SOUTH ASIA
BIOSAFETY PROGRAM

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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 national governmental agencies to facilitate the implementation of transparent, efficient and responsive regulatory frameworks for products of modern biotechnology that meet national goals as regards the safety of novel foods and feeds and environmental protection.

SABP is working 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 Bangladesh and address policy issues within the overall context of economic development, international trade, environmental safety and sustainability.

SOUTH ASIA CONFERENCE ON CURRENT APPROACHES TO THE ENVIRONMENTAL RISK ASSESSMENT OF GENETICALLY ENGINEERED CROPS

May 16-18, 2011 • New Delhi • India

The South Asia Biosafety Program and Biotech Consortium India Ltd., with support from the Department of Biotechnology, Ministry of Science and Technology, is organizing the South Asia Conference on the Environmental Risk Assessment of Genetically Engineered Crops to be held in New Delhi, May 16-18, 2011. This conference will provide an opportunity to hear leading scientists from regulatory agencies, public sector research institutions and the private sector in Australia, Brazil, Canada, Europe, India, Mexico, the Philippines, the United Kingdom and the U.S. present on the current science that is used to inform the environmental risk assessment of genetically engineered (GE) crops.

The provisional conference agenda is below and the conference registration form can be found on page 2. Additionally, both can be downloaded from **http://cera-gmc.org/index.php?action=meetings**

For more information about the conference, please contact:

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For more information about SABP see http://cera-gmc.org/index.php?action=s._asia_biosafety_program.

CONFERENCE PROVISIONAL AGENDA

May 16-18, 2011 • New Delhi • India

May 16, 2011

Welcome and Opening

Session I: International Experience in Environmental Risk Assessment of GE Plants

- International Consensus on ERA of GM Crops: Contributions from the OECD
- ERA of GE Crops in Australia
- ERA of GE Crops in the Philippines
- ERA of GE Crops in India

Session II: Problem Formulation for Environmental Risk Assessment

- Problem Formulation for Risk Assessment in a Public Policy Context
- Problem Formulation as a Formal Process in ERA
- Problem Formulation Applied to the Development of ERA Guidance in the EU
- Applying Problem Formulation to ERA in India
- Perspective on ERA from a Public Sector Research Organization in India

May 17, 2011

Session III: Selected Topics in ERA

- Collecting Data and Interpreting Results from Field Trials
- Gene Flow to Wild and Weedy Relatives
- Considering Gene Flow in Centers of Origin or Centers of Diversity
- Early Tier Lab Testing of Non-Target Organisms
- Semi-field and Field Studies for Assessing Impacts on Non-Target Organisms

Session IV: Additional Science for Oversight of GE Plants

- Post Release Environmental Monitoring (PREM)
- PREM – General Surveillance in Brazil
- Canada's Approach to PREM
- Insect Resistance Management: The Past, the Present and the Future
- Insect Resistance Management – Predicting Insect Resistance in Bt Cotton using Modeling

May 18, 2011

Session V: Recurring Issues for ERA of GM Plants (Panel Discussions)

- Horizontal Gene Transfer
- Antibiotic Resistance Markers
- Herbicide Tolerance Management of GE Crops

South Asia Conference on Current Approaches to the Environmental Risk Assessment of Genetically Engineered Crops

May 16-18, 2011 -- Hotel Taj Ambassador Delhi, Cornwallis Road, New Delhi

BCIL

SOUTH ASIA BIOSAFETY PROGRAM

Attach mailing label from brochure, or your business card.

Name Preferred on Badge _____

Complete the following if the information on the mailing label is incorrect or no label is provided.

Registrant is:

Gender ○ Male ○ Female

Title ○ Mr. ○ Mrs. ○ Ms. ○ Dr.

First Name _____ Middle Initial _____

Last/Surname _____

Job Title _____

Employer/Company/Institution _____

_____

Address _____

Street _____

City _____ State/Province _____

Zip/Postal Code _____ Country _____

Telephone _____

Facsimile _____

E-mail _____

Registration Fees

Industry	Rs. 5,000/-
Research Institution Universities Individual experts	Rs. 3,000/-
Students	Rs. 2,000/-
BCIL BiotechClub Members	25% discount
Additional delegates from same organization (except students)	25% discount
Government departments and ministries	No fee up to two nominations and Rs. 2,000/- each for additional nomination

The registration fee will be paid by Demand Draft/At par cheque in favour of Biotech Consortium India Limited, New Delhi. For international participants, bank transfer details shall be provided upon receiving registration form.

Cancellation/Refund Policy

Registration cancellations must be made in writing and received by BCIL no later than April 7, 2011. Cancellations received by this date are subject to a 20% processing fee. Registration and ticketed event cancellations received after May 1, 2011, are NOT subject to a refund.

Registration forms should be sent to:

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Biotech Consortium India Limited (BCIL)
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GM LABELLING DISCUSSION PAPER PUBLISHED

The Centre for International Trade and Development, School of International Studies, Jawaharlal Nehru University (JNU), New Delhi, has published a discussion paper presenting the results of a GM food labelling consumer experiment supported by South Asia Biosafety Program (SABP).

Weak aversion to GM foods: Experimental evidence from India. Discussion Paper 10-02. Bansal, B., S. Chakravarty, and B. Ramaswami. 2010.

The paper makes two important contributions to the literature studying consumer attitudes towards genetically modified foods. First, it elicits willingness-to-pay for similar food products that differ only in their content of GMOs. Second and more importantly, it examines how probabilistic information matters in the formation of food preferences. The paper advances a definition of consumers who are weakly GM averse, i.e., those who do not react to probabilistic information unless it comes in the form of a label. An experiment involving auctions of food products is designed to estimate weak GM aversion on the part of such consumers. In our experiment, about one-fifth of GM averse subjects are weakly averse. Presence of such consumers may have implications for the potential market size for labelled GM foods.

The paper is available at: http://www.jnu.ac.in/Academics/Schools/SchoolOfInternationalStudies/CITD/DiscussionPapers/DP02_2010.pdf

MAKING POPULAR RICE VARIETIES TOLERANT TO SALINITY STRESS USING MODERN BIOTECHNOLOGY

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Rice is one of the most important cereal crops of the world. However, the production of rice should increase by at least 40 per cent in the next 25 years to keep pace with the growing world population. Minimization of the loss caused by biotic and abiotic environmental factors can not only help to improve net production but extend rice cultivation to marginal and noncultivable lands. High salinity, contributed largely by NaCl, is one of the most important factors that limit the productivity of major crop plants, including rice. This includes coastal salinity due to saline water intrusion during tidal waves and low water tables due to withdrawal of upper riparian water as well as inland salinity due to irrigation schemes without adequate rainfall to leach out the deposited salt. Current estimates show that 20 per cent of highly productive irrigated land is affected by salinity (Yeo, 1999). In Bangladesh, about one million hectares in the coastal area, out of a total cultivable area of 9 million hectares is affected by salinity, which is more profound during the dry season (Lisa *et al*., 2004). Traditional breeding approaches with salt tolerant rice landraces have been inefficient principally due to the difficulty of recovering elite genotypes with salt tolerance traits, because of the genetic complexity of salt tolerance and the strength of genotype-by-environment interactions (Gregorio and Senadhira, 1993). Application of modern biotechnology on the other hand may contribute significantly towards developing stress tolerant (salt and drought) rice varieties.

'Pokkali', the most tolerant and well-characterized landrace and an international benchmark for salt tolerant rice, is the most frequently used donor for salt tolerance in breeding programs. We are working on transformation of several genes into rice such as full-length vacuolar antiporter from Pokkali rice, OsNHX1, High affinity potassium transporter gene (HKT) as well as the ascorbate peroxidase gene from rice. Several reporter–gene constructs have been made, which will allow the testing of these promoters for efficacy and salt induction. Reporter gene analysis in transient assays as well as in stably transformed plants will be used so that the best one can be selected for driving the expression of the isolated transgenes for producing transgenic salt tolerant rice.

TRANSFORMATION FOR SALT TOLERANCE WITH OsNHX1:

Transformed calli were regenerated into plants and planted in soil. T0 were advanced to T2 by germinating T1 and T2 seeds in solution containing 50 mgL^{-1} Hygromycin. This provided a primary selection of the transformed plants as the

Hygromycin resistance gene is present in the transformed T-DNA. Germinated T2 seedlings were subjected to salt stress at 120 mM NaCl and scored, using Pokkali and IR29 as tolerant and sensitive controls, respectively. The plants that had better score compared to wild type, were selected and tested for transformation status by PCR. The expression of OsNHX1 in PCR-positive plants was also tested using semi-quantitative RT-PCR. Two strongly expressing plants were used as male parents for introgression of the transgene into high yielding farmer popular varieties, namely, BRRI dhan28, BRRI dhan29, BRRI dhan36 and BRRI dhan45.

TRANSFORMATION WITH GENES FROM ICGEB:

We have transformed rice (Binnaota) with borrowed constructs from ICGEB, India, such as the NHX1 gene from drought tolerant grass, *Pennisetum glaucum*, (PgVNHX) (Verma *et al*., 2007), and Pea DNA helicase, PDH45 (Sanan-Mishra *et al*., 2005). The PDH-45 transformants showed dramatic stress tolerance at the seedling stage in 200mM NaCl stress. These will now be assessed for reproductive stage tolerance. Binnatoa seedlings containing the *PgNHX* gene from *Pennisetum glaucum* have shown good tolerance at 160mM NaCl and have set seeds with minimal yield loss at 60mM NaCl stress in soil compared to wild type. Stressed plants showed almost no decrease in spikelet fertility and reduction in grain weight was signifi-

(continued on page 4 - see Rice)

CALENDAR OF EVENTS

Event	Organized by	Date and Venue	Website
INDIA			
Workshop on Commercialization of Biotechnology	Department of Biotechnology (DBT), Government of India, and Biotech Consortium India Limited (BCIL), New Delhi	March 17, 2011 New Delhi	
World Congress on Biotechnology	OMICS Publishing Group, USA	March 21-23, 2011 Hyderabad	http://omicsonline.org/biotechnology2011/
3rd Congress on Insect Science	Indian Society for the Advancement of Insect Science and Department of Entomology Punjab Agricultural University	April 18-20, 2011 Ludhiana	http://web.pau.edu/content/banner/trd_congress.pdf
Bangalore India Bio 2011	Department of Information Technology, Biotechnology and Science and Technology, Government of Karnataka	May 4-6, 2011 Bangalore	http://www.bangaloreindiabio.in/BIO2011/index.php
South Asia Conference on Current Approaches to the Environmental Risk Assessment of Genetically Engineered Crops	Center for Environmental Risk Assessment (CERA), ILSI Research Foundation, Biotech Consortium India Limited in association with Department of Biotechnology, Government of India	May 16-18, 2011 New Delhi	http://cera-gmc.org/index.php?action=meetings
World Cotton Research Conference	International Cotton Advisory Committee and Indian Society for Crop Improvement under the aegis of Indian Council of Agricultural Research	November 7-11, 2011 Mumbai	http://www.wcrc-5.com/WCRC5_Circular.pdf
8th International Safflower Conference: Safflower Research and Development in the World - Status and Strategies	Indian Society of Oilseeds Research and Indian Council of Agricultural Research	January 19 - 23, 2012 Hyderabad	http://www.dor-icar.org.in/downloads/Conference1.pdf
INTERNATIONAL			
Biosafety, Biosecurity, & Biodefence (BioSSD) 2011 International Congress on Asia Pacific's Practices, Challenges, and Strategies	PROTEMP Conferences and beta congress (Germany) in collaboration with the Malaysian government agencies	July 18 – 20, 2011 Putra World Trade Center, Kuala Lumpur	http://www.biossdcongress.com/
First International Workshop on the Food and Environmental Safety Assessment of Genetically Modified Animals	Argentine Ministry of Agriculture, Livestock and Fisheries, (SAGyP, Biotechnology Directorate); ICGEB; United Nations University Biotechnology Programme for Latin America and the Caribbean (UNU-BIOLAC) and International Life Sciences Institute (ILSI Argentina)	September 5 - 9, 2011 Buenos Aires, Argentina	http://www.agrobiotecnologia.gov.ar/gmanimal2011/

Rice - *continued from page 2*

cantly less than wild type (Islam *et al.*, 2009). These plants will now be backcrossed into farmer-popular varieties. Plants with these genes will be crossed with plants containing the OsNHX1 transgene to get more durable salt tolerance.

ACKNOWLEDGEMENTS

The work described is collaborative between Dhaka University, Bangladesh Rice Research Institute (BRRI), International Rice Research Institute (IRRI) and International Center for Genetic Engineering and Biotechnology (ICGEB). Funds for the work were from the Bangladesh Chapter of US Department of Agriculture and Generation Challenge Program.

* References cited in the text may be obtained from the author on request.

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