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# NEWSLETTER

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## SABP

The South Asia Biosafety Program (SABP) is an international developmental program initiated with support from the United States Agency for International Development (USAID). The program is implemented in India and Bangladesh and aims to work with the local governments to facilitate implementation of transparent, efficient and responsive regulatory frameworks that ensure the safety of new foods and feeds, and protect the environment.

Over the next three years, SABP will work with its in-country partners to:

- Identify and respond to technical training needs for food, feed and environmental safety assessment.
- Develop a sustainable network of trained, authoritative local experts to communicate both the benefits and the concerns associated with new agricultural biotechnologies to farmers and other stakeholder groups.
- Raise the profile of biotechnology and biosafety on the policy agenda within India and address policy issues within the overall context of economic development, international trade, environmental safety and sustainability.

## SALIENT FEATURES AND POTENTIAL IMPACT OF PRSV-RESISTANT PAPAYA FOR BANGLADESH

Craig Meisner, Ph.D., Cornell University

Genetic engineering resistance to viruses through the introduction of the coat protein gene of the virus into the host plant has been known for two decades. In 1992, papaya ringspot virus (PRSV) was detected in Puna, where 95% of Hawaii's papaya was being grown, culminating in a 50% reduction in production by 1998. Fortunately, a virus-resistant variety was in the making and introduced in 1998, having fulfilled APHIS, EPA and FDA in the USA regulatory/consultation requirements for this particular transgenic product. This transgenic papaya stemmed the losses due to PRSV, with over 24 million pounds of transgenic papaya being produced and consumed in North America each year.

In Bangladesh, in the last two decades, the PRSV has equaled its devastation bringing the average yield per tree over two years of its life down to 21 kg/plant/year. Yet, in confined field tests in Thailand, transgenic papaya remained

healthy while all nontransgenic papaya became infected, resulting in transgenic papaya producing 63kg/tree/year compared to 0.7kg/tree/year from infected nontransgenic papaya! The transgenic papaya was developed using the same technology that was deployed for the Hawaiian transgenic papaya.

USAID through a program originally funded through the International Center for Maize and Wheat Improvement (CIMMYT) and now through other institutions in Bangladesh, is helping to place transgenic papaya in the hands of the Bangladesh Agricultural Research Council (BARC) for experimental testing and possible release for garden and commercial use. So far, the application has been scrutinized by Bangladesh Agricultural Research Institute (BARI), BARC and the national biosafety committee to ensure its fulfillment of the Government of Bangladesh guidelines for entry of transgenic papaya for experimental purposes to Bangladesh. We are hopeful that the scrutiny is almost complete and an application that is very clear can be forwarded to those in the Government of Bangladesh for further decision.

Clearly, increasing the productivity of papaya through virus resistance will make a tremendous impact in making a sweeter, riper, more affordable papaya available for the poor. The nutritional impact alone will increase livelihoods and may give Bangladesh a chance to reach its Millennium Development Goal ([www.developmentgoals.org](http://www.developmentgoals.org)) sooner than later in terms of food security, nutrition, and health. That is the aim of our joint program with BARI, BARC, Bangladesh Agricultural University, Bangabandhu Sheikh Mujibur Rahman Agricultural University and many other collaborative institutes.



Comparison of transgenic and conventional papaya. The transgenic contains the gene for the viral protein coat while the conventional plants do not. Yield and resistance differences are clearly visible.

CALENDAR OF EVENTS (INDIA)			
Event	Organization	Date	Place
Awareness workshops on GM crops regulations with special reference to Bt cotton	BCIL and All India Crop Biotechnology Association	July – August 2006	Bhatinda, Hyderabad and Navsari
Second Asian Graduate Course on Production and Use of Food Composition Data in Nutrition	National Institute of Nutrition (ICMR) and International Nutrition Foundation. For more information go to <a href="ftp://ftp.fao.org/ag/agn/infoods/asia_food_comp06.pdf">ftp://ftp.fao.org/ag/agn/infoods/asia_food_comp06.pdf</a>	November 5-25, 2006	National Institute of Nutrition, Hyderabad, India

### TRAINING OF TRAINERS AGRIBIOTECHNOLOGY WORKSHOP HELD AT TAMIL NADU

The South Asia Biosafety Program (SABP) in collaboration with Tamil Nadu Agricultural University (TNAU), Coimbatore organized a workshop on



agri-biotechnology for extension personnel from Tamil Nadu. The workshop was held on July 5, 2006, at the Coimbatore campus of TNAU.

Fifty-one participants representing seven districts of Tamil Nadu attended the workshop. The workshop attracted participation from government extension workers, non-governmental organization representatives, and men and women farmers. The language of the workshop was Tamil.

During the workshop, participants interacted with experts on biotechnology from the Centre for Plant Molecular Biology (CPMB) at TNAU, Coimbatore, Dr. P. Balasubramanian, Director, CPMB, TNAU, Dr. S. Mohankumar, Professor, CPMB, Dr. D. Sudhakar, Professor, CPMB and Shri P.J. Suresh, All India Crop Biotechnology Association (AICBA). Experts explained concepts on agri-biotechnology, biosafety and genetic engineering and the participants had an opportunity to share their commonly asked questions and concerns.

Some of the questions were:

- Is it possible to increase the sugar content of sugarcane through transgenic technology?
- Are Golden rice seeds available in the market?
- Why is the cost of transgenic seeds higher than that of hybrid seeds?
- When will Bt brinjal seeds be available to the farmers?
- Can we reuse GM seeds?
- What are the impacts of GM crops on the environment?
- How safe is GM food?
- Why is the growing of non-BT refugia lines recommended with BT cotton?

Dr. Balasubramanian, Dr. Mohankumar, Dr. Sudhakar, Shri P.J. Suresh and Vikas Chandran (SABP) participated in the panel discussion in the last session.

An easy-to-use, spiral-bound training manual in Tamil, covering frequently asked questions about GM crops, biotechnology and biosafety along with two wall posters on aspects of GM crop development, use and biosafety were distributed to all the participants for disseminating the information to farmers. The Tamil version of the documentary film 'The Story of Bt Cotton in India' produced by SABP in collaboration with ISAAA, which looks at several case studies of successful cultivation of Bt cotton in India and addresses the various benefits and concerns related to it, was screened for the delegates.

### ISAAA RELEASES BT COTTON FACT SHEET

The International Service for the Acquisition of Agri-biotech Applications (ISAAA) has just released the "Fact Sheet on Approved Bt Cotton Hybrids in India (2006)". The document includes all recent approvals of Bt cotton in India, with dates of approval, origin, and geographical distribution of newly approved varieties.

**ISAAA: Status of the event-wise approval of Bt cotton hybrids in India (2006).**

Event	North	Central	South	Total Hybrids
Bollgard-I (Mahyco)	12	22	21	44
Bollgard-II (Mahyco)	0	5	2	7
Event 1 (JK Seeds)	1	1	2	4
GFM Event (Nath Seeds)	1	1	1	3
<b>Total Hybrids</b>	<b>14</b>	<b>29</b>	<b>26</b>	<b>58</b>

Source: ISAAA

The Fact Sheet includes a map of India that shows the distribution of approved Bt cotton hybrids and tables illustrating the status of the approval of Bt cotton by zone, state and event.

The fact sheet can be seen at [http://www.isaaa.org/kc/CBTNews/files/India\\_Btcotton\\_23006.pdf](http://www.isaaa.org/kc/CBTNews/files/India_Btcotton_23006.pdf)

More detail can be obtained by contacting:

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**We welcome reader comments or suggestions.**

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## SEMINAR ON BIOSAFETY AND FIELD TRIAL REQUIREMENTS OF TRANSGENIC CROPS

The Department of Biotechnology of Bangladesh Agricultural University (BAU), Mymensingh gave a seminar about biosafety and field trial requirements of transgenic crops on June 7, 2006, at BAU. The seminar was sponsored by the South Asia Biosafety Program (SABP) and the International Service for the Acquisition of Agri-biotech Applications (ISAAA). Prof. Dr. R.I. Sarker, Director of Bangladesh Agricultural University Research System (BAURES) and Dr. Md. Bahadur Meah, Professor in the Department of Plant Pathology, BAU were the chief and special guests respectively.



Seated on the dias (from left): Prof. Dr. Md. Bahadur Meah, Prof. Dr. R.I. Sarker, Prof. Dr. Md. Shahidul Haque, Head, Department of Biotechnology, BAU (Chairperson), Dr. Md. Abdul Razzaque, and Dr. Donald J. MacKenzie.

About 120 participants covering faculty members, undergraduate, graduate and post-graduate fellows and scientists from the Bangladesh Institute of Nuclear Agriculture attended the seminar. Dr. Md. Abdul Razzaque, Member Director (Crops), BARC presented a paper on the "Role and Opportunities of Agricultural Biotechnology: Bangladesh Perspectives" while Dr. D.J MacKenzie, Executive Vice President, AGBIOS (Canada) presented his paper on "A Risk Management Approach to Confined (Isolated) Field Trials of Genetically Engineered Plants".

Dr. Razzaque's presentation highlighted the importance of agriculture to the Bangladesh economy and noted that arable land is decreasing at a rate of about 1.6% every year. He said that at present Bangladesh is more or less self sufficient in food grain production, however, Bangladesh would need to grow about double the amount of food grains in the coming 15-20 years to feed the ever increasing population using the limited cultivable land. He discussed the different constraints limiting the productivity of important crop plants and, in this context, the application of modern biotechnology may play an important role in increasing agricultural productivity, decreasing environmental pollution, etc. He highlighted the different benefits and potential risks of using biotech (genetically modified) crops globally as well as in neighbouring countries.

Dr. MacKenzie gave a detailed overview of how to conduct confined field trials of genetically engineered crops. He gave examples of the field trials being conducted in North America, different African countries and the Philippines. He mentioned that in many countries the regulators initially used the existing acts and regulations, e.g. Plant Protection or Plant Quarantine Acts. In Bangladesh such a system could be undertaken before having a regulatory framework in hand. Dr. MacKenzie also explained the different requirements,

namely, reproductive isolation, spatial isolation, risk mitigation, management, storage, shipment, etc., to be followed during contained field trials of genetically engineered plants.

After the two presentations there was a lively discussion about various issues and the seminar ended with remarks by Dr. Sarker, Dr. Meah and Dr. Haque.

## BARC DEVELOPS STANDARD OPERATING PROCEDURES

To complement the biosafety guidelines that have been developed but not yet approved by the Bangladesh Ministry of Environment and Forests (MOEF), Bangladesh Agricultural Research Council (BARC), with the assistance of the South Asia Biosafety Program (SABP), has taken the initiative to prepare standard operating procedures (SOPs) for the field trials of genetically modified crops. BARC, the apex body for all National Agricultural Research System (NARS) institutes, has formed a small committee comprising expert members from various NARS institutes and universities to develop the draft SOPs. The committee has met several times and the last of these meetings,



Participants at the BARC SOP development meeting held June 7, 2006, at BINA.

which was attended by scientists and researchers from the Departments of Genetics & Plant Breeding, Biotechnology, Horticulture, Crop Botany, Entomology, Environment, Agronomy, Plant Pathology, Pathology, Animal Husbandry, Agricultural Extension, Fisheries Biology and Genetics of Bangladesh Agricultural University and BINA, was held June 7, 2006. Guests included Dr. Md. Abdul Hamid, Director General, BINA and Dr. Donald J. MacKenzie, Executive Vice President, AGBIOS (Canada).

The meeting, which was chaired by Dr. Md. Abdul Razzaque, Member Director (Crops), BARC, began with Dr. Razzaque's overview of the draft SOPs and inspectors' manuals. He stressed the importance of these documents and sought suggestions and comments about the draft documents from the participants. Dr. MacKenzie gave a presentation on the regulatory and administrative procedures that are currently being used in North America and Africa. The participants made several suggestions and comments for inclusion in the SOPs and, in conclusion, it was decided that BARC/SABP, after incorporating all the applicable suggestions, would send the documents to those concerned for their final opinions.

## GEAC SHIFTS TO EVENT-BASED APPROVAL FOR GM CROPS

The Financial Express - July 5, 2006

**N**ew Delhi -- The regulator for genetically modified (GM) crops and products, Genetic Engineering Approval Committee (GEAC), has decided to follow the "event-based approval system" for approving GM crops, instead of case-by-case approach.

This change in the policy has come after the CD Mayee Panel report suggested such a change. The Mayee Panel deliberating on biosafety issues of Bt cotton said: "Extensive biosafety and agronomic testing are not necessary for the approved event. Once an event has been tested for its biosafety and approved for environmental releases, it should be treated at par with the non-Bt hybrids."

The GEAC, accepting the report, has said switching over to event-based system for approval will reduce unnecessary delays. "While due consideration for agronomic value of the GM hybrid should be given and not completely done away with, the parameters of prime importance to assess the efficacy of Bt technology are; (i) confirmation of the gene/event, (ii) level of protein expression and (iii) morphological characterisation based on DUS tests."

See the full article at: [http://agbios.com/sabp\\_main.php?action=ShowNewsItem&id=7660](http://agbios.com/sabp_main.php?action=ShowNewsItem&id=7660)

## LABELLING OF GM PRODUCTS DELAYED

The Financial Express - July 6, 2006

**N**EW DELHI -- The Centre's plan to regulate imports of genetically modified (GM) products is now in oblivion.

**B**ureaucratic delays in the health and environment ministries, relating to the finalisation of necessary guidelines, has held up the implementation of notification of the commerce ministry calling for mandatory labelling of imported GM products.

**I**n April, the government made changes in the foreign trade policy, making labelling of imported GM products mandatory. The concerned importer was liable to a penal action under Foreign Trade (Development & Regulation) Act, 1992 if the the imported GM products were found unlabelled.

This notification was, however, kept in abeyance till July 7, 2006 to give time to the concerned ministries and government agencies to finalise the necessary guidelines. The health ministry took up the onus of formulating guidelines for labelling of GM food, leaving the issue of labelling other non-food GM items to the Genetic Engineering Approval Committee (GEAC), which is under the environment ministry.

The GEAC, however, took some initiative to formulate some interim rules for imports of GM soyabean oil. The environment ministry has said that in future, it will not regulate GM food as the exercise is likely to be taken up by the proposed food authority, to be set up once the Food Safety & Standards Bill is enacted into law.

The health ministry proposed amendments to the relevant provisions of Prevention of Food Adulteration Rules, 1955 and circulated a draft guideline on labelling of GM food in March and invited public comments by May 10.

The work in the health ministry did not move with the desired pace.

**I**n this situation, the director-general of foreign trade KT Chacko said, "The concerned ministries have not intimated to us about the progress, nor have they asked for extension of time. The implementation of the law is at stake."

## INDIGENOUSLY DEVELOPED BT COTTON LIKELY BY 2007-08

Financial Express - June 27, 2006

**I**ndia's first indigenously developed Bt cotton in the private sector is likely to be out by 2007-08.

**M**etahelix Life Sciences, Bangalore-based firm, which has developed the strain, has now gone in for multi-field trials this kharif season. Once the Bt cotton hits the market it would be priced 30-40% cheaper than its competitors.

**U**S biotech firm Monsanto's Indian arm, Mahyco Monsanto Biotech (India) was initially the only one with the government's permission to sell Bt cotton in the country, resulting in large scale illegal seeds finding their way into the farms.

**L**ater this forced the Centre to approve conducting trials and commercial production of hybrid Bt cotton, and several companies have since licensed the technology from Monsanto and rolled out hybrid Bt cotton varieties.

See the full article at: [http://agbios.com/sabp\\_main.php?action=ShowNewsItem&id=7645](http://agbios.com/sabp_main.php?action=ShowNewsItem&id=7645)

## INDIA AGRICULTURAL SITUATION

USDA Foreign Agricultural Service GAIN Report Number IN6046 - June 16, 2006

This report from the U.S. Department of Agriculture (USDA) says that an additional six Indian states have now joined Andhra Pradesh in its legal battle to permanently lower Monsanto-Mahyco's royalty fees on the Bt trait in cotton. The states have signed a common memorandum of understanding to join together as a single party before India's Monopolies and Restrictive Trade Practices Commission (MRTPC) and the Supreme Court of India in the case filed by Monsanto-Mahyco against price controls. An additional hearing in the case will take place July 5 before the Supreme Court. Monsanto's managing director has said that arguments that justify price controls by comparing the price of Bt cotton in China with the price in India are unfair, in part because cotton cultivation in China requires significantly more seed per acre than in India.

The report is available online at the following link: <http://www.fas.usda.gov/gainfiles/200606/146197998.pdf>

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