

Bt Eggplant: From OPV to Hybrid Trials

The Bt Eggplant Project concluded its second season for open-pollinated variety (OPV) trials at the University of the Philippines Los Baños (UPLB), Camarines Sur, and Pangasinan last February and March 2011. The second season started last November 2010, when the materials were transported and transplanted to the three sites on separate occasions. The Bt eggplants were observed inside the fenced field trial sites for four months, allowing them to complete one whole plant cycle. Observations were made at the different plant stages, most importantly during the fruiting stage when the Bt eggplant fruits were compared with its non-Bt counterparts in terms of horticultural characteristics and resistance to the eggplant's main insect pest, the eggplant fruit-and-shoot borer (EFSB).

The concluded season originally included one site in Davao City, inside the University of the Philippines (UP) Mindanao Campus. This was supposed to be the first OPV season in Mindanao. However, the trial was pre-terminated last December 2010. Scientists from UP Mindanao opted to conduct a non-Bt trial in the area which aimed to evaluate components of integrated pest management (IPM) used individually or in combination. A comparison was made in terms of controlling the EFSB pest using chemical pesticides and sili (chili) extract, which is reported to be a control method used by organic farming practitioners. Aside from this, other pests and diseases related to the eggplant varieties and to their IPM treatment were also observed and recorded. This study is estimated to run for six months.

The Visayas State University in Baybay City started its non-Bt eggplant trial last December to identify the different arthropods that thrive in eggplant farms. It also aimed to record the abundance and diversity of these insects, and compare both factors in insecticide-treated and untreated eggplant plots. The study ended in March 2011.

The Bt Eggplant multilocation trials will run for two years. The OPV trials were set to be conducted on the first year, and the hybrid trials on the second. The multilocation trials have completed two seasons of OPV trials, and preparations are currently on-going for the hybrid trials, which are to be initiated during the later part of 2011. (*ZJBugnosen*)

Farmers and LGUs Visit Bt Eggplant Trial Sites



Dr. Lourdes D. Taylo explains the differences between Bt and non-Bt eggplants to barangay officials of Brgy. Paitan, Sta. Maria, Pangasinan during the field visit last February 23, 2011.

Farmers, local government constituents, and agriculture officers of Sta. Maria, Pangasinan; Bay and Los Baños, Laguna; Pili, Camarines Sur; and Isabela and Quezon provinces witnessed the activities in a Bt eggplant field trial during study visits conducted within February to May this year.

The multi-location trial site in Sta. Maria, Pangasinan was visited by Mayor Teodoro Ramos and Vice Mayor Moises Hortaleza, Jr. last February 11, 2011. They were briefed by Dr. Frank Shotkoski, ABSPII Director, and Dr. Desiree Hautea, ABSPII Regional Coordinator.

Farmers, barangay (village) officials, and provincial agriculture officers and extension workers from the towns of Sta. Maria, Asingan, Villasis; Brgys. Paitan, Cauplasan, Samon, and Sta. Rosa in Pangasinan also visited the trial site on February 23. They were briefed by Dr. Emiliana Bernardo, chair of the Department of Agriculture-Insect Resistance Management Advisory Team, who explained and attested that Bt is safe for non-target organisms; and Dr. Lourdes Taylo, study leader from the University of the Philippines Los Baños (UPLB),

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Bt Eggplant Field Trials Gain Support from LGUs

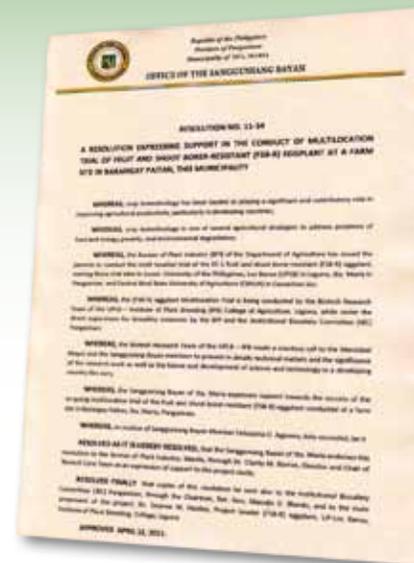
More local government units (LGUs) now realize the importance of continuing the multi-location field trials of the fruit and shoot borer (FSBR) resistant Bt eggplant. Five barangays or villages and four town councils have expressed their approval to carry on with the field trials in their respective sites.

Resolutions supporting the continuation of the Bt eggplant field trials were recently passed by the following barangays: Paitan, Cauplasan and Sta. Rosa in the town of Sta. Maria, Pangasinan; Putho-Tuntungin in Los Baños; and Paciano Rizal in Bay, Laguna. Brgy. Paitan and Brgy. Paciano Rizal each have a field trial site in their vicinities.

The town council of Bay, Laguna also resolved to authorize the conduct of the experiment by the University of the Philippines Los Baños (UPLB) on February 14, 2011. Bay Municipal Agriculturist, Alexander Darwin, said that such experiments were covered by biosafety regulations and are therefore closely monitored.

The municipalities of Kabacan, North Cotabato and Sta. Maria, Pangasinan followed with resolutions of support for the trial passed on March 3 and April 12, 2011, respectively.

In the Bicol region, the town of Pili, Camarines Sur, where a field trial by the Central Bicol State University (CBSUA) is being conducted, denied a petition to stop the field tests. The petition was put forward by MASIPAG, a non-government organization advocating organic farming. Pili Vice Mayor Ronaldo Boclot, in his letter to CBSUA President Marito Bernales, informed that the opposing group did not provide clear proof of Bt eggplant's detrimental effect to health.



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Collaborators meet to discuss biosafety dossier

A three day seminar-workshop sponsored by ABSPII, USAID together with Cornell University was attended by ABSPII collaborators from India, Indonesia, Bangladesh and the Philippines was held at the Asia Pacific Blossom Hotel, Dhaka, Bangladesh on March 28-30, 2011. According to ABSPII Director Dr. Frank A. Shotkoski, the activity is "very important especially among partner-collaborators from India, Bangladesh and the Philippines who are nearing commercialization of Bt eggplant, and Indonesia, now in the field trial stage on late blight resistant potato, who will be involved in the preparation of comprehensive biosafety dossier for assessment as required by country regulators before any GM product can be approved."

Drs. Scott Shore and Monica Garcia-Alonso shared their experience and expertise in the development of regulatory dossier for GM crops for safety assessment. A comprehensive regulatory dossier will provide the regulators conducting risk assessment better clarity in understanding the nature of the product. The weight of evidence from the literature as well as robust scientific experiments conducted will be the basis for deciding on whether there are unintended risks associated to human, animals and environment. Regulatory assessment and studies are required in each stage of product development starting from gene discovery to commercialization.

Preparing a regulatory dossier is like building a story that provides a reader with information supported by good quality studies and references that contain reliable information; a walk through on how the product was developed, the properties of the event and studies conducted to answer the issues on safety to human, animals and environment. The dossier is a compilation of information, data, reports, reference documents, published literature and government decisions that should provide the regulator a convincing justification for approval.

The general principles and key considerations in food and feed safety assessment as well as environmental risk assessment (ERA) were tackled. The conduct of toxicology and allergenicity studies were dealt in the food and feed safety assessment while the stepwise exposure and hazard assessment was discussed in detail in ERA. There were also some discussions about insect resistance management plan that will be developed specific for the each country. Practical group sessions enabled the collaborators to interact with one another and share their experiences.

The event was facilitated by the ABSPII SouthAsia Regional Office represented by Dr. Akshat Medakker, and Dr. G.P. Das, ABSPII Country Coordinator for Bangladesh. Also present were Dr. K.V. Raman from Cornell University as well as Dr. Larry R. Beach of USAID. *(LDTaylo)*



Local Gov Units Updated on Bt Eggplant Project

Local government units (LGUs) in Sta. Maria, Pangasinan; Los Baños and Bay, Laguna; Pili, Camarines Sur; and North Cotabato province in Mindanao were informed of the development and status of the Bt eggplant project in the Philippines through briefings and information outreach activities conducted in their areas.



Mr. Mario Navasero, entomologist from UPLB, shows the target and non-target insects of Bt eggplant to officials of Barangay Paitan, Sta. Maria, Pangasinan, during their field visit in the trial site there last February 23, 2011.

The barangay councils of Paitan, Cauplasan, Samon, Sta. Rosa, and San Alejandro, were enlightened about the field trial site in Pangasinan by the project proponents themselves. They also saw the site in field visits conducted on February 23, March 7 and March 30, 2011.

In Pili, Camarines Sur, the barangay council of San Jose was also briefed on March 1, 2011. Ms. Merle Palacpac, Chair of the Biotech Core Team of the Bureau of Plant Industry, explained the regulatory system in the Philippines. The other resource persons were Dr. Lourdes Taylo, study leader from the University of the Philippines Los Baños (UPLB), and Dr. Emiliana Bernardo, Chair of the Department of Agriculture-Insect Resistance Management Advisory Team. Some of the councilors visited the Central Bicol State University of Agriculture (CBSUA) field trial site the following day and saw the Bt and non-Bt eggplants. The visit was part of the "Seminar on Understanding the Science, Safety and Benefits of Bt Crops Technology" for Bicol farmers.

Bt eggplant project proponents also updated the barangay councils of Putho-Tuntungin and Paciano Rizal, and the town council of Bay, Laguna. Dr. Desiree Hautea, ABSPII Regional Director, clarified the queries of the officials of Brgys. Putho-Tuntungin and Paciano Rizal. Dr. Taylo introduced and explained the Bt eggplant technology to the municipal councilors of Bay. She also explained that Public Information Sheets were posted in the municipal hall and other public places before the conduct of the trial. The previous Mayor of Bay and its Municipal Agriculturist were previously updated on the field trial. (JAPanopio and SMMercado)

SUCs Active Partners in Imparting Knowledge on Biotech Crops

The state universities and colleges (SUCs) with ongoing or planned field trials of Bt eggplant are actively involved in sharing knowledge and information on the science, safety, and benefits of crop biotechnology to various stakeholders in their respective areas. These learning initiatives were made possible through the conduct of several seminars and fora in their campuses to update the academic community about the status of the Bt eggplant project and to enhance understanding of the issues surrounding this technology.

Various experts on biotechnology including the Bt eggplant project proponents, regulators, biotech corn farmers, esteemed professors from the University of the Philippines (UP), and chairs of the Department of Agriculture-Biotechnology Program Office, Biotechnology Advisory Team, and Insect Resistance Management Advisory Team served as resource persons in the series of seminars/fora/symposia conducted from January to March this year organized by the SUCs, Agricultural Biotechnology Support Project II (ABSPII), International Service for the Acquisition of Agri-biotech Applications (ISAAA) and the Southeast Asian Regional Center for Graduate Study and Research in Agriculture Biotechnology Information Center (SEARCA BIC).



Dr. Frank Shotkoski, ABSPII Director, answers questions from students of Pangasinan State University during the open forum of the Seminar on Creating Awareness, Knowledge and Understanding of Biotech Crops last February 10, 2011.

Students, faculty members, and researchers from the University of Southern Mindanao (USM) were updated and enlightened about the Bt eggplant project, the science behind it during the seminars conducted on January 13 and February 4. Other topics such as the Philippine regulatory system, the

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Provincial Prosecutor to Charge Bt Eggplant Field Trial Vandals; Stakeholders Laud Decision

The Provincial Prosecution Office of the Province of Laguna recommended filing 'malicious mischief' against members of an anti-biotech group who intruded and destroyed the Bt eggplant field trial last February 17, 2011 inside the University of the Philippines Los Baños (UPLB).

UPLB, as the proponent of Bt eggplant in the Philippines, brought the case to court following the incident.

In the resolution passed May 13, 2011 and signed by Laguna Provincial Prosecutor George C. Dee, it was stated as an undisputed fact that the perpetrators, who are members of the non-government organization Greenpeace, forcibly entered the experimental farm of the University with the common purpose of pulling up the existing experimental plants, which caused damages to the experimental plant breeds worth 25 million pesos.

In an official statement on the Prosecutor's decision, UPLB Chancellor Luis Rey Velasco said that the university will pursue the case "to ensure that the violators will be held liable for their actions. We have to protect the interest of the University and defend our academic freedom."

Dr. Lourdes D. Taylo, research study leader of the Bt eggplant project in UPLB and representative of the university for the complaint, said that the decision was a welcome news for those directly involved in the development of Bt eggplant. She reiterated that the project is fully compliant with all the conditions stipulated in the biosafety permit for the conduct of field trial of GM eggplant issued by the Bureau of Plant Industry (BPI).

President of the National Academy of Science and Technology (NAST) of the Philippines Dr. Emil Q. Javier issued a statement condemning the destruction of the trial site. "Misinformed, misguided people are denying our poor farmers and consumers the benefits of good science," he said.

The NAST president reaffirmed the academy's support, in strongest terms, to the insistent and legitimate activity of the scientific community which is consistent with the national policy of the government on the safe and responsible use of modern biotechnology products.

Chair of the Department of Agriculture-Biotechnology Program Office (DA-BPO) Dr. Candida Adalla said that the decision "should send a signal to all concerned that there are rules to guide our actions. She reminded that "the rights of a person should not impinge on the rights of others and that institutional mandates and properties must also be appropriately respected."

Meanwhile, farmer Isidro Acosta from Naguilian, Isabela said that such decisions give justice to farmers because Bt eggplant would be an additional choice for them. He expressed that farmers



Top photo: Uprooted eggplants that served as pollen traps in the UPLB Bt eggplant field trial. Bottom photo: The destroyed gate of the field trial. The perpetrators reportedly used a bolt cutter to break the gate and enter the field experiment.

should be given the right to choose the technologies they would like to apply to their farms.

The anti-biotech group, led by Greenpeace members, forced entry to the field experiment early morning on February 17, 2011 but only succeeded in uprooting more than a hundred non-transgenic eggplants, which served as pollen traps and check varieties. (JAPanopio and SMMercado)

SUCs Active Partners in Imparting Knowledge... (From previous page)

coexistence of GM crops and organic farming, and the risk assessment that GM crops and food undergo were also tackled in the seminars. USM President Dr. Jesus Antonio Derije emphasized during his messages that the university's mandate to be involved in education, research, extension, and resource generation, and therefore must be given the chance to conduct the field trial.

A similar seminar was conducted in Pangasinan State University (PSU) last February 10, 2011. The event was attended by almost a hundred students and faculty members of the university, and some representatives from the local government units and

agriculture office in Sta. Maria, Pangasinan.

Central Bicol State University of Agriculture (CBSUA) in Pili, Camarines Sur also conducted separate symposia targeted for students and farmers on January 17 and March 2, respectively. The January 17 symposium was participated by more than 200 students while the March seminar was attended by more than a hundred farmers from different parts of the Bicol region. A highlight of the farmers' seminar was the visit to the Bt eggplant field trial where farmers personally saw the difference between the Bt and conventional eggplants. (JAPanopio and SMMercado)

Biotech Communication Workshop Conducted for Key Stakeholders

Regulators, farmers, agriculture officers, members of the academe and media in Mindanao took part in a biotech communication workshop on April 26-26, 2011 in Pearlmont Inn, Cagayan De Oro City, Philippines. The “Communication Workshop: Enhancing Skills in Addressing Issues about Crop Biotechnology” aimed to enhance the capacities of the participants in addressing inquiries related to biotechnology.

Dr. Candida Adalla, Chair of the Department of Agriculture-Biotechnology Program Office (DA-BPO), discussed the biotechnology initiatives of the government. She also said that, “the efforts on Bt eggplant will hopefully translate into benefits to Filipino farmers.”

Dr. Rhodora R. Aldemita of the International Service for the Acquisition of Agri-biotech Applications (ISAAA) provided the participants with the basics and principles of biotechnology, as well as the answers to frequently asked questions related to crop biotechnology.

The communication aspect was discussed by Dr. Jaine Reyes, University Extension Specialist at the Institute of Strategic Planning and Policy Studies, University of the Philippines Los Baños (UPLB). She explained the nature and importance of science communication and shared tips and lessons on how to write reply letters and article

rebuttals, as well as answers during panel interview.

Message map, a useful tool in organizing ideas for inquiries and similar situations, was discussed by Ms. Jenny Panopio of the Southeast Asian Center for Graduate Study and Research in Agriculture-Biotechnology Information Center (SEARCA BIC).

Members of the Asian Farmers Regional Network (ASFARNET) Philippines, representatives from the Fertilizer and Pesticide Authority of the Philippines and the Bureau of Plant Industry Plant Quarantine Officers, the Philippine Information Agency, the academe (University of Southern Mindanao and UP Mindanao), and DA Regional Offices and Field Units in Mindanao served as participants in the workshop. It was organized by ASFARNET and DA Regional Office 10, in collaboration with Agricultural Biotechnology Support Program II (ABSPII), DA-BPO, ISAAA, and SEARCA BIC. (*JAPanopio and SMMercado*)



Farmers and LGUs Visit Bt Eggplant Trial Sites

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who introduced and explained the project and Bt eggplant's development in the Philippines. Barangay council members from the nearby barangays of Paitan and Cauplasan visited the site on March 7 where they were briefed by Dr. Taylo.

Likewise, farmers from different parts of the Bicol region also visited the multi-location trial site in Pili, Camarines Sur. The farmers observed the data gathering in the site and were briefed by the Institutional Biosafety members present. The visit was held as part of the seminar on March 2, where biotech experts and a biotech corn farmer, Engr. Raul Careras, shared the science and importance of biotech crops.

Visits were also conducted with farmers and agriculture officers from Isabela and Quezon provinces on April 25 and May 3, respectively. Dr. Jinky Leilani Lu of UP Manila shared her study on pesticide residues in eggplants in both activities.

During the visits, Bt and non-Bt eggplants were shown to the visitors. Data gathering and the importance of Bt eggplant were also explained by the project proponents who were present during the visits.

The farmers, after seeing an undamaged Bt eggplant and hearing its potential benefits and safety from the experts, expressed their eagerness to plant the Bt seeds. (*JAPanopio and SMMercado*)

DOST-BC Approves Seed Production of New Batch of Resistant PRSV-R Papaya Selections in Contained Screenhouse

Last May 31, the Department of Science and Technology-Biosafety Committee (DOST-BC) finally decided to approve generation advance of individual PRSV-resistant plant selections inside BL2 screenhouse and screening of their progenies for PRSV resistance under contained conditions in BL2 greenhouse. Five candidate PRSV-resistant plants that survived under high inoculum pressure in the BL2 greenhouse were identified. These came from T1 generation of Events 143 and 164, T2 and T4 generations of Event 132. More transgenic plants with potential resistance to PRSV infection are currently being screened in BL2 greenhouse and 50 individual transgenic plants selections will be transplanted in a staggered manner to BL2 screenhouse for seed production.

This undertaking aims to identify better-performing PRSV-resistant T1 transgenic plants, which have unique genotypes, and establish stable transgenic PRSV-resistant papaya lines in advanced generations. (MADMaquilan)

PRSV-R Papaya Researchers Present Results in FCSSP Conference

Researchers of the papaya ringspot virus-resistant (PRSV-R) project presented results during the 21st scientific conference of the Federation of the Crop Science Society of the Philippines held last May 9-14, 2011 at the La Piazza Hotel and Convention Center in Legazpi City, Albay.

Carlo Ramil reported on "Papaya ringspot virus (PRSV) coat protein gene expression in advanced generation of selected lines of PRSV-resistant papaya" co-authored by Roanne Ripalda, Mary Ann Maquilan, Mary Ann Abustan, Maricel Gonzales, April Alviar, Alma Canama, Dr. Filomena Sta. Cruz, and Dr. Desiree Hautea. Mr. Ramil reported the results in molecular characterization analyses confirming the presence of transgene RNA and protein product in T3 and T4 generations of PRSV-resistant papaya Event 132, and further indicating the stability of coat protein gene expression in two generations. He also presented the Southern blot analysis data showing possible single insertion site within Event 132 T4 transgenic papaya genome.

Mary Ann Maquilan, in her oral presentation entitled: "In vitro seed germinability and seedling characterization of transgenic events of papaya (*Carica papaya* L.) co-authored by Mary Ann Abustan, Dr. Pablito Magdalita, and Dr. Desiree Hautea, highlighted the importance of the *in vitro* culture approach for generating transgenic plant materials from seeds that have been in storage for several years as in the case of T1 to T4 transgenic papaya produced between 2003 to 2008 in confined field trial sites. The research team has been conducting molecular characterization and virus resistance screening experiments in the DOST-BC approved facility in the Institute of Plant Breeding using transgenic plants produced *in vitro*. The approach not only increased the efficiency of germination of old seeds that are difficult to germinate by standard sowing practices but also allowed for careful pre-selection of plant lines for better shoot growth response *in vitro* for use in experiments.

The oral papers presented were part of the project entitled: "Accelerating the development of PRSV coat protein-mediated resistant papayas: verification trials, final event selection and molecular characterization" co-funded by the Philippine Council for Agriculture, Forestry and Natural Resources Research and Development, Agricultural Biotechnology Support Project II (ABSP2), and the International Service for the Acquisition of Agri-biotech Applications (ISAAA). (MADMaquilan)



Carlo Ramil presenting the report during the FCSSP Conference.

Bt Eggplant Field Trials Gain Support... (From page 2)

Meanwhile, the planned Bt eggplant field trial in Kabacan was finally endorsed by the Provincial Council of North Cotabato. After months of deliberation and public consultations, a resolution was passed on May 19, 2011 allowing the field testing.

The proponents of Bt eggplant and the Department of Agriculture's Bureau of Plant Industry, the main regulatory agency in charge of the field trials, have remained steadfast in their stands that the multi-location field trial sites in the country are strictly regulated and monitored. (SMMercado)



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ABSP2 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, ABSP2 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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