

An INIBAP Newsletter for Asia and the Pacific Network

Back-to-back international workshops held in the Philippines



INIBAP's First Global Banana Uses Enterprise Workshop and Technology Fair held in the Philippines

A better livelihood for banana farmers and processors around the world still awaits but is closer within reach as the International Network for the Improvement of Banana and Plantain (INIBAP) recently held its First Global Banana Uses Enterprise Workshop and Technology Fair (see related story) at the Manila Southwoods Manor and Cavite State University on 10-13 October 2005. The theme of the workshop was

“*Musa* processing businesses and their support environment: Potential contribution to rural development and biodiversity through value-adding”.

Among the outputs of the workshop are: the identification of critical factors in the promotion of *Musa* processing business and in strengthening the corresponding business support environment; the identification of a project mechanism for a more effective *Musa*

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4th BAPNET Steering Committee Meeting held in the Philippines

Back to back with the Global Banana Uses Enterprise Workshop, the Steering Committee of the Banana Asia Pacific Network of INIBAP convened for its 4th annual steering committee meeting at the Manila Southwoods Manor on 13-15 October 2005. The results of the workshop were presented to the members of the Steering Committee. The meeting was mostly allocated to the discussion of the regional *Musa* Conservation Strategy for the Global Trust Fund. The member countries came up with the criteria for prioritizing *Musa* collections that may be supported by the Global Trust Fund and follow up actions which were adopted by the committee. The issue of fusarium wilt and the preparations for the upcoming international workshop on fusarium wilt to be held in Malaysia in April 2006, along with some other regional concerns, were also discussed. Fusarium wilt was identified as a priority regional concern in the previous BAPNET meeting. Major epidemics are reported in Australia,

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1st Global Banana Enterprise Techno-Fair held in Cavite State University

A one-day Technology Trade Fair where several countries held their banana products on exhibit was held at the Cavite State University, Indang Cavite on 13 October. The fair showcased the many uses of the banana fibre, the excellent eating and nutritional qualities of banana products such as chips, candies, bar, cookies, ketchup, pickles, vinegar and flour, and other processed banana products such as wine, beer, bags, hats, clothes and soap.



India's banana fiber



Thailand's banana delicacies



Philippines' *Musa* textile industry

Banana wine, anyone?

Banana wine is one of the latest processed products of banana to enter the market. Like any new product, finding a niche market for banana wine is a challenge—but not in Malawi, where the large Catholic community has proven to be a very lucrative market.



“After we processed the banana wine, we were thinking who would buy it, and then we observed that they use wine in a Catholic mass, and so we thought, why not sell it to the church people?” Victor Mshani, a banana researcher in Malawi shared during the First Global Banana Uses Enterprise Workshop and Technology Fair held last October 2005 in the Philippines.

Malawi is not alone, nor is it unique. Elsewhere in Africa and in some parts of Asia and

Latin America, 30% of the harvested banana fruits are squeezed to produce juice that can be taken fresh or fermented with sorghum flour to make banana beer and wine. In Tanzania, banana beer can be further distilled into a liquor called ‘gongo’. ‘Gongo’ has a very high demand, unfortunately though, the government declared it illegal as it is perceived to contain poisonous ingredients.

“The illegality of ‘gongo’ production needs to be revised. The livelihood of many small-scale rural farmers depends on this,” Mgenzi Byabachewezi addressed this concern during his presentation of the status of banana processing business and their support environment in Tanzania.

Case studies, initiated by the International Network for the Improvement of Banana and Plantain, with funding from the Common Fund for Commodities and Rockefeller Foundation, were conducted in nine countries - Malawi, Tanzania, Cameroon, Nigeria, Nicaragua, Costa Rica, Philippines, Malaysia and India – with each country presenting the strengths and challenges of the many different types of businesses which process bananas and of the service providers which support processing businesses.

India exhibited the widest range of products out of banana—banana paper, clothes, slippers, bags, baby food, puree, juice, wine, chips, banana halva, bajji, figs—name it, and the product development unit of the National Research Centre for Banana has tried producing it.

“I was very impressed with the innovative products from India”, commented one observer at the First Banana Techno-fair held at the Cavite State University in the Philippines. “Brazil also has brought a lot of interesting products, this is the first time I have seen pasta made from banana flour.” The techno-fair showcased the unique products of each country and promoted information exchange among the countries.

What happens next

Given the wide range of products that could be produced out of bananas, the questions: “which products are marketable, who will produce these and for whom?” quickly comes to mind.

In most countries where the case study was conducted, banana chips surfaced as the most marketable product. This product is processed in small scale by rural households and sold in the local market.

“For the chips to penetrate into the export market, aside from packaging, the nutritional quality must be improved, especially if you want to export it to European countries where there are rigid nutritional requirements,” advised Max Reynes, a food technologist of CIRAD-France.

According to Reynes, most banana chips have oil content higher than 0.5%. This can be decreased by choosing the right cooking material, limiting frying time and selecting adequate varieties, taking into account the asparagin content.

The Department of Trade and Industry in the Philippines extends assistance to small and medium enterprises of banana chips, not only by regulating the quality and nutritional aspect, but also by promoting packaging technologies. Such is also the case in other countries.

However, for products other than chips, there is no defined marketing system and hence, wasting of produce is common. Handicrafts, for instance, are only attractive to some tourists, but not among the local people. A support service is thus needed for these businesses to flourish.

“But actually another problem also is that in most research institutions, for instance FAO (Food and Agriculture Organization), only a very low percentage of the staff is working on postharvest technologies, hence there is less assistance available to processors,” Francois Mazaud of FAO stated.

Developing relevant, easily understood and readily available information was seen as the key to solving this problem. Information should be published in a guide and in a website, and grouped according to raw materials, type of processing technology, new product development and support services available.

At the day’s end

At the end of the day, the piercing question still remains: what will be the contribution of these processing businesses to rural development?

In India, a single small business is providing employment to at least 3-4 persons in a village, with each village having at least one business unit. With more than 8000 business units in over two states, banana chips business is the largest employment provider in the processing business. Chips business is also a source of income for several other business establishments like department stores, petty shops, sweet shops and bakeries.

Once a worker gets a few years of experience, usually he starts his own business and spreads out.

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Observations from the field:

Revisiting the Philippine genebanks by an MGIS expert

(Excerpts from Elizabeth Arnaud's Travel Report)

Armed with several important agendas, Elizabeth Arnaud, in charge of the *Musa* Germplasm Information System, went on duty travel to the Philippines from 3-10 December 2005. Her first stop was the Davao National Crop Research and Development Center, Bureau of Plant Industry Davao. Along with co-traveller Inge Van den Bergh, she visited the plots planted with ITC accessions for field verification and took sets of photos for the different accessions which will be sent to Edmond De Langhe for identification and to Ines Van den Houwe for information. A visit to the greenhouse and genebank where BPI conducts screening for nematodes followed afterwards. To complete the trip, a demonstration of the ITC module was done by Elizabeth at Lapanday, who are presently in the process of developing a coding system.

One of the many highlights of Elizabeth's trip was the visit to the National Plant Genetic Resources Laboratory, IPB in Los Banos. There, she was able to discuss the new version of MGIS, update the MGIS of IPB and suggest some improvements, notably the addition of postharvest fruit quality descriptors. She also identified the need to speed up the processes of producing such descriptor list.

On the difficulty to make variety taxonomical descriptions

According to Elizabeth, young curators in charge of genebank or field verification work seem to be struggling more on how to measure the required characters (e.g. lobes development) than with the list of descriptors itself. She observed that they regularly use the two *Musalogues* to identify their varieties and varieties planted for field verification. "They do their observations on two crop cycles to make it more accurate," Elizabeth noted.

Furthermore, Elizabeth said that although the curators can easily spot each character on the plant, some of the observations could be very subjective and the researchers lack

prior experience to judge the development size of such characters. Elizabeth is however optimistic that morphological observation will be gaining accuracy through experience and through varietal comparisons. "It would be interesting to give them some reference varieties against which they can compare their own varieties and observations," she commented.

In her interview with several curators, Elizabeth noted that they usually ask for more illustrations of the descriptors. An identification key that gives the more typical characters for each group or variety along with photos is needed. The MGIS new version is already designed to store one photo per descriptor and could thus become the electronic version of this key. However, it is important to choose the characters that vary the least with the environment. The indication of the location where the photo was taken is still very important, according to Elizabeth.

On the difficult access to internet

"Internet connection is still not very easy and reliable in the national research institutions in Philippines," Elizabeth observed. "It is costly and slow." This is in fact true as more often than not, only one of the available computers is connected to internet. This confirms that any web-based informatics tool has to be conceived to be very light to load online and needs supplementary technical solution to allow an offline consultation or use (CD-Rom version).

On follow-up projects

Elizabeth was very satisfied with the trip and felt it to be very productive, what with all the field visits and meetings left and right. A set of specific actions and follow-up activities with regards to the field verification, Nembase, MGIS, IMTP and ITC module of Lapanday was listed to wrap up the whole trip and ensure its success.

Elizabeth Arnaud in the field.....



Field verification



Taking sample photos



Showing how to use the color chart

Banana wine... (continued from page 2)

"This is where the concept of business development comes in. For a business to succeed, no matter how small it is, there has to be a business plan," Martha Istambuli, a business development specialist from Nigeria commented.

A highly perishable fruit like banana could be converted into shelf stable products and convenience foods such as chips and wine through research and development. With changing habits and new trade regimen, market reach could be wide and open. By increasing the processing of banana, not only the postharvest losses can be reduced, but more so, revenue and employment can be generated, paving way to rural development.

INIBAP's First Global Banana... (continued from page 1)

processing business; the development of a proposal for a manual on *Musa* processing technology developed by food technologists; and the development of recommendations, themes for new projects and follow-up actions for a *Musa* processing enterprise.

The activity was funded by the Common Fund for Commodities (CFC) and the Rockefeller Foundation and was co-hosted by the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD) and the Department of Agriculture-Bureau of Agricultural Research (DA-BAR).

INIBAP holds MGIS training in Cambodia

When there's a need, INIBAP is quick to answer, for as long as time, resources and partners permit that is.

One of the newer BAPNET-member countries, Cambodia has signified its need on a hands-on training on the *Musa* Germplasm Information System (MGIS). This need was responded to on 11-18 December, when INIBAP-Asia Pacific tapped another BAPNET-member country's assistance by sending Mr. Lavernee Gueco, a research associate at the Institute of Plant Breeding, Los Baños Laguna to train 2 researchers at the Cambodia Agricultural Research and Development Institute (CARDI), Mr Pith Khon Hel and Mr Nin Charya.

The first part of the training focused on familiarization and description of the basic parts of a banana plant and how the data were gathered. Each trainee was requested to characterize several varieties of banana individually and the results of their observations were later compared. Some exercises were also done by observing the characters used in the classification of bananas through a taxonomic scorecard (Simmonds and Shepherd 1955) and the genome groups and their respective score ranges (Silayoi and Chomchalow 1987). However, not enough germplasm materials were available on the site to fully demonstrate it. The minimum set of photos of banana varieties for quick identification according to Prof Edmond

de Langhe were also discussed.

Aside from field exercises, lectures on the morphological characterization of banana were conducted. Characterization is important in the assessment of genetic diversity present within the collection, to verify the identity of the germplasm and to check duplicates which would add maintenance cost in a genebank.

In order to have a good estimate of the amount of genetic diversity of a collection, a lecture on the standardization of sampling procedures was done. The lecturer explained why, when, how and where the data are collected in the morphological characterization of a banana germplasm. Some recommended practices were discussed to come up with more precise estimates and the use of IPGRI descriptors and its importance in the exchange of information from other curators in different parts of the world. Lastly, the trainees were taught to analyze genetic diversity using Shannon-Weaver Diversity Index.



Mr Pith Khon Hel, one of the MGIS trainees in CARDI.

4th BAPNET Steering... (continued from page 1)

southern China, Indonesia, Malaysia, Philippines and Taiwan where the disease remains one of the major production constraints in commercialized banana plantations as well as for many important local cultivars grown by millions of small scale growers for local consumption in the Asia region.

The Steering Committee members present were: Mr Bob Williams (Australia), Dr Md. Sahadad Hussain (BARI, Bangladesh) Dr Men Sarom (CARDI, Cambodia); Mr Xu Linbing (GDAAS, China); Mr Agus Muharam (ICHORD, Indonesia); Dr M.M. Mustafa (NRCB, India); Dr Nik Masdek (MARDI, Malaysia); Mrs. Rosa Kambuou (NARI, PNG); Dr Patricio S. Faylon (PCARRD, Philippines); Dir Nicomedes Eleazar (DA-BAR, Philippines); Dr I.J. de Zoysa (HOEDI, Sri Lanka); Mr. Piroge Suvanjin (HRI, Thailand); Dr Ho Huu Nhi (VASI, Vietnam); Dr Chi-Hon Chen (TBRI, Taiwan); Dr Mary Taylor (SPC, Fiji) and Dr U Aye Tun (MAS, Myanmar).



New Publications



INIBAP 2005. INIBAP Annual Report 2004. International Network for the Improvement of Banana and Plantain, Montpellier, France.

A.B. Molina, L.B.Xu, V.N. Roa, I. Van den Bergh, K.H. Borromeo, editors. 2005. Advancing banana and plantain R&D in Asia and the Pacific. Volume 13. Proceedings of the 3rd BAPNET Steering Committee Meeting held in Guangzhou China, 23-26 November 2004. INIBAP Asia Pacific, Philippines.



Inibap is a network of the International Plant Genetic Resources Institute (IPGRI)

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