. Ticsay and Dr. Gil C. Saguiguit, Jr. with 18 authors from all over Southeast Asia, the book presents the

regional perspectives and country papers of an International Conference on Biodiversity and Climate Change organized by SEARCA in 2008, in partnership with the ASEAN Centre for Biodiversity, World Agroforestry Centre, Bioversity International, and Silliman University. This conference

aimed to establish the link between climate change and biodiversity in the context of agriculture and food security.

H.E. Robert Brinks, Ambassador Extraordinary and Plenipotentiary of the Royal Netherlands Embassy in Manila, addressed the guests of the book's launch. He said, "To succeed, we must show the world, in particular the sceptics among us, that the future of humanity is intertwined with the health of our earth and that the collapse of biodiversity will affect all people, as we are dependent on nature for water, food, medicines, and fuel."

Dr. Gil C. Saguiguit, Jr., SEARCA Director, said that the book is SEARCA's contribution to the celebration of the International Year of Biodiversity. He furthered that the book "draws attention to what is 'suspected' but not yet well investigated and establishes link between climate change and biodiversity loss."

Dr. Sajise, lead editor, said the book "could be a major component for our survival kit in the coming years and for future generations."

SIGNING OF COOPERATIVE AGREEMENT

In line with SEARCA's KC3 initiative, the Center signed separate Memorandum of Agreements with new partners: University of the Philippines Los Baños, World Fish Center, and the United Nations Development Program's Adaptive Learning Mechanism (UNDP-ALM). Signatories were: Dr. Saguiguit for SEARCA; Dr. Luis Rey I. Velasco, UPLB Chancellor; Ms. Julia Wolf, Project Manager UNDP-ALM; and Dr. Maripaz Perez, Regional Director of East and Southeast Asia, WorldFish Center.

The agreements provide for exchanges of scientific materials and collaborative activities in research and other programs between SEARCA and the partner institution. (MAFAbad)

SEARCA Takes Part in Social Forestry Confab

Indonesia's Ministry of Forestry and Estate Crops hosted the Fourth Association of Southeast Asian Nations (ASEAN) Social Forestry Network (ASFN) Conference on 14-16 June 2010 in Yogyakarta. Themed *Social Forestry Contributing to Food Security and in Addressing Climate Change*, the conference served as a venue for the sharing and exchange of information on the latest developments in social forestry and its contribution to addressing concerns on food security and climate change adaptation and mitigation. About 300 participants attended the event, composed of researchers, policymakers, and development practitioners from government and private institutions, and nongovernment organizations in the ASEAN countries.

Dr. Bessie M. Burgos, Manager of SEARCA's Project Development and Management Department, presented a paper at one of the plenary sessions. Titled *Lessons Learned from Social Forestry-Related R&D Initiatives of SEARCA*

and *Role of Knowledge Management*, her paper highlighted SEARCA's various community-based research and development initiatives on natural resource management. Dr. Burgos also presented SEARCA's current initiatives, particularly the Knowledge Center on Climate Change Adaptation in Agriculture and Natural Resource Management (KC3) and Climate Change Adaptation and Mitigation Program for Agriculture and Natural Resource Management for Southeast Asia (CChAMP) as potential collaborative activities for the ASEAN countries.

H.E. S. Pushpanathan, Deputy Secretary-General of ASEAN for ASEAN Economic Community, remarked, "...concerted effort and enhanced collaboration and partnership among all stakeholders are important for sustainable forest management while securing the livelihood and food security of the communities living in and around the forests."

Among the Conference's activities was a tree planting held in Gunung Kidul District where the participants also visited sustainable community forestry management groups. Teak is widely



Dr. Bessie M. Burgos, Manager of SEARCA's Project Development and Management Department, participates in a tree planting activity during the Fourth ASFN Conference held in Indonesia.

planted in the area for timber, as well as corn and cassava.

The Fourth ASFN Conference was co-funded by the ASFN-Swiss Partnership on Social Forestry and Climate Change. Established in August 2005 by the ASEAN Senior Officials on Forestry, the ASFN is the first government-driven social forestry network in Southeast Asia that seeks to promote policy and practices to strengthen ASEAN cooperation in social forestry through the sharing of social forestry information and knowledge. (SPBatoon)

SEARCA Offers 2nd Training Course on Responding to Climate Change



Participants discuss their capsule proposal during the workshop in the *Second Training Course on Responding to Climate Change through Research and Development in Agriculture* held on 15-18 June 2010 at SEARCA.

“Agriculture is the sector most vulnerable to climate change because of its high dependence on climate and weather,” said Dr. Gil C. Saguiguit, Jr., SEARCA Director (in a speech read by Dr. Editha C. Cedicol, Manager of SEARCA’s Graduate Scholarship Department).

Occasion was the opening program of the *Second Training Course on Responding to Climate Change through Research and Development in Agriculture* held on 15-18 June 2010 at SEARCA.

Dr. Saguiguit added, “...agriculture’s vulnerability to climate variability and change will put millions of people in developing countries such as the Philippines at greater risk of poverty, hunger, and malnutrition. Clearly, the impacts of climate change not only threaten food security but also our farmers’ economic security.” He emphasized that the role of government in facilitating research and development initiatives is very important.

The four-day training had 27 participants from state universities and colleges, Philippine Department of Agriculture (DA) bureaus and attached agencies, and local government units (LGUs). Through lectures, exercises and a workshop, the participants were reviewed on core climate science concepts; introduced to tools that can be used to measure the extent of risks their areas are exposed to; presented with existing methods, procedures, and measures in climate change mitigation and adaptation; and guided in drafting capsule proposals on the impact of climate change on the agricultural development of their respective areas of responsibility.

The collaborative research capsule proposals prepared by participants were presented to a panel

of experts for critiquing. They were encouraged to further improve and develop their output into a full-blown proposal for submission to funding agencies that prioritize climate change research (see side bar for the proposals).

Seven experts served as resource persons on the following topics: 1) the Philippine climate change scenario; 2) climate change vulnerability assessment; 3) managing risks in livestock, agriculture and fisheries due to climate variability; 4) mainstreaming climate change in local planning; and 5) economic valuation of climate risks. They are:

- Dr. Maria Victoria O. Espaldon, Professor and Dean, School of Environmental Science and Management (SESAM), University of the Philippines Los Baños (UPLB)
- Dr. Flaviana D. Hilario, Weather Services Chief of the Climatology and Agrometeorology Branch, Philippine Atmospheric, Geophysical and Astronomical Services Administration (DOST-PAGASA)
- Dr. Juan M. Pulhin, Professor and UP Scientist II, Department of Social Forestry and Forest Governance (DSFFG), College of Forestry and Natural Resources, (CFNR), UPLB
- Dr. Rogelio N. Concepcion, Adjunct Professor, UPLB SESAM, and consultant on water and environmental sanitation, National Anti-Poverty Commission (NAPC), Philippines
- Dr. Severino S. Capitan, Professor, Animal Breeding and Physiology Division, Animal and Dairy Sciences Cluster, College of Agriculture, UPLB
- Dr. Laura T. David, Professor, Marine Science Institute, UP Diliman, and member, National Academy of Science and Technology (NAST) Technical Committee on Climate Change

- Dr. Canesio D. Predo, Assistant Professor, Institute of Renewable Natural Resources, CFNR, UPLB; and Senior Economist, Environment and Economy Program for Southeast Asia (EEPSEA)

Dr. Hilario emphasized the importance of tropical cyclones because they are the source of 50 percent of the annual rainfall in the Philippines. She said PAGASA has observed that there has been very little rainfall in the last three months of 2009 and the first three months of 2010.

These findings have implications to agriculture, urban planning, and even education. For instance, in Metro Manila, even 30 millimeters of rain can cause flooding because some areas are already below sea level.

“Temperature change is the component of global climate change that impact livestock. The higher the temperature, relative humidity, and solar radiation exposure, the more uncomfortable the animal, resulting in less feed intake, less metabolic capacity, and less ability to divert nutrients to the body,” Dr. Capitan explained during his talk on managing risks in livestock due to climate variability.

Dr. Concepcion focused on the relationship of climate change and food security. By presenting research data and case studies, he provided the participants with an idea of the risks that climate change poses on water, food, and health. He linked these risks with land and water degradation through various frameworks.

Thus, said Dr. Concepcion, Philippine researchers should focus at least 80 percent of their efforts on climate change adaptation for agriculture. For the Philippines, adaptation must be a continuous response to the Asian economic advancement. He added that researchers should focus on preventing the effects and risks associated with climate change from becoming disasters, especially to the agriculture sector.

Dr. David discussed the impacts of climate change on fisheries. Based on the temperature profile of the Philippines since the 1900s (including the effects of monsoon, anomalies and extreme events, and long-term oscillations), the average temperature in the Philippines has been increasing. Increased temperature and abnormal weather impact both the natural and societal subsystems of the coastal system.

Capsule Proposals

The following are research proposals resulting from the Second Training Course on Responding to Climate Change.

Group 1 (University of Southern Mindanao, Philippine Coconut Authority, Zamboanga Sibugay LGU, Fiber Development Authority)

TITLE: Climate Change Adaptation Strategies and Poverty Reduction in Farming and Fishing Communities in Mindanao

The proposed research project has three individual but interconnected studies. Initially, a study assessing the current climate change adaptation and mitigation strategies of farmers and fisher folk in Mindanao (Southern Philippines) will be conducted. The findings in this study will be used to determine the most appropriate fishing and farming technologies that could enhance the adaptation strategies of the communities under study. Finally, a research involving local government units will be carried out to develop and communicate climate change adaptation plans in the area.

Group 2 (Pampanga Agricultural College, Philippine Carabao Center, Bureau of Agricultural Research-Department of Agriculture)

TITLE: Assessing the climate change vulnerability and adaptive capacity of the Candaba community in Pampanga

Being the most low-lying region in Pampanga (Northern Philippines), Candaba is considered the most vulnerable to extreme alterations brought about by climate change. The study intends to assess the vulnerability and adaptive capacity of differently affected sectors in Candaba to climate change. Specifically, it aims to: identify the pattern of climate variability and extreme events and assess their social and economic impacts; identify the sectors affected by extreme weather events; and determine the affected sectors' adaptation and mitigation strategies. The end goal is to devise measures to enhance the adaptive capacity of the affected sectors and stakeholders of the study community.

Group 3 (BFAR-NFRDI, Visayas State University, University of Batangas)

TITLE: Vulnerability Assessment of Coastal Areas and Integrated Adaptation Responses to Climate Change in Batangas and Leyte

The study is an assessment of the adaptive capacity of coastal communities to various effects of climate change.

Using an integrated and holistic approach, the study intends to address the biophysical, social, and economic concerns of vulnerable coastal areas in Batangas and Leyte (Northern and Central Philippines, respectively). To achieve this, the following activities will be conducted: vulnerability assessment, and adaptation planning, implementation, and monitoring and evaluation.

Group 4 (Isabela LGU, DA-BAR)

TITLE: Yam Cultivation in the Drought-prone Areas in Selected Municipalities in Isabela

The study is essentially about adaptive capacity; it will introduce crop diversification as a way to cope with climate change. Particularly, it intends to determine the suitability of yam (*ube*) as a substitute crop to corn in areas extremely affected by ENSO phenomenon in Isabela (Northern Philippines).

Group 5 (Ifugao LGU, DA-BAR)

TITLE: Bamboo Plantation Establishment for Sustainable Environment and Economic Development in Ifugao Province

The study concerns the rehabilitation and conservation of watershed areas through bamboo plantation. Through the project, the effects of climate change can be reduced since a hectare of bamboo could sequester about 12 tons of carbon annually.

According to her, global warming will affect primary productivity. This is apparent in seagrasses, corals, and mangroves. At first, primary productivity will rise but when it becomes too warm, productivity will start to go down depending on the species' threshold temperature.

Dr. Pulhin focused on the various tools in climate change vulnerability assessment. He said there has been an evolution in climate change vulnerability studies. Impact assessment studies, including vulnerability assessments, are now more extensive, have converged with different disciplines, and have evolved to include adaptation assessments and adaptation options. With these assessments, a system that is more resilient or has a better capacity to cope with environmental changes can be designed.

Dr. Espaldon discussed the basic steps in risk assessment. She showed an example of a composite map showing priority areas for rain-induced landslide hazard. Some vulnerability factors that can be looked into when planning, aside from crops loss and yield loss (based on population, social infrastructures, and service infrastructures), were also discussed. Such vulnerability factors are the social indicators for a community's vulnerability and also reflect its adaptive capacity.

Dr. Predo shared that most applications of probabilistic forecast are in the field of agriculture, although the principles can also be applied to fisheries. He emphasized that agriculture and fisheries production is always at risk to climate variability and climate change because El Niño Southern Oscillation (ENSO) affects both sectors. He also discussed the different sources of risks of the agriculture and fisheries sectors.

This training course is one of the components of the project titled *Capability-Building on Responding to Climate Change through R&D in Agriculture* of the Philippine Department of Agriculture's Bureau of Agricultural Research.

The project aims to strengthen initiatives on research and technology development, technology management, and their effective implementation, transfer and adoption by stakeholders. (MAFABad with a report from JVBariuan)

19 Southeast Asians Awarded New Graduate Scholarships

Fifteen Southeast Asians began their graduate studies at the start of the current school year (2010/2011) under the auspices of SEARCA's Graduate Scholarship Program. They are from Lao PDR (4), Myanmar (4), Vietnam (4), and the Philippines (3).

Six are pursuing PhD programs and nine, master's program. All of them are enrolled at the University of the Philippines: 14 at the University of the Philippines Los Banos (UPLB) and one in UP Diliman (UPD).

Four of the new scholars are funded by the German Academic Exchange Service (DAAD) and the rest by SEARCA. The new scholars are:

Lao PDR

1. Mr. Anongsack Chanthavong, Head, Food Security Project for Multi Ethnic Groups in Long District, Luang Namtha Province, Action Against Hunger International Network (*MS, community development*)
2. Mr. Sonphet Ounthala, Deputy Head, Administration Office, Provincial Agriculture and Forestry Office, Luang Namtha Province, (*MS, community development*)
3. Mr. Bouakham Tia Sisongkham, Deputy Chief of Agriculture and Forestry, Technical Services Section, Department of Agriculture and Forestry, Vientiane (*MS, environmental science*)
4. Mr. Khampong Pong Vongphachan, Deputy Provincial Project Officer, Department of Agriculture and Forestry, Vientiane (*MS, environmental science*)

Myanmar

5. Mr. Win Htein, Deputy Assistant Supervisor, Myanma Perennial Crops Enterprise, Ministry of Agriculture and Irrigation, Yangon (*MS, environmental science*)
6. Ms. San Hla Htwe, Deputy Supervisor, Oil Crops Development Project, Myanmar Agricultural Service, Ministry of Agriculture and Irrigation, Nay Pyi Taw (*PhD, soil science*)
7. Ms. Zin Mar Lwin, Assistant Program Office, Planning Section, Department of Agricultural Planning, Ministry of Agriculture and Irrigation, Nay Pyi Taw (*MS, environmental science*)
8. Ms. Khin Thanda Oo, Deputy Supervisor, Agricultural Extension Division, Ministry of Agriculture and Irrigation, Nay Pyi Taw (*PhD, horticulture*)

Philippines

9. Ms. Bathsheda P. Aparilla, Agriculturist I, Department of Agriculture, Quezon City (*MS, soil science*)
10. Ms. Hannie T. Martin, Apayao State College, Conner, Apayao (*MS, forest resources management*)
11. Mr. Rey B. Lara, Planning Officer I, Department of Agriculture – Regional Field Unit IX, Pagadian City (*MS, urban and regional planning, UPD*)

Vietnam

12. Mr. Quyen Dinh Ha, Lecturer, Department of Rural Development, Faculty of Economics and Rural Development, Hanoi University of Agriculture (*PhD, community development*)
13. Mr. Nguyen Van Huong, Lecturer, Faculty of Economics, Hung Yen University of Technology and Education (*PhD, agricultural economics*)
14. Mr. Vu Hoang Lan, Lecturer and Researcher, Faculty of Animal Husbandry and Veterinary Medicine, Thai Nguyen University of Agriculture, Thai Nguyen Province, (*PhD, animal science*)

15. Ms. Le Thi Thanh Loan, Lecturer, Department of Agricultural Economics and Policies, Faculty of Economics and Rural Development, Hanoi University of Agriculture (*MS, agricultural economics*)

A scholarship grant was also given to Mr. Cherdpong Kheerajit, a Thai. Starting the second semester (November 2010), Mr. Cherdpong will pursue PhD in development communication at UPLB. He is a Lecturer at the Department of Agricultural Extension and Communication, Faculty of Agriculture, Kasetsart University, Bangkok, Thailand.

SCHOLARS BEGINNING STUDIES IN SY 2011/2012

Moreover, scholarship grants were given to three other Southeast Asians, who are expected to begin their graduate programs in school year 2011/2012, all at UPLB. They are:

1. Ms. Pok Wudtisawad, Agricultural Extensionist, District Agricultural Extension Office, Department of Agricultural Extension, Thailand (*PhD, agricultural economics*)
2. Ms. May Yee Kay Khine Seine, Assistant Program Officer, Planning Section, Department of Agricultural Planning, Ministry of Agriculture and Irrigation, Myanmar (*PhD, agricultural economics*)
3. Ms. Do Thanh Thu, Lecturer, Hanoi University of Agriculture, Vietnam (*MS, agriculture economics*)

Altogether, the 19 new scholarship grants bring to 1,271 the total number of graduate scholarships that SEARCA has awarded to nationals of the 11 SEAMEO member countries. As of 30 June 2010, SEARCA has 76 ongoing scholars, including the new scholars. (LLDDomingo)

6 Southeast Asians Awarded PhD Research Scholarships

SEARCA awarded six PhD research scholarships to an Indonesian, a Lao, and four Filipinos to enable them to conduct their dissertation research and complete their doctoral degrees. Their research topics support the Center's priority thrusts under the broad themes of promotion of agricultural competitiveness and natural resource management. The scholarship grants are for one year, starting June 2010. The scholars are expected to complete their doctoral degree programs by April 2011.

The awardees and their nationalities, degree programs, study posts, and dissertation titles are:

- Ms. Imas Sukaesih Sitanggang, Indonesian, PhD in computer science (database system), Universiti Putra Malaysia, Malaysia; *Modeling Peatland Fires Risk Using Spatial Decision Tree, a Case Study of the Province of Riau, Indonesia*
- Mr. Phouthasone Sibounnavong, Lao, PhD in biotechnology (plant pathology), King Mongkut's Institute of Technology, Thailand;

Biological Activities of Antagonistic Fungi to Control Fusarium Wilt of Tomato

- Mr. Arvin P. Vallesteros, Filipino, PhD in forest resources management, University of the Philippines Los Baños (UPLB); *Integrating Information Technology and Local Knowledge to Detect and Measure Forest Degradation*
- Ms. Van Leah B. Alibo, Filipino, Straight PhD in environmental science, UPLB; *Carbon Storage and the Role in Climate Change Mitigation of the Caimpugan Peatland in Agusan Marsh, Philippines*
- Mr. Stephen Rey P. Liganan, Filipino, PhD in community development, UPLB; *Vulnerability, Coping Mechanisms, and Disaster Risk Management as Factors Influencing the Effects of Flood Risks to Households in Selected Rice Farming Communities of Pototan, Province of Iloilo, Philippines*
- Ms. Hyde D. Nadela, Filipino, PhD in animal science, UPLB; *Physiological Responses of Heat-Stressed Broiler Chickens Subjected to Early Thermal Conditioning and Feed Restriction*

SEARCA-Bearhs ELP Training Scholarship Awards 1st Grant



Dr. Nguyen Viet Dang

Dr. Nguyen Viet Dang, Lecturer and Researcher at the Faculty of Economics and Rural Development, Hanoi University of Agriculture, Vietnam, outranked 64 other applicants to the Special SEARCA-Bearhs Environmental Leadership Program (ELP) Scholarship.

The Bearhs ELP for Southeast Asia is a summer certificate course organized by the College of Natural Resources, Center for Sustainable Resource Development of the University of California (UC), Berkeley, USA. This three-week intensive course is designed for mid-level development and environmental professionals to enhance their leadership skills in addressing complex cross-cultural environmental problems as well as in meeting the challenges of reducing poverty and social conflict. It runs from 25 June to 17 July 2010 at UC Berkeley.

This year, SEARCA and the Bearhs ELP initiated a joint training scholarship. SEARCA sees this partnership as a way of carrying out its mandate of strengthening institutional capacities in agricultural and rural development

in Southeast Asia. Moreover, it is hoped to further develop the training scholar so that he/she may perform a strategic role toward the development and institution of environmental policy in his/her country that will lead to cross-sectoral environmental initiatives.

"I am excited to participate in this program and at the same time nervous," said Dr. Dang, recognizing that with such opportunity comes a big responsibility. He just completed (November 2009) his PhD in agricultural economics from the University of the Philippines Los Baños under a SEARCA-German Academic Exchange Service scholarship. He earned his MS in regional and rural development planning from the Asian Institute of Technology in Bangkok, Thailand.

SEARCA and the Bearhs ELP will fully cover all expenses related to Dr. Dang's participation in the summer certificate course.

In its initial year of implementation, the Special SEARCA-Bearhs ELP Training Scholarship attracted 65 applications from the Philippines (28), Indonesia (18), Vietnam (11), Myanmar (3), Thailand (3), Cambodia (1), and Lao PDR (1). (MTBFerino)

2 Travel Grants Awarded

Two Filipino researchers presented scientific papers in two separate conferences held in China and USA, through the support of SEARCA's Travel Grants Program.

Dr. Emilia S. Visco, Assistant Professor, College of Human Ecology, University of the Philippines Los Baños (UPLB), presented *The Role of Social Capital in Sustainable Social Development: The Case of Selected Extension Programs in the Philippines* at the 2010 Joint World Conference on Social Work and Social Development held in Hong Kong, China on 10-14 June 2010. The conference was attended by 2,891 participants from 113 countries. Dr. Visco also served as a moderator in one of the conference's sessions.

Dr. Asuncion K. Raymundo, Dean of College of Arts and Sciences and Professor of Microbiology, UPLB, presented an oral paper titled *Comparing Two Methods of Analyzing Microbial Communities of an Extreme Environment in the Philippines* at the 110th General Meeting of the American Society for Microbiology held in San Diego, California, USA on 23-27 May 2010. The convention—consisting of several forums, poster and oral presentations, fellowships, symposiums, and roundtable discussions—was attended by almost 10,000 participants from all over the world. Dr. Raymundo said that the conference – through the poster sessions, interaction, and exchange with other microbiologists - allowed her to be updated in microbial ecology, which is her current research focus.

The SEARCA Travel Grant provides opportunities to Southeast Asian nationals with limited funds to present papers in scientific conferences or forums in order to discuss with other scientists and scholars developments in their respective disciplines.

Since the program was started in 2006, 45 scientists, researchers, and graduate students have received support from SEARCA. It is one of the strategies SEARCA undertakes to help build the capacity of academic and research institutions in Southeast Asia, especially those in agricultural and rural development. More information on this program is available at <http://searca.org/web/research/travelgrants/index.html>. (RCDikitanan)

5 Timorese Start Academic Bridging Scholarships

Five nationals of Timor Leste started in June 2010 their non-degree study at the University of the Philippines Los Baños (UPLB) under SEARCA's Academic Bridging Program.

They are:

- Mr. Mario Jose Morais, National Consultant, Ministry of Agriculture and Forestry, Dili (*animal science*)
- Ms. Monica Moreira, Production Assistant, Care International (*agronomy*)
- Mr. Luis Tavares, Animal Science, Lecturer, National University of Timor-Leste, Dili (*animal science*)
- Ms. Ana Jeannie Magno De Corte-Real Araujo, Official for Administration and Finance, International Labor Organization (*agronomy*)
- Mr. Ergilio F. Vicente, Program Coordinator, Centro Juventude Covalima and Vocational Training Center (*community development*)

Mr. Morais, Ms. De Corte-Real Araujo, and Mr. Vicente are supported by the German Academic Exchange Service (DAAD), while Ms. Moreira and Mr. Tavares are funded by SEARCA.

The Academic Bridging Program provides assistance to best qualified scholarship candidates from the transition economies of Southeast Asia, including Timor Leste, in upgrading the BS degree of agriculture graduates to enable them to qualify for admission to the graduate school of reputable universities in Southeast Asia and even outside the region.

Scholars under the Program take up undergraduate technical courses that would enhance their knowledge in their respective areas of specialization. They may also undertake specialized training courses to improve English language proficiency and other technical skills. (LLDDomingo)

Thesis Abstracts

REPRODUCTION OF CORAL *POCILLOPORA DAMICORNIS* (LINNAEUS) AT PANJANG ISLAND, CENTRAL JAVA



Munasik
Indonesian
Universitas Gadjah Mada

This study was designed to investigate the reproduction period, reproductive effort, and recruitment rate of coral *Pocillopora damicornis* in the southern and northern sides of Panjang Island, Central Java, Indonesia.

Reproduction period was determined by observing gametogenesis, embryogenesis, and planulation (planulae release) period, while the reproductive effort was estimated by measuring polyp fecundity and larval production in each colony. Recruitment rate of the coral was determined by the density of juvenile in the field.

Results showed that reproductive effort and recruitment rate of coral *P. damicornis* differed between the southern and northern sides of Panjang Island. Reproduction period was not different between the sides while reproductive activities occur every month throughout the year. Planulation occurred from new moon to full moon with gamete maturation in full moon and third quarter moon, indicating that planulation was controlled by gametogenesis cycle and influenced by the interaction between tide and lunar. The multiple gametogenic cycles resulted in double peaks planulation in a single colony while planulation in paired colony revealed a single peak, indicating that variation in planulation period is due to adaptation of gametogenic cycles, which are controlled by the existence of other colonies. Reproductive effort varied seasonally with the polyp fecundity and larval production increasing during southeast monsoon and decreasing in northwest monsoon. The annual fluctuations in reproduction were controlled by the interaction of water temperature, photoperiod (day length), nutrient, and rainfall. Reproductive effort was different between the southern and northern sides, probably in response to reduced number of productive polyp in the northern side, which was influenced by high wave frequency and wave height. High larval production in the southern side, which was trapped by the turbulent eddies current, caused high recruitment in this side, however it had a low survival rate of juvenile. Recruitment was characterized by

high mortality of juvenile in the early settlement period and high abundance of juvenile under surfaces of the settlement plates, which was influenced by sediment accumulation. High recruitment occurred around their parental colonies and seemed to correspond to adult distribution. It is suggested that the population of coral *P. damicornis* be maintained by internal recruitment.

GROWTH AND YIELD MODELS FOR EUCALYPTUS SPECIES USING GEOSPATIAL TECHNOLOGY IN AEK NAULI, NORTH SUMATRA PROVINCE, INDONESIA



Siti Latifah
Indonesian
University of the Philippines
Los Baños

This study was conducted primarily to develop a yield prediction model for forest plantation of *Eucalyptus* spp. in Aek Nauli, North Sumatra, Indonesia as a contribution toward sustainable forestry development and management. Specifically, it aimed to develop growth and yield models for *Eucalyptus* plantations, test the models to identify the best growing species, integrate growth and yield models into a GIS model and recommend appropriate management strategies to improve growth and yield.

The data came from 650 rhombic plots consisting of 106 PSPs and 544 inventory plots. Six candidate non-linear regression equations using original ages and initial and projection ages were tested and assessed for statistical validity and accuracy in predicting yield.

Models using initial age, specifically model 2 was found consistently to be the best model in almost all *Eucalyptus* plantations. Among the models using initial and projection age, model 4 was the best model. Model 2 which use original ages, is better than model 4 which use initial and projection age, because the former is more reliable and its growth curve follows a sigmoid shape. There is significant difference between the models prediction of merchantable volume for *Eucalyptus* species. Consequently, each *Eucalyptus* species had a specific model to predict the yield.

Results show that *E.* hybrid had the highest (230 m³/ha) of average predicted volume in

year 7 and *E. pellita* had the lowest (104 m³/ha). The most important factor affecting yield of *E. urophylla* and all species is rainfall. For *E. grandis*, *E. pellita*, and mixed *Eucalyptus* the important factors are stand density, elevation, interaction site index, and age.

Environmental requirements for viable plantations of various *Eucalyptus* species are site index ranging from 15 to 25 m, stand density ranging from 800 to 1200 tree/ha, spacing ranging from 6 to 9 m², plot size ranging from 0.025 to 0.04 ha, depth of top soil ranging from 20 to 40 cm, rainfall ranging from 100 to 400 mm/month, slope ranging from 0 to 45 %, elevation ranging from 600 to 1700 masl, and A, C and E groups of soil.

GENETIC DIVERSITY OF NATURAL POPULATIONS OF *BACTROCERA OCCIPITALIS* (BEZZI) AND *B. PHILIPPINENSIS* DREW AND HANCOCK (DIPTERA: TEPHRITIDAE) IN SELECTED MANGO PRODUCING AREAS IN THE PHILIPPINES USING MICROSATELLITES



Grace Sheila Paguibitan-Jalani
Filipino
University of the Philippines
Los Baños

Using nine microsatellite loci, the genetic diversity of natural populations of *Bactrocera occipitalis* and *B. philippinensis* was investigated. Estimates of genetic diversity based on allele number (n_a and n_e), heterozygosity (H_o and H_e), and Shannon information index (I) revealed that the Cavite population was the most genetically diverse ($n_a=18.56$; $n_e=12.88$; $H_o=0.58$; $H_e=0.89$; $I=2.55$) and Pangasinan was the least ($n_a=7.89$; $n_e=8.94$; $H_o=0.34$; $H_e=0.87$; $I=2.31$). Among groups, the intermediates were the most genetically diverse ($n_a=25.44$; $n_e=15.30$; $H_o=0.52$; $H_e=0.92$; $I=2.85$) and *B. philippinensis* was the least ($n_a=17.44$; $H_o=0.44$; $H_e=0.90$; $I=2.54$). A low level of genetic diversity was detected among populations and among groups. Pangasinan and Palawan were the most related while Palawan and Guimaras were the least. Among groups, *B. occipitalis* and intermediates were the most related while *B. occipitalis* and *B. philippinensis* were the least. Dendrogram analysis indicated that *B. occipitalis*, *B. philippinensis*, and intermediates are not genetically distinct from each other.

Snapshots



Dr. Saengtong Pongjaroenkit, Dr. Varaporn Sangtong, and Dr. Chotipa Sakulsingharoj, Professors of the Genetics/Biotechnology Program, Faculty of Science, Maejo University (MJU); accompanied by Ms. Ma. Diana Jantakad of MJU's International Affairs Office and Ms. Supansa Phethin, graduate student of the program, visited the Center on 19 April 2010 to pay a courtesy call on Dr. Gil C. Saguiguit, Jr. (center), SEARCA Director, and to discuss SEARCA's programs, particularly its Biotechnology Information Center. With them in the photo are other SEARCA staff members.

SEAMEO Staff Exchange Program

SEARCA sent two of its staff members to the SEAMEO Regional Center for Tropical Biology on 8-10 June 2010 under the SEARCA-BIOTROP Staff Exchange Program. SEARCA likewise received on 20 April 2010 four staff members from SEAMEO BIOTROP and the SEAMEO Regional Center for Education in Science and Mathematics (SEAMEO RECSAM). SEAMEO BIOTROP is based in Bogor, Indonesia, and SEAMEO RECSAM in Penang, Malaysia.

The Staff Exchange Program is aimed at enhancing the staff's personal and professional development while providing opportunities for the staff to broaden their knowledge, learnings, and experiences in their particular disciplines or areas of expertise. These aims are achieved by enabling individuals to exchange with staff of various SEAMEO centers. As a staff development approach, the Staff Exchange Program has the advantage of enabling learning through a natural office setting, semi-structured training set-up, and hands-on experience.



Mr. Edmund M. Ubaldo, Purchaser, and Ms. Natividad P. Salazar, Treasury Services Assistant, are welcomed by Dr. Bambang Purwantara, Director of SEAMEO BIOTROP, during their Staff Exchange Program in Indonesia on 8-10 June 2010.



Dr. Gil C. Saguiguit, Jr., SEARCA Director, receives a token from Ms. Wati Madyawati and Ms. Rima Febriana of SEAMEO BIOTROP.



Ms. Ganthimathi and Ms. Siti Hajar of SEAMEO RECSAM hand a souvenir to Dr. Saguiguit.

Association of Filipino SEARCA Alumni Holds First Scientific Meeting

The SEARCA Fellows Association of the Philippines (SFAP) held its first Scientific Meeting on 22 April 2010 at the SEARCA Residence Hotel Conference Room.

Themed *Life after SEARCA Scholarship*, the meeting served as a venue of a Best Paper Award competition for newly completed Filipino SEARCA scholars. It was also an opportunity to orient the new graduates on SFAP and to foster camaraderie among the SEARCA graduate alumni.

Taking their oath as new SFAP members were: Dr. Rusty G. Abanto (environmental science), Dr. Reggie Y. dela Cruz (molecular biology and biotechnology), Dr. Artemio Martin, Jr. (soil science), Mr. Lawrence T. Ramos (environmental science), and Dr. Lita B. Sopsop (environmental science), all from the University of the Philippines Los Baños (UPLB).

Three of them presented their dissertations: (1) Dr. Martin—“Characterization and Suitability Evaluation of Major Agricultural Soils towards Rationalizing Land Area Allocation for Biofuel Feedstock Production in Cagayan Valley, Philippines;” (2) Dr. Dela Cruz—“Differential Expression of Selected Genes in Normal and Mutant Endosperms of Coconut;” and (3) Dr. Sopsop—“Human-forest Interaction in Aborlan Guba System, Palawan Island, Philippines: Implications for Conservation and Management.”

Dr. Martin's research sought to distinguish sites considered major agricultural lands for food and feed production and to delineate marginal lands that may be utilized for biofuel feedstock production in Cagayan Valley, Northern Philippines. Dr. Dela Cruz' study aimed to find out the expression of selected genes in the endosperms of normal and mutant makapuno coconut at different stages of development. Dr. Sopsop's research generally aimed to formulate a sustainable plan for the management of the Aborlan Guba System in Central Western Philippines by determining the influence of the people's socioeconomic characteristics on forest resource utilization and designing a model that would predict the forest cover change.

Dr. Dela Cruz received the Best Paper Award. Dr. Sopsop and Dr. Martin ranked second and third, respectively.

The criteria for judging included content (25%), coherence (25%), novelty (30%), and delivery (20%). The panel of judges was composed of Dr. Merdelyn Caasi-Lit of the Institute of Plant Breeding; Prof. Aimee Lynn Barrion-Dupo and Dr. William Gruezo of the Institute of Biological Sciences (IBS); and Dr. Antonio Santos of the Department of Social Sciences, all of UPLB.

Formed in 1995, SFAP aims to provide means for the SEARCA graduate alumni to use their expertise for development assistance. It seeks to make creative collaborative research and development endeavors in the Philippines and in the Southeast Asian region. SFAP is currently headed by Dr. Cecilia N. Gascon, President of Southern Luzon State University. (VJRElla and LDEPadilla)

SEARCA Participates in Asia-Pacific Policy Forum

The rapid changes occurring in Asia and the Pacific, particularly in agriculture and its related sectors, call for constant review and rethinking of perspectives, policy directions, and strategies to ensure relevance and responsiveness. Organized toward this end, the Ninth Asia Pacific Agriculture Policy (APAP) Forum discussed the following topics; *Rethinking Strategies for Global, Regional, and National Food Security; New Agricultural Policy Era after the Food and Financial Crises; Biofuel Development, Food Price, and Food Security; Climate Change, Water Security, and Agricultural Development; and Roles of Multilateral Organizations in Global, Regional, and National Food Security.*

Dr. Mercedita A. Sombilla, Manager of SEARCA's Research and Development Department, presented a paper on biofuel development. Titled *A Regional Strategic Framework for Biofuel Development in the Greater Mekong Subregion*, Dr. Sombilla's paper laid out some policy recommendations for a sustainable biofuel development program. These include:

- Leveraging of investments for biofuel production among smallholders

- Preferential purchasing
- Investment support for infrastructure, research, and human resource development
- Area development and feedstock selection policy and the companion policy on biofuel production and use
- Promotion of public-private partnerships

Other speakers were from the UN Food and Agriculture Organization, Center for Chinese and Agricultural Policy, Stanford University, USA; Jahangirnagar University of Bangladesh; Ministry of Agriculture in Indonesia; and Ministry of Food, Agriculture, Forestry, and Fisheries (MIFAFF) of Korea. Forum discussants were from various universities and agriculture and rural development institutions from China, France, Japan, Korea, Lao PDR, Myanmar, Nepal, Philippines, and Vietnam.

The Ninth APAP Forum was held at Seoul Olympic Parktel in Songpa-gu, Seoul, Korea on 21-22 June 2010. It was organized by the Korea FAO Association and the Global Agriculture Policy Institute under the sponsorship of MIFAFF and the National Agricultural Cooperative Federation of Korea. (CNGRogel)

Registrar, he was Chair of the PhD in Education Program of UPOU. He holds a PhD in environmental science from the University of the Philippines Los Baños (UPLB, 2005) obtained through SEARCA's graduate scholarship program. He is at present the Business Manager of the SEARCA Fellows Association of the Philippines (SFAP), composed of Filipino graduate alumni of SEARCA.

On the other hand, Dr. Inocencio E. Buot, Jr., is a professor of ecology, systematics, and biodiversity conservation. He was Deputy Director of the UPLB Institute of Biological Sciences and concurrent Program Chair of UPOU's FMDS Diploma in Environment and Natural Resources Management before his appointment as UPOU-FMDS Dean. In August 2009, he was conferred the title of UP Scientist 1, a highly prestigious recognition within UP. He earned his PhD in ecology from the University of Chiba, Japan; his MS in Botany is from UPLB in 1984, obtained through a SEARCA scholarship. Dr. Buot currently serves as Vice President for Luzon of SFAP. (MTBFerino)

produce quality research papers for publication and enable them to work with SEARCA's R&D personnel on mutually identified areas of concerns/interests in agriculture and rural development.

The six awards bring to 34 the total number of PhD research scholarships the Center has granted as of 30 June 2010. (LLDDomingo)

55 SEARCA Scholars/ from page 16

FROM MYANMAR (7):



- Ms. May Thinn Khaing, "Leaf and Fruit Nitrogen Potassium and Calcium Concentrations in Relation to Fruit Yield, Quality, and Severity of Anthracnose in Mango (*Mangifera indica* L.)," UPLB (*MS, horticulture*)



- Ms. Seinn Seinn Mu, "Economic, Health and Environmental Effects of Pesticide Use in Mung Bean [*Vigna radiata* (L.) Wilczek] Production in Myanmar," UPLB (*MS, agricultural economics*)



- Ms. Thanda Tin, "Introgression of the B-Carotene Locus into Rice Using Marker-assisted Backcrossing," UPLB (*MS, plant breeding*)



- Mr. Myat Thu, "Biology, Population Dynamics and Management of Banana Pseudostem Borer, *Odoiporus longicollis* Olivier (Coleoptera: Curculionidae) on 'Lakatan' AA, *Musa acuminata* Colla," UPLB (*PhD, entomology*)



- Ms. Sanda Kyaw Win, "Physiological, Morphological and Agronomic Factors Affecting Water Use Efficiency of Sugarcane," UPLB (*PhD, agronomy*)



- Ms. Khin Nyunt Yee, "Parasitization of Three Species of Mango Leafhoppers by *Halictophagus* sp. (Strepsiptera: Halictorhagidae) in the Philippines," UPLB (*PhD, entomology*)



- Ms. Amy Thein, "Reduction of Bacterial Leaf Blight of Rice Caused by *Xanthomonas oryzae* pv. *oryzae* by its Avirulent Stains," KU (*MS, plant pathology*)

FROM THE PHILIPPINES (13):



- Mr. Charlie B. Batin, "Fruit Color as an Indicator of Seed Germination and Seedling Performance of *Jatropha curcas* L.," UPLB (*MS, forestry*)



- Ms. Shiela Grace M. Paguibitan-Jalani, Genetic Diversity of Natural Populations of *Bactrocera occipitalis* (Bezzi) and *B. philippinensis* Drew and Hancock (Diptera: Tephritidae) in Selected Mango Producing Areas in the Philippines Using Microsatellites," UPLB (*MS, molecular biology and biotechnology*)

Bagarinao, Buot Appointed to UPOU Admin Posts

Dr. Ricardo T. Bagarinao and Dr. Inocencio E. Buot, Jr., both SEARCA graduate alumni from the Philippines, were recently appointed to administrative posts at the University of the Philippines Open University (UPOU). Dr. Bagarinao assumed the post of University Registrar starting 12 April 2010, and Dr. Buot as Dean of the Faculty of Management and Development Studies (FMDS), effective 1 April 2010. Their appointment is for a term of three years.

A full-time member of the UPOU Faculty of Education, Dr. Bagarinao, Associate Professor, teaches courses in physiology, morphoanatomy, genetics, natural sciences, biology for teachers, advanced ecology, and socio-cultural perspectives on the environment. Prior to his appointment as University

6 Southeast Asians/ from page 10

SEARCA began awarding PhD research scholarships in November 2005 to give more Southeast Asian PhD students the opportunity to use the resources and facilities available at SEARCA and its network of universities for their research. The grant also aims to help the scholar



• Ms. Josefina M. Ocampo, "Impact of Marine Protected Area (MPA) Establishment on Natural Resources Conservation in Verde Island, Batangas City," UPLB (*MS, natural resources conservation*)



• Mr. Lawrence T. Ramos, "Simulating Streamflow in the Santa Rosa River in Laguna, Philippines," UPLB (*MS, environmental science*)



• Mr. Rusty G. Abanto, "Natural and Artificial Regenerations in the Rock Dump Site of Abandoned Mining Area in Larap, Jose Panganiban, Camarines Norte, Philippines," UPLB (*PhD, environmental science*)



• Ms. Reggie Y. dela Cruz, "Differential Expression of Selected Genes in Normal and Mutant Makapuno Endosperms of Coconut (*Cocos nucifera* L.) Using Relative RT-PCR," UPLB (*PhD, molecular biology and biotechnnology*)



• Mr. Artemio A. Martin, Jr., "Characterization and Suitability Evaluation of Major Agricultural Soils towards Rationalizing Land Area Allocation for Biofuel Feedstocks in Cagayan Valley, Philippines," UPLB (*Straight PhD, soil science*)



• Ms. Lualhati L. Aliño, UP Diliman, "Trophic Dynamics Analyses of Coastal Fisheries in Trawlable Areas in the Philippines," UPLB (*PhD, marine science*)



• Ms. Jesebel R. Besas, "Mechanism of Histamine Formation and Control in Fermented Viscera (Dayok) from Yellowfin Tuna [*Thunnus albacares* (Bonnatere)]," UPLB (*PhD, food science*)



• Ms. Lucille Elna P. De Guzman, "Storage Behavior and Seed Viability Equation of *Jatropha curcas* L.," UPLB (*PhD, agronomy*)



• Ms. Clarissa Yvonne J. Domingo, "Prevalence and Risk Factors of Zoonotic Protozoa among Smallholder Livestock Farmers in Aurora Province," UP Manila (*PhD, public health*)



• Mr. Eriberto D. Salang, "Carbon Sequestration by Faraon and Adyuton Soils Under Different Cropping and Tillage Systems in Zamboanga Peninsula," UPLB (*PhD, soil science*)



• Ms. Lita B. Sopsop, "Human-Forest Interaction in Aborlan Guba System, Palawan Island, Philippines and Implications for Conservation and Management," UPLB (*PhD, environmental science*)

FROM THAILAND (5):



• Ms. Prapitpan Anupunt, "Shared Function Modality in the Delivery of Community Development Services in a Decentralized Agricultural Technology Transfer and Services Center (ATSC) in Khukhan District, Sisaket Province, Thailand," UPLB (*PhD, community development*)



• Ms. Kanlaya Damrongsadsiri, "Land Use Change and Its Impacts on Watershed Function and Food Security in Huaynamphung Sub-Watershed," UPLB (*PhD, environmental science*)



• Ms. Suprane Sritumboon, "Dynamics of Soil Moisture Regime in Sugarcane Farms as Affected by Their Soil Organic Matter and Physical Properties," UPLB (*PhD, soil science*)



• Ms. Suparat Umnat, "Optimization of Emblic Fruit *Phyllanthus emblica* L.) Processing Methods for Maximum Retention of Functional Properties," UPLB (*PhD, food science*)



• Ms. Parinyarat Poosiri, "Factors Influencing Self-reliance of Thap Lan Woman's Weaving Group in Prachin Buri Province," KU (*PhD, tropical agriculture*)

FROM TIMOR LESTE (6):



• Mr. Gil Da Conceicao, "Role of Liurai and Ritual Lisan on Adoption Vegetables Farming through Farmer Field School in Timor Leste," UGM (*MS, agricultural economics*)



• Mr. Julio Vicente, "Level and Structure of Innovations Adoption in Beef Cattle Farming of Cooperative Café Timer's Aid in Timor Leste," UGM (*MS, livestock science*)



• Mr. Dedisio Jose Lay Ximenes, "Effect of Soil Tillage on Soil Characterization of Southern Slope Merapi Mountain Sleman District, Yogyakarta, Indonesia," UGM (*MS, soil science*)



• Mr. JoaoXavierAmaral, "Economic Valuation of Coastal Resources in Timor Leste: Direct Use Values of Coastal Resources in Batugade, Balibo Bobonaro District, Timor Leste," UPV (*Master, marine affairs*)



• Mr. Mateus de Jesus Gomes, "Integration of Agricultural Extension Competencies in the Basic Agricultural Courses in Selected Institutions in East Timor," UPLB (*MS, agricultural education*)



• Ms. Agustinho da Costa Ximenes, "Agronomic Responses and Nitrogen Use Efficiency of Local and Introduced Corn (*Zea mays* L.) Genotypes to Varying Levels and Sources of Nitrogen in Two Corn Growing Areas in Timor Leste," UPLB (*MS, agronomy*)

FROM VIETNAM (5):



• Mr. Ho Viet The, "QTL Mapping and Marker-assisted Backcrossing for Developing Salinity Tolerant Rice (*Oryza sativa* L.)," UPLB (*MS, plant breeding*)



• Mr. Trinh Quang Thoai, "Participation and Payment for Forest Management in Vietnam: A Case Study in Northwest Mountainous Region," UPLB (*MS, agricultural economics*)



• Mr. Nguyen Viet Dang, "Spatial and Vertical Integration of Tea Markets in Vietnam," UPLB (*PhD, agricultural economics*)



• Ms. Hoang Hai Thanh, "Replacement of Fish Meal by Poultry By-Product Meal, Corn Gluten Meal and Soybean Meal in the Diets of Seabass (*Lates calcarifer*) Fingerlings," UPV (*MS, fisheries*)



• Mr. Mac Nhu Binh, "Reproductive Performance of Seahorse (*Hippocampus comes*) Fed Adult Artemia Bioencapsulated with Fish Liver Oil," UPV (*MS, fisheries*)

Of the 55 SEARCA scholars who graduated, 13 were supported by the German Academic Exchange Service (DAAD).

As of 30 June 2010, the total completed SEARCA graduate scholarship programs are 1,106 for full graduate scholarships and 15 for PhD research scholarships. (LLDDomingo)

55 SEARCA Scholars Complete Graduate Programs, 6 Earn Academic Recognition

Fifty-five SEARCA scholars under the Center's full graduate scholarship (49) and PhD research scholarship (6) programs have obtained their MS (29) and PhD (26) degrees in school year 2009/2010 as of 30 June 2010.

The new graduates are nationals of Cambodia (7), Indonesia (7), Lao PDR (5), Myanmar (7), Philippines (13), Thailand (5), Timor Leste (6), and Vietnam (5). This school year saw the largest number of Lao scholars to graduate .

Of the SEARCA scholars under the full graduate scholarship, four completed their programs at Universitas Gadjah Mada (UGM), one at Institut Pertanian Bogor (IPB), two at Kasetsart University (KU), 39 at University of the Philippines Los Baños (UPLB), and three at UP Visayas (UPV). On the other hand, the PhD research scholars obtained their doctorates from UPLB (4), UP Diliman (1), and UP Manila (1).

RECOGNITIONS

Of the 40 SEARCA scholars who graduated from UPLB, five were given recognitions. Four received the Academic Achievement Award, which is given to the graduate students who garnered the top five highest academic average. They are Mr. Rusty G. Abanto, PhD in environmental science; Ms. Reggie Y. Dela Cruz, PhD in molecular biology and biotechnology; Mr. Artemio A. Martin, Jr., Straight PhD in soil science; and Ms. Lita B. Sopsop, PhD in environmental science.

On the other hand, Mr. Eriberto D. Salang (PhD, soil science) was given the Outstanding Service Award, a special recognition for those who have provided positive and significant contributions to society.

Meanwhile, Ms. Clarissa Yvonne J. Domingo, the only SEARCA scholar who obtained her doctorate from UP Manila, was recognized for having the highest academic performance in the Doctor of Public Health Program.

The new SEARCA alumni, the title of their thesis/ dissertation, their study post and degree program are as follows:

FROM CAMBODIA (7):



- Ms. An Ny, "The Impoverishment Risk Reconstruction (IRR) Model and Livelihood Satisfaction of the Urban Poor Resettlement Communities in Phnom Penh,



Cambodia," UPLB (*PhD, community development*)

- Dr. Heng Naret, "Social Capital and the Performance of Farmer Water User Communities (FWUCs) in Takeo Province, Cambodia," UPLB (*PhD, community development*)



- Dr. Pheak Sothea, "Effectiveness of the Community Development Methods in the Rectangular Strategy of the Royal Government of Cambodia," UPLB (*PhD, community development*)



- Mr. Pheak Thearith, "Seila Program's Communication Strategy to Promote Decentralization in Communes in Kampong Thom Province, Cambodia," UPLB (*MS, development communication*)



- Ms. Sok Daream, "Empowerment Mechanism and Organizational Performance of Community Fisheries in Banteay Meanchey Province, Cambodia," UPLB (*MS, community development*)



- Mr. Thin Phirun, "Social Participation in Selected Farmer Water User Communities in Bana District, Battambang Province, Cambodia," UPLB (*MM, development management*)



- Ms. Yoeu Asikin, "Willingness to Pay for the Conservation of Flooded Forest in Tonle Sap Biosphere Reserve, Cambodia" UPLB (*MS, agricultural economics*)

FROM INDONESIA (7):



- Ms. Sasanti Widiarsih, "Morphological and Molecular Characterization of *Hoya mindorensis* Schlechter," UPLB (*MS, plant breeding*)



- Ms. Siwi Gayatri, "Exploring Social Capital and Cooperativism among the Getasan Dairy Cattle Farmers in Semarang Regency, Central Java, Indonesia," UPLB (*MS, community development*)



- Dr. Siti Latifah, "Growth and Yield Models for Eucalyptus Species Using Geospatial Technology in Aek Nauli, North Sumatra Province, Indonesia," UPLB (*PhD, forest resource management*)



- Dr. Agus Setiadi, "Spatial Integration of Beef Cattle Markets in Central Java, Indonesia," UPLB (*PhD, agricultural economics*)



- Dr. Bambang W. Suwignyo, "Effects of Tannin of the Rumen Ecology of Carabao (*Bubolus bubalis*) and Cattle (*Bos indicus*)," UPLB (*PhD, animal science*)



- Mr. Munasik, "Reproduction of Coral *Pocillopora damicornis* (Linnaeus) at Panjang Island, Central Java, Indonesia," UGM (*PhD, marine biology*)



- Ms. Maria Ulfa Christiantys, "Production of Biodegradable Plastic through Blending Thermoplastic Sago Starch with Compatibilized Linear Low Density Polyethylene," IPB (*MS, agro-industrial technology*)

FROM LAO PDR (5):



- Mr. Dethsackda Toun Manikham, "Community Participation in the Environmental Management of Limestone (Hin namno) National Protected Area in Boulapha District, Khammouane Province, Lao PDR," UPLB (*MS, environmental science*)



- Mr. Avakat Touy Phasouysaingam, "Assessment of Ecotourism's Contribution to Biodiversity Conservation and Income of Local People in Nalan Village Luang Namtha Province, Lao PDR," UPLB, (*MS, natural resources conservation*)



- Mr. Vanthieng Phommasoulin, "Comparative Analysis of Coffee Farming Practices Introduced by Government and the Private Sector in Paksong District, Champasak Province, Lao PDR," UPLB (*MS, extension education*)



- Mr. Linglong Sithixay, "Determinants of Global Competitiveness of the Coffee Industry in Lao PDR," UPLB (*MS agricultural economics*)



- Mr. Outhai Soukkhy, "Farm Households' Rice Diversity Management in Luangprabang Province, Lao PDR," UPLB (*PhD, community development*)