

BAPNET Steering Committee sets priority banana R&D agenda for 2007



The 2007 BAPNET Steering Committee. *Top row, L-R:* Mr Victoriano Guiam (representing Dr Nicomedes Eleazar) and Ms Edna Anit (representing Dr Patricio Faylon), Philippines; Mr Robert Williams, Australia; Dr Ho Huu Nhi, Vietnam; Mr Suchat Vichitrananda, Thailand; Dr Nik Masdek, Malaysia; and Dr Catur Hermanto (representing Mr Agus Sutanto), Indonesia. *Bottom row, L-R:* Mr Chi-Hon Chen, China; Dr Mohamed Mustafa, India; Dr Indra Jinadarie de Soyya, Sri Lanka; Dr Men Sarom, Cambodia; Dr Gus Molina, BAPNET Coordinator; and Dr Yi-Ganjun, China.

The Steering Committee of the Banana Asia-Pacific Network (BAPNET), during their 5th Steering Committee meeting held in Phnom Penh, Cambodia on 22-25 January 2007, set the network's banana R&D agenda and priorities for the region for 2007, which, among other things, focus on banana pest and disease management and the sustainability of BAPNET. The meeting was hosted by the Cambodian Agricultural Research and Development Institute (CARDI) and supported by Bioversity International (or Bioversity, formerly INIBAP/IPGRI). Twenty participants attended, composed of the SC members, the network Coordinator and secretariat, authorized representatives of SC members from the Philippines and Indonesia, guests/observers from collaborating institutions in Taiwan and China, a representative of Bioversity – France, and staff of CARDI. SC representatives of Bangladesh, Myanmar and the Secretariat of the Pacific Community were not able to attend the meeting.

Dr Ouk Makara, Deputy Director of CARDI, welcomed the participants, while Dr Gus Molina, BAPNET Coordinator, delivered the meeting's opening address. He reviewed the network's banana R&D agenda that were set in previous SC meetings, the activities that have been carried out to address these priorities, and the next steps for the network, which includes strengthening the effectiveness and sustainability

of BAPNET. Dr Molina also introduced the members of the SC, as well as the invited guests.

Dr Men Sarom, Director of CARDI and current chair of BAPNET, also welcomed all the participants, and thanked BAPNET and Bioversity for supporting CARDI host the meeting.

During the opening ceremonies, BAPNET/Bioversity recognized two individuals for their outstanding contributions to the network. Drs Sarom and Molina, on behalf of BAPNET and Bioversity, respectively, awarded the 2007 Pisang Raja Award to Mr Robert Williams, SC representative of Australia, for his significant contributions to the activities of BAPNET as well as to the advancement of banana R&D in Australia. Also, a Special Pisang Raja Award was conferred upon Ms Versalynn Roa, Bioversity-Philippines' Administrative Assistant, in recognition of her 15 years of dedicated and outstanding service to BAPNET and Bioversity.

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At right, *top:* Mr Robert Williams listens intently as Dr Gus Molina reads the citation of his Pisang Raja Award, while Drs Ouk Makara and Men Sarom look on. *Bottom:* Ms Versalynn Roa happily showing her Special Pisang Raja Award with Drs Molina and Men Sarom.



Dr Men Sarom receiving from Dr Gus Molina the Plaque of Appreciation given to CARDI by BAPNET/Bioversity for hosting the 5th BAPNET SC meeting.

Dr Molina, representing Dr Richard Markham, Director of Bioversity's Commodities for Livelihood Programme, also presented a plaque of appreciation to CARDI through Dr Sarom for hosting the 5th BAPNET SC meeting as well as the Institute's active participation in Bioversity's and BAPNET's activities.

Meeting highlights, outputs and agreements:

BAPNET, banana R&D priorities and development of action plans
Three major priority areas that were set during previous SC meetings were reviewed, particularly banana IPM, *Musa* conservation and use, and capacity building and information development and exchange

Specifically, discussions focused on reviewing BAPNET's regional strategy on fusarium wilt and prioritizing current and future fusarium R&D collaborative activities and their corresponding present and possible funding sources. Representatives of Indonesia and the Philippines reported on the status of banana R&D programmes in their

respective countries, with Indonesia focusing on the progress of the ACIAR-funded fusarium wilt project being implemented in the country, and the Philippines on current projects on BBTV management and NRMDC being funded through Letters-of-Agreement (LOAs) with Bioversity, as well as through their own national programme funding. Dr Molina suggested that the ACIAR-funded fusarium project could be a prototype of a comprehensive and integrated approach of holistically addressing the *Foc* problem in the region. Hence the activities can be modelled or adapted in all countries. Aside from Indonesia, Philippines, India, Australia, China, and Taiwan, other countries, are only focused as initial step on survey, collection and characterization. A discussion was carried out to identify current *Foc* R&D activities in each country, and plans for the future if and when resources are available.

During the discussions, the BAPNET SC pointed out that aside from fusarium wilt, foliar diseases (particularly Sigatoka) and bacterial wilt are also important banana pest and disease concerns in the region. On this issue, the following action plans were proposed:

- a) Development of a project proposal to characterize and determine the extent of distribution of the various foliar pathogens in the region, which would contribute towards the development of a distribution map for Asia-Pacific and eventually to the formulation of appropriate foliar disease management strategies;
- b) Development of a regional project proposal on bacterial wilt, similar to the proposal for foliar diseases as indicated above;
- c) The BAPNET secretariat will consolidate the country reports for each of the identified diseases, which will serve as preliminary documents for the development of the framework of the regional project proposals on foliar diseases and bacterial wilt;
- d) Conduct of a regional diagnostic training on bacterial wilt by the fourth quarter of 2007;
- e) Plan for a training-workshop on conventional banana breeding techniques and methodologies;
- f) In identifying possible donors for projects, the SC representatives will serve as lead persons in sourcing bilateral funding, to be assisted by the RC/ Secretariat. For possible multilateral funding, the Regional Coordinator would be the focal point.
- g) The SC members suggested that BAPNET's Constitution and information on identified priority banana R&D activities and programmes be placed in the BAPNET section of Bioversity's Web site. This is to reinforce previous agreements and serve as reference especially for new SC members;
- h) The Regional Coordinator will follow-up and regularly communicate updates to SC representatives regarding the status of the agreed banana R&D regional activities.



Some of the meeting participants during one of the small focus group sessions to discuss and set banana R&D priorities and activities for the Asia-Pacific region.

Information development and exchange

- a) The use of posters that summarize and highlight each country's current banana R&D activities was introduced as an innovation, which was in lieu of the traditional by-country reporting as practiced in past SC meetings. The practice promoted more in-depth interaction between and among the SC members regarding banana R&D activities in each country. It was agreed that this will be continued for future meetings;
- b) It was agreed that BAPNET SC representatives will submit, on a quarterly basis, news articles to be featured in the RISBAP Bulletin. They will also serve as the focal point for the collection of *Musa* news articles in their respective countries, which will then be sent to the network Secretariat;
- c) The SC representatives were also encouraged to regularly communicate to or update other network members about their respective countries' ongoing banana R&D activities and/or programmes (i.e., training, workshops, conferences, etc) using BAPNET's listserv email system. This is to maintain an open line of communication and promote the free exchange of information between and among BAPNET member countries.



Some of the posters displayed during the 5th BAPNET SC meeting, which showcase the network member countries' current banana R&D activities.



Dr Inge Van den Bergh, ProMusa Coordinator of Bioversity - France, discussing the IMTP.

Conservation and use of *Musa* germplasm

Dr Inge Van den Bergh of Bioversity-France discussed the Conservation Strategy for *Musa*, including the Global Crop Diversity Trust (GCDDT) and the International *Musa* Testing Programme (IMTP). Specifically covered was the prioritization of regional *Musa* collections for possible funding by the GCDDT and its eligibility criteria (i.e., country as signatory to the International Treaty on Plant Genetic Resources), the formation of the *Musa* Technical Advisory Group (TAG), review of IMTP Phases I-III and plans for IMTP Phase IV. The following were agreed upon:

- a) SC members will identify and nominate country representatives to the TAG;
- b) SC members agreed that BAPNET, as a network, will support and participate in IMTP Phase IV, which is scheduled to start by early 2008;
- c) SC representatives of countries participating in the current IMTP Phase III will follow-up with people involved in the trials to finalize and send in their data (for those who have not done so yet) by 31 March 2007; and
- d) The network coordinator and the SC will seek funding and other mechanisms to implement field participation on IMTP; while the IMTP coordinator will develop proposals and provide funding for coordination and training

Sustaining and strengthening BAPNET

- a) The Chinese Academy of Tropical Agricultural Sciences (CATAS) expressed its intent of having formal representation and membership in the BAPNET Steering Committee. After deliberations, the SC decided that China will still be represented by only one SC representative, that from Guangdong Academy of Agricultural Sciences. In order to harness other relevant *Musa* R&D programmes in China as well as to provide synergy to BAPNET-Bioversity collaboration, the Chinese SC representative, Dr Yi Ganjun, will facilitate and lead the formation of a China banana network. Other Chinese scientists may also be invited as resource persons or as alternate representative during BAPNET meetings upon the nomination of the official SC representative;
- b) The SC members agreed that a structured survey be conducted by early-2008 to evaluate the effectiveness of BAPNET as a network;



The BAPNET Steering Committee discussing the sustainability of the network.

- c) The SC also suggested that the current chairperson (Dr Men Sarom, Cambodia) report on the status and progress of the agreements, action points and accomplishments of the present year during the next SC meeting;
- d) Dr Molina explained that holding the BAPNET SC meeting is a big expenditure incurred by Bioversity every year. While the meeting is essential for the effective operation of the network, efforts should be undertaken to find complementary funding for its conduct. In this regard, the SC representatives agreed to explore other options to the funding provided by Bioversity. Among the suggestions were: (1) tap the International Seminar Support Scheme of AusAid; (2) SC representatives to fund their own expenses to attend the meeting to be charged against banana R&D projects being implemented in their countries; and (3) possible cost-sharing of host country with Bioversity. Dr Molina assured the SC representatives that Bioversity will continue to support BAPNET's SC meetings the best way it can;
- e) The SC members voted to hold the next Steering Committee meeting in Vietnam in 2008. In case this does not push through, either Thailand or Australia have been identified as alternative host countries.

For a more detailed documentation of the 5th BAPNET Steering Committee meeting or other queries regarding the same, please e-mail Dr Gus Molina, BAPNET Coordinator, at a.molina@cgiar.org.

Fighting fusarium in Asia-Pacific: Project updates

Indonesia team completes *Foc* survey of Southeast Sulawesi



Top: Dr Agus Sutanto taking vascular tissue samples from a suspected *Foc*-infected plant; Below: Excising discoloured vascular strands to obtain *Foc* samples.

In continuation of the activities under the ACIAR-funded Asia-Pacific fusarium wilt project on "Mitigating the threat of banana Fusarium wilt: understanding the agroecological distribution of pathogenic forms and developing disease management strategies" (CP2005-136), the Indonesian survey team has completed its sortie of Southeast Sulawesi, which was conducted from 9 to 24 January 2007. Led by Dr Agus Sutanto (Indonesian project staff and plant breeder/biotechnologist, Indonesia Fruit Research Institute) and joined by Dr Wayne O'Neil (Experimentalist, Queensland Department of Primary Industries and Fisheries), the survey team covered the Kolaka District (West Coast) and Konawe Selatan of Sulawesi island.

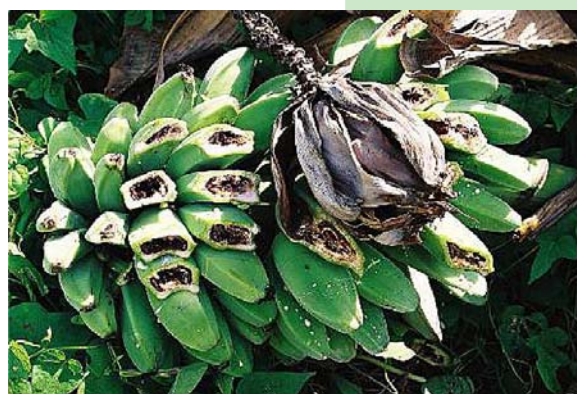
In the Kolaka district, farms were surveyed at Baula and Wundulako. Suspected *Foc* samples were taken from several Pisang Manurung (Kepok/Saba) plants. A sample was also taken from a backyard Tanduk (Horn Plantain) in Kolaasi Village, near Kolaka. It was observed that blood disease was fairly prevalent in the district. Samples were taken from plants which may have been affected by both blood disease and fusarium wilt for further study.

Surveys were also conducted at the Tinanggea and Lainya sub-districts in Lapoa, Konawe Selatan district. Similar to the Kolaka district, a high incidence of blood disease was also observed in Tinanggea. Until recently, Tinanggea was one of the highest banana producing areas in the province, but the disease drastically reduced local yields. A vast majority of the diseased plants that were investigated turned out to be infected by blood disease. One probable *Foc*-infected sample was collected from a backyard planting (diploid AA, probably Pisang Burung), which also showed signs of bacterial infection. In the Lainya sub-district, approximately 50km east of Tinanggea, blood disease was again observed, but not as rampant as in Tinanggea. *Foc* samples were collected from Kepok plants at Rambu-Rambu village, while another sample was taken from a roadside Pisang Mas plant with well-developed symptoms. A nearby Dwarf Cavendish was observed to have some suspicious external symptoms, but no internal signs of disease when opened.

In all of the surveyed sites, bananas were intercropped - in some cases with just one other crop, but in most with a number of mixed crops. Some of the common banana intercrops included cassava, cacao, pepper, vanilla and citrus. Soils were predominantly of the clay-type with low nitrate levels as farmers rarely added inorganic fertilisers to the crops. Although mixed cropping helps to slow the spread of fusarium wilt, this is offset by the local farmers' lack of effective cultural management practices such as the use of clean planting

material, disinfection of farm implements/tools and crop hygiene in the areas surveyed. Waterlogging, which was also commonly observed in the surveyed sites, may be a common contributing stress towards the development and spread of fusarium wilt as several of the suspected *Foc* cases were in waterlogged conditions. The high clay content of the soils as well as high rainfall in the surveyed areas further contribute to this problem.

Blood disease, which was widespread in the province, had a devastating effect on local banana yields, especially on Kepok which is a favoured local variety. The survey team theorizes that the high sugar content of the variety's male flowers makes it very attractive to insects that are known vectors of the pathogen. On the other hand, it was also observed that other varieties growing in close proximity to diseased Kepok plants, such as Pisang Susu, were not badly affected by the disease. It was suggested that the use of alternative varieties and some simple management practices, such as early debudding and tool disinfection, may greatly help to reduce the spread of this disease. ■



Fruit and bud symptoms of blood disease as observed in the surveyed sites in Southeast Sulawesi.

Indian banana scientist to study *Foc* pathogen of India in Australia

Dr R Thangavelu, scientist of India's National Research Centre for Banana (NRCB), is undertaking a study on "Characterizing Indian fusarium wilt by VCG (vegetative compatibility group) and molecular methods, and development of molecular markers for the early detection and diagnosis of fusarium wilt pathogen in banana planting materials". The research fellowship is funded by the Indian Council for Agricultural Research (ICAR), hosted by the Queensland Department of Primary Industries and Fisheries (QDPI&F), Australia and facilitated by Bioversity International – Philippines (Asia-Pacific Office) through the Banana Asia-Pacific Network (BAPNET). Dr Thangavelu will conduct the study for 12 months in Australia, from February 2007 to January 2008. He will be collaborating with Ms Lisa-Maree Gulino, Soil Microbiologist/Plant Pathologist, Horticulture and Forestry Science, QDPI&F. Dr Thangavelu is a member of BAPNET's sub-network on fusarium wilt, which is now engaged in characterizing and mapping *Foc* pathogen incidence in the region. In connection with this, he also participated in the International Fusarium Wilt Characterization Workshop held at the Malaysian Agricultural Research and Development Institute (MARDI) in April 2006.

It is believed that the genetic diversity of *Foc* in India is great as the country is one of the centres of diversity for banana, and *Foc* is believed to have co-evolved with the crop. Thus, the understanding of the distribution and genetic diversity of the disease, as well as its early and correct diagnosis, is crucial to the effective and efficient management of fusarium wilt in the country. Dr Thangavelu's research aims to address these issues.

Dr Thangavelu's study is anchored on the premise that fusarium wilt can be managed most effectively if control measures are introduced at the early stages of the disease's development. It has been observed that the symptoms of fusarium wilt generally appear five to six months after planting, or at the time of flowering. In traditional farming systems in India, by the time the symptoms appear, the farmer would have already invested Rs 40 000 – 50 000 (about US\$ 1000) per acre for banana cultivation. Additionally, although it has also been found that applying chemical and bio-control measures after the appearance of the symptoms is ineffective in checking the spread of the disease, a lot of Indian farmers still observe this practice, which adds much to farmers' production costs. The early and proper diagnosis of pathogen infection in banana plants would allow for the timely and effective application of appropriate disease management practices and, therefore, help keep farm costs down by minimizing the unnecessary use of chemical pesticides. Dr. Thangavelu envisions that the results of his fusarium wilt study would not only help increase the income of poor Indian banana farmers but also contribute to the national, regional and even global pool of knowledge to advance the fight against the spread and effect of this dreaded and destructive banana disease. The study would also complement Bioversity's ACIAR-funded project on developing strategies on managing fusarium wilt in Asia and the Pacific. ■



Dr R Thangavelu

ISHS and Bioversity to hold first joint international crop protection symposium

Diseases and pests are widely recognized as the biggest threat to the sustainable production of bananas and plantains. For the past century, commercial growers around the globe have suffered devastating losses in their plantations due to diseases such as fusarium wilt and black leaf streak, and pests such as nematodes. For small-scale farmers in the developing world, who depend on bananas and plantains for food and livelihood, the effect of the ever-increasing pest and disease problems is even more severe. While some relief can be offered by the application of pesticides, this approach is often not feasible and certainly not sustainable. Harmful chemicals have become unpopular and their high cost has urged growers and researchers, especially those working in small and subsistence farming systems, to consider alternative means of control. Conventional and unconventional plant improvement methods are fast becoming popular in enhancing existing cultivars, and the significance of diversity in pathogen, pest and plant resources has been fully recognised. Novel approaches to address the threat of newly emerging pests and diseases, as well as the invasion of existing diseases and pests to new areas, are being seriously considered.

In an effort to coordinate progress made in scientific research on banana and plantain internationally, the Global Programme for Musa Improvement (ProMusa) has recently formed an alliance with the International Society for Horticultural Science (ISHS). The establishment of a new Section on Banana and Plantain was approved and launched at the ISHS' Council Meeting in Korea in August 2006. This new alliance will facilitate the organization of annual symposia of the ProMusa working groups for Crop Protection, Crop Production and Crop Improvement. With this communiqué, ISHS and Bioversity International* are pleased to announce that their first joint meeting in Crop Protection will be held in White River, South Africa from 10 to 14 September 2007. The symposium is fee-based; discounts will be given to students who wish to attend.

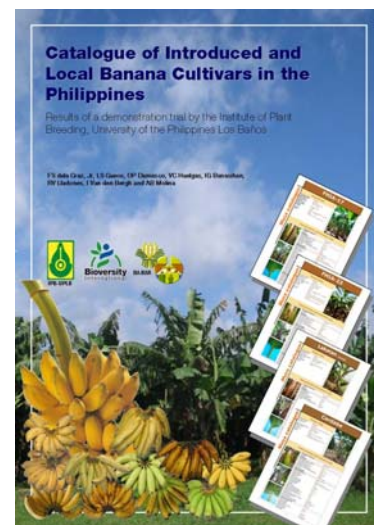
The meeting will be held in one of South Africa's most scenic areas and will comprise a three-day symposium, a field visit to banana farms and a one-day workshop. The social programme will include a welcome reception and a symposium dinner. Post-conference tours will be possible to arrange for the delegates.

For more information about the symposium and to download the electronic registration form, please visit http://www.promusa.org/symposium/2007_symposium_welcome.php or you may email Bioversity's ProMusa Coordinator, Dr Inge Van den Bergh, at i.vandenbergh@cgiar.org. - from the ProMusa Web site at <http://www.promusa.org>

New publication

Dela Cruz, FS, Jr, LS Gueco, OP Damasco, VC Huelgas, IG Banasihan, RV Lladones, I Van den Bergh and AB Molina. 2007. **Catalogue of introduced and local banana cultivars in the Philippines: Results of a demonstration trial by the Institute of Plant Breeding, University of the Philippines Los Baños.** IPB-UPLB, Bioversity -Philippines, and DA-BAR. Los Baños, Laguna, Philippines. 59pp.

This catalogue provides information on the morphological and yield characteristics of 19 introduced and 8 local banana cultivars grown at the IPB-UPLB demonstration plot. It is intended to serve as a guide to help in identifying and selecting cultivars for further evaluation by researchers and planting by interested growers. Available in both spring-bound copy and electronic (PDF) format. For copies and more information about the publication, please contact Dr Gus Molina, Regional Coordinator for Asia-Pacific, Commodities for Livelihood Programme, Bioversity-Philippines (Asia-Pacific Office). Email: a.molina@cgiar.org; Tel/Fax: (+6349)536 0532.



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