



Bt eggplant planting materials ready for multilocation field trial.

BPI Gives Go Signal for FSB-R Eggplant Multilocation Trial

The Bureau of Plant Industry (BPI) of the Department of Agriculture has issued the permits last March 15, 2010 to start the multilocation trial of the EE-1 fruit and shoot borer-resistant (FSB-R) eggplant after several months of extensive science-based review of the said trial's proposal. The permits issued are for the three trial sites in Luzon, namely: University of the Philippines Los Baños (UPLB) in Laguna, Sta. Maria in Pangasinan and Central Bicol State University of Agriculture (CBSUA) in Camarines Sur. The approval of the multilocation field trials of this genetically enhanced biotech eggplant will allow for the verification and evaluation of the FSB resistance exhibited by EE-1 FSB-R eggplant under various field and agro-climatic conditions.

The proponents from UPLB submitted the proposal to the BPI Biotech Core Team last September 2009. Since then, the BCT, through its designated Scientific and Technical Review Panel (STRP), has been reviewing every detail of the proposal, making sure that all biosafety matters have been covered, and that requirements have been satisfied.

The field trial is under the responsibility of the BPI through the implementation of the Department of Agriculture's Administrative Order No. 8 (DAO 8). This Administrative Order was issued on April 3, 2002, and governs the importation and release of biotechnology products for propagation or for direct use as food or feed, or for processing.

Similarly, the biosafety and environmental officers of the United States Agency for International Development (USAID) had earlier given a go signal for the conduct of the multilocation field trial after its initial environment examination (IEE) showed that it will have very low level of environmental risk.

The FSB-R eggplant project in the Philippines started in 2004 under the jurisdiction of the National Committee on Biosafety of the Philippines. After several years of laboratory, contained and confined trials, the project was given its certificate of completion of contained experiment on March 30, 2009. This paved the way for the next phase of the project, which is the multilocation field trial. (*ZJ Bugnosen*)

Research Team Shares Possible IRM Strategies for Bt Eggplant



Dr. Desiree M. Hautea discusses proposed IRM plans.

In preparation for the possible commercial release of the fruit and shoot borer resistant (FSB-R) biotech eggplant in the Philippines, the product development team realizes the importance of an effective Insect Resistance Management (IRM) scheme to fully maximize the potential benefits of this Bt technology insect resistant product. The proposed IRM plans were presented by Dr. Desiree M. Hautea, Product Development Manager of the biotech eggplant project, during the recently concluded Asia Pacific Conference on Insect Resistance Management for Bt Crops last March 18-19, 2010 at the Asian Institute of Management Conference Center, Makati City, Philippines. Dr. Hautea also presented the results of some preliminary studies in relation to efficacy, IRM and biosafety studies being implemented by the scientists and collaborators of the biotech eggplant project.

Moreover, the highlights of these research studies being implemented by the University of the Philippines Los Baños in collaboration with its research partners and agencies were also

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Pan-Asia Farmers and Key Stakeholders Get Updates on FSB-R Eggplant R&D

Progressive farmers, media practitioners, government officials and other key stakeholders from eight Asian countries recently got an update on the research and development status of the fruit and shoot borer resistant (FSB-R) eggplant project during their visit last March 24, 2010 at the Institute of Plant Breeding (IPB), University of the Philippines Los Baños (UPLB).

Dr. Lourdes D. Taylo, chief entomologist of the project, shared the importance of the fruit and shoot borer pest in eggplant farming and why the need for biotechnological intervention to control or reduce the insect's infestation. She also discussed the promising results on the efficacy testing of the FSB-R eggplant against the target pest as well as the highlights of the other ongoing research

studies undertaken as part of the project development.

The study tour to IPB-UPLB biotech facilities and briefing on public-sector initiatives on crop biotechnology was part of the Farmer's Exchange Program organized by CropLife Asia, Biotechnology Coalition of the Philippines, CropLife Philippines and the SEARCA Biotechnology Information Center. This Program which started in 2007 has been a platform of knowledge sharing and exchange on crops agricultural biotech through first-hand sharing of experiences.

Participants to this activity who came from India, Indonesia, Philippines, Korea, China, Vietnam, Taiwan and Thailand also learned about adoption and commercial propagation of biotechnology crops in the Philippines. (*JA Panopio*)

Last March 22, Dr. Derek Russell, public sector coordinator of the Collaboration on Insect Management for Brassicas in Asia and Africa (CIMBAA) and Professor at the Genetics Department of University of Melbourne, delivered a seminar entitled, "Bt Brassicas for Asia and Africa". The seminar held at Room 100 of Crop Science Cluster (CSC), UP Los Baños (UPLB) was attended by researchers from different institutions in UPLB such as the CSC, Crop Protection Cluster, the National Institute of Molecular Biology and Biotechnology (BIOTECH) and Program for Biosafety Systems (PBS).

Dr. Russell explained that CIMBAA is a public-private partnership constituted by the Asian Vegetable Research and Development Centre (AVRDC), Centre for Environmental Stress and Adaptation Research at the University of Melbourne, Cornell University, Natural Resources Institute at the University of Greenwich (UK), and Nunhems, an international vegetable seed company. The objective of the program is to develop cabbage and cauliflower varieties

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with durable resistance against Diamondback moth (DBM) and to introduce genetically modified (GM) crops within a full IPM setting for effective and long-term sustainability. The program intends to help small-scale farmers in developing countries maximize their profits, to address farmer/ consumer/ environmental health risks associated with heavy pesticide spraying, and to prevent the development of pest resistance to insecticides.

The CIMBAA has already produced GM brassicas resistant to pests based on a construct of two Bt-genes, *Cry 1B* and *Cry 1C*. The insects cannot readily develop simultaneous resistance to these toxins because they have not yet been exposed to these genes before. These two genes also have separate binding sites in the insect gut that would prevent insect cross-resistance and are tightly linked to avoid segregation into single Bt gene plants. The program initially focused on delivering the technology to India, the world's second biggest producer of cabbage and cauliflower and where DBM is of greatest problem. A study of 645



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Global Biosafety Management Program Held in India

Filipino participants of the Global Biosafety Management Program in Goa, India.



A Global Biosafety Management Program was held last March 27-31, 2010 at Fort Aguada Beach Resort, Goa, India. The program was organized by the College of Agriculture and Life Sciences (CALS), Cornell University, Ithaca, NY, Sathguru Management Consultants, India and co-sponsored by the Agricultural Biotechnology Support Project II (ABSP II)-Southeast Asia.

The five-day program was attended by 55 participants, with seven attendees coming from the Philippines. They include Dr. Randy A. Hautea, ISAAA Global Coordinator and SEAsiaCenter Director, Dr. Desiree M. Hautea, ABSP II-Southeast Asia Regional Coordinator, Dr. Clarito M. Barron, Assistant Director and Chair, Biotech Core Team, and Ms. Lilian Teano, Senior Agriculturist, both from the Bureau of Plant Industry of the Philippine Department of Agriculture, Dr. Merdelyn Lit, IRM Advisory Team, and Ms. Alma O. Canama, Genetics Laboratory Head, both from the Institute of Plant Breeding, Crop Science Cluster, University of the Philippines

Los Baños. Other participants to the program were from Bangladesh, France, India, Libya, Spain, South Korea, Zambia, Zimbabwe and USA.

The program highlighted the safety assessment of transgenic product development and its commercialization specifically on relevant biosafety standards, regulatory framework, monitoring strategies, risk analysis and safety issues involved in cross border technology transfers. The training program lectures focused on global perspective on genetic engineering approach, insect resistance management, risk assessment paradigms, molecular characterization and validation strategies in evaluating good events, confined field trials of GM crops, durable resistance management strategies for abiotic stress in GM crops, environmental risk assessments and evolving mechanisms for regulation. (AO Canama)

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presented as poster papers displayed during the conference. The detailed topics and authors of these research efforts are as follows:

1. Generational stability of *cry1AC* gene across three generations of fruit and shoot borer resistant eggplant in the Philippines by D. M. Hautea, J. O. Narciso, A. O. Canama, R. R. Ripalda, C. P. Ramil, J. E. B. Canicosa and M. A. Balendres
2. Assessing the effects of Bt eggplant on generalist predatory arthropods by M. V. Navasero, J. P. Manipol, D. M. Hautea and E. P. Alcantara
3. Temporal abundance and occurrence of non-target arthropods on Bt and non-Bt eggplant plots in the Philippines by M. V. Navasero, J. P. Manipol, J. O. Narciso, D. M. Hautea, R. A. Hautea and V. M. V. Cruz
4. *Cry1Ac* expression in fruit and shoot borer-resistant eggplant in the Philippines by R. R. Ripalda, D. M. Hautea, A. O. Canama and J. O. Narciso
5. The potential of Bt eggplant in the control of fruit and shoot borer, *Leucinodes orbonalis* Guenee (Lepidoptera: Pyralidae) in the Philippines by L. D. Taylo, M. L. J. Sison, V. M.

V. Cruz, D. M. Hautea, J. O. Narciso, A. L. Alviar, R. B. Quilloy and R. A. Hautea

6. Evaluation of potential alternate hosts of eggplant fruit and shoot borer, *Leucinodes orbonalis* Guenee (Lepidoptera: Pyralidae) in the Philippines by L. D. Taylo, M. L. J. Sison, K. P. Ardez, D. M. Hautea and J. O. Narciso

The IRM Conference co-organized by the Philippines Department of Agriculture Bureau of Plant Industry, Biotech Coalition of the Philippines, CropLife Asia, CropLife Philippines, Philippine Council for Agriculture, Forestry and Natural Resources Research and Development, ISAAA and the Program for Biosafety Systems provided an avenue to review the current principles and concepts of IRM, share IRM implementation experiences in the region, and examine the experiences on IRM strategies, implementation and monitoring.

With the biotech eggplant as one of the promising Bt technology that might be soon planted in the farmer's field, this conference was very useful and timely for the Bt eggplant project team to improve their IRM plans, and establish network and possible research collaboration with IRM experts from the region. (JA Panopio)

Communication Team Joins Exhibit for the Asia-Pacific IRM Conference

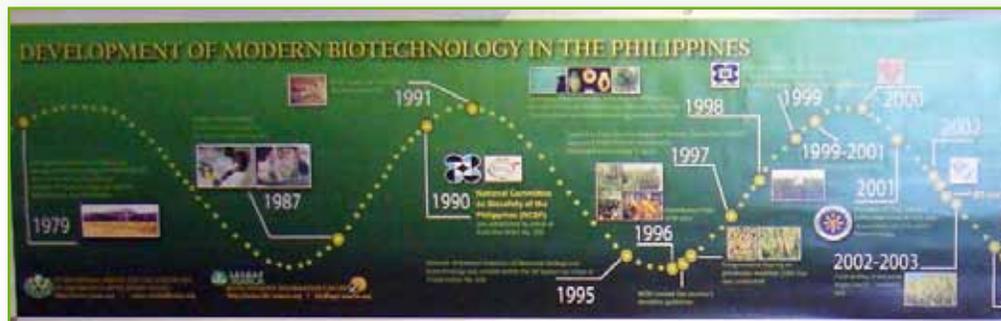
The communication team recently developed a poster exhibit which highlights the different Bt crops technologies commercially available and those in the pipeline to address major important pests of specific crops.

These Bt crops include Bt corn (resistant to corn borer and rootworm), Bt cotton (resistant to cotton bollworm), Bt rice (resistant to rice borer), Bt eggplant (resistant to fruit and shoot borer) and Bt potato (resistant to Colorado potato beetle). The poster projects the importance of the Bt crop biotechnologies as an alternative science-based option for pest management. It also highlighted the documented and potential benefits from using the Bt technology which include reduction of insect pest damage, increased farm productivity and reduced environmental and health impact from the reduced insecticide use.



Similarly, the institutional posters of ABSPII and a timeline on the modern crop biotechnology developments in the Philippines (see photo below of a portion of the timeline) were also showcased during the two-day conference. The timeline shows the public-sector products under development where two of the promising biotechnologies that may soon be commercially available include the fruit and shoot borer resistant eggplant and the papaya ringspot virus resistant papaya which are both being developed by the Institute of Plant Breeding at the University of the Philippines Los Baños. These two public-sector crop biotech R&D efforts are being supported by ABSPII in collaboration with local partner agencies.

The poster exhibits were set-up during the Asia Pacific Insect Resistance Management Conference held last March 18-19, 2010 at AIM Conference Center, Makati City, Philippines. (JA Panopio)



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households in New Delhi, Bangalore, Kalore, and Bardhaman reported 68% consumer acceptability in 2006. The Indian government likewise supports the introduction of Bt vegetables.

Dr. Russell concluded the seminar with an assessment of the program's feasibility in the Philippines, saying that there is no clear economic justification yet for working through such alternative strategy. Seed production within the country is also not possible due to lack of vernalization and indigenous cabbage seed industries, therefore approval for the GM crop may have to be secured first and then importation regulations will have to be dealt with. The flea beetle problems in

many areas may also pose a challenge in growing these Bt brassicas.

The CIMBAA program is now in the stage of regulatory dossier preparation for product registration. The first variety is set for commercial release in India by late 2011 while product registration in Indonesia and Kenya is still being worked out.

Dr. Russell's seminar was sponsored by ABSPII-SEAsia office as part of its continuing efforts to enhance Filipino researcher's knowledge on other biotechnology products being developed by other countries. (MAD Maquilan)



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ABSPII is a USAID-funded consortium of public and private sector institutions that supports scientists, regulators, and the general public in developing countries to make informed decisions about agricultural biotechnology. Where demand exists, ABSPII focuses on the safe and effective development and commercialization of bio-engineered crops as a complement to traditional and organic agricultural approaches. The project helps boost food security, economic growth, nutrition, and environmental quality in East and West Africa, Indonesia, India, Bangladesh, and the Philippines.

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