



SOUTH ASIA
BIOSAFETY PROGRAM

June 2013

Vol. 10 No. 6

NEWSLETTER

for private circulation only - not for sale

www.cera-gmc.org

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.

COMMENTS INVITED ON BIOTECHNOLOGY REGULATORY AUTHORITY OF INDIA (BRAI), BILL, 2013

The Biotechnology Regulatory Authority of India (BRAI), Bill, 2013 was introduced in Parliament on April 22, 2013. The Bill has been referred to the Parliamentary Standing Committee on Science and Technology, Environment and Forests.

The Standing Committee has invited views and suggestions from individuals and organizations interested in the Bill's subject matter. An advertised invitation was published in newspapers across the India on June 11, 2013.

**Deadline for receipt of comments is
July 10, 2013.**

Readers may like to respond to this important Bill and also share this information with other concerned stakeholders.

A copy of the advertisement follows on page 2.



SAVE the DATE
September 18 - 20, 2013 | New Delhi, India

South Asia Biosafety Conference

Plenary Sessions On:

- Challenges to the Development and Regulation of Genetically Engineered Plants in South Asia
- Regulation of Genetically Engineered Plants in the Context of Biodiversity, Phytosanitary and Food/Feed Safety Laws
- Post-Approval Considerations for the Commercial Release of Genetically Engineered Plants
- New Plant Breeding Techniques and Biosafety Risk Assessment

Workshops On:

- Understanding Test Protocols: Design, Reporting and Data Interpretation
- The Scientist as a Public Communicator

REGISTRATION INFORMATION TO FOLLOW



SOUTH ASIA
BIOSAFETY PROGRAM

Co-organized by

South Asia Biosafety Program · Biotech Consortium India Limited · Bangladesh Academy of Sciences

INTERNATIONAL CONFERENCE ON THE APPLICATION OF BIOTECHNOLOGY IN ADDRESSING THE DEVELOPMENT NEEDS OF BANGLADESH

Globally, biotechnology has been profoundly influenced by two factors, the drastic reduction of public funds for research and the dominant role of the private sector in biotechnology research and development for health care and other industrial applications. Moreover, in the case of a developing country like Bangladesh, private sectors are not that much aware of the prospect and potential of biotechnology research. To address these issues and to build a bridge between the private sector and research organizations and scientists, the Committee of Action for Research, Extension and Services (CARES) in collaboration with Bangladesh Academy of Sciences (BAS), Bangladesh Council of Scientific and Industrial Research (BCSIR) and Bangladesh Agricultural University (BAU) organized a two-day international biotechnology conference May 25 - 26, 2013. CARES's main vision

(continued on page 2 - see Bangladesh)

COMMENTS INVITED ON (BRAI), BILL, 2013

continued from page 1

PARLIAMENT OF INDIA



RAJYA SABHA SECRETARIAT

DEPARTMENT RELATED PARLIAMENTARY STANDING COMMITTEE ON SCIENCE & TECHNOLOGY, ENVIRONMENT & FORESTS SUGGESTIONS/VIEWS ON "THE BIOTECHNOLOGY REGULATORY AUTHORITY OF INDIA BILL, 2013"

"The Biotechnology Regulatory Authority of India Bill, 2013" as introduced and pending in Lok Sabha has been referred to the Department-related Parliamentary Standing Committee on Science & Technology, Environment & Forests, headed by **Dr. T. Subbarami Reddy, M.P., Rajya Sabha** for examination and report.

2. Modern Biotechnology is recognised globally as a rapidly advancing science wherein advanced molecular techniques and process are employed to develop useful products, processes and services in areas of agriculture, human and animal, healthcare, environment management and industry. Biotechnology industry in India has been growing at an average annual rate of twenty to thirty per cent during the last five years and its turnover exceeded Rs. 20,440.00 crores approximately. There are, however, public concerns in respect of organisms and products derived from modern biotechnology on human, animal and environmental safety. Various countries have developed regulatory mechanisms to ensure safe and responsible use of biotechnology organisms and products. But in India, activities and processes involving the genetically engineered organisms and products thereof, are broadly regulated under the 'Rules for Manufacture, Use/Import/Export and Storage of Hazardous Micro Organisms/Genetically Engineered Organisms or Cells 1989' notified under the Environment (Protection) Act, 1986 and the guidelines published by the Department of Biotechnology. But despite the aforesaid rules and guidelines, India has experienced a number of challenges. A Task Force on the Application of Agriculture Biotechnology constituted by the Ministry of Agriculture in 2003 recommended establishment of an autonomous, statutory and professionally-led National Biotechnology Regulatory Authority which was supported by the other Task Force on recombinant pharma constituted by Ministry of Environment & Forests in 2004.

3. In pursuance of the recommendations of the above Task Forces, this Bill aims *inter-alia* at establishing an independent statutory regulator to be known as the Biotechnology Regulatory Authority of India, to regulate research, transport, import, manufacture and use of organisms and products of modern biotechnology to promote the safe use of modern biotechnology by enhancing the effectiveness and efficiency of robust regulatory procedures.

4. The Committee has decided to invite Memoranda containing views/suggestions from individuals/organizations interested in the subject matter of the Bill.

5. Those desirous of submitting Memoranda to the Committee may send their written Memoranda either in English or Hindi to **Shri Alok Chatterjee, Director, Rajya Sabha Secretariat, Room No. 005, Ground Floor, Parliament House Annexe, New Delhi-110001 (Tel No.: 011-23034597, Fax No.: 011-23015585), E-mail: rsc-st@sansad.nic.in** within **thirty** days from the date of publication of this advertisement. Those who are willing to appear before the Committee for oral evidence besides submitting the Memoranda may indicate so. However, the Committee's decision in this regard shall be final. The Memoranda submitted to the Committee would form part of the records of the Committee and would be treated as confidential and would enjoy privileges of the Committee. The Committee will have full right on Memoranda received. It may or may not use those Memoranda while preparing the report.

6. The Bill has been published in the Gazette of India, Extraordinary, Part II, dated the 22nd April, 2013. Copies of the Bill can be had on written request to the abovementioned officer or can be downloaded from the official website of the Rajya Sabha (<http://rajyasabha.nic.in>), under the caption "Bills with the Committees".

Website- <http://rajyasabha.nic.in> E-mail: rsc-st@sansad.nic.in

davp 31202/11/0004/1314

BANGLADESH - continued from page 1

is to promote and support basic, applied and prototype research of immediate economic value in the fields of agriculture, life sciences, small and medium enterprises, green technology and rural enterprises.

Over 90 scientists and experts from the US, India, Sri Lanka and Bangladesh presented their research findings and ideas in seven scientific sessions. About 250 participants from Bangladesh and abroad attended. The conference covered many areas like agriculture, horticulture, fisheries, animal husbandry, biomedical and pharmaceutical, nutrition and food science, environment, climate change issues, economic resources and economic impact of research on life sciences.

The conference's inauguration was presided over by foreign and domestic dignitaries from government, academia and CARES representatives, including the Honorable Minister of Agriculture H.E. Begum Matia Chowdhury. Highlights included a suggestion that a link be created among members of the South Asian Association for Regional Cooperation (SAARC) to work together in promoting biotechnology based industry and research and an emphatic message about the importance of collaborative research.

Presentation topics included:

- A collaborative research project that traced the source of the bacterium that causes cholera, *Vibrio cholera*, to plankton in rivers and estuaries in Bangladesh and cholera epidemiology with sea temperatures and plankton blooms.
- The potential of five genes, Apical Membrane Antigen-1 (AmA-1), Oxalate Decarboxylase (OXDC), α -D-mannosidase, β -hexosaminidase and C-5 sterol desaturase (FvC5SD), that play roles inducing a biotic stress resistance mechanism as well as improving food quality.
- DNA marker assisted breeding and genetic transformation for producing salt tolerant rice for Bangladesh, a transgenic research project with genes conferring salinity tolerance that is working with Na⁺/H⁺ antiporter gene, detoxification genes, RNA/DNA unwinding genes and transcription factors.
- Research designed to test probiotic bacteria able to inhibit the growth of pathogenic bacteria that cause mortality of prawn and hopefully a new solution for sustainable aquaculture in Bangladesh.
- A lecture on indiscriminate use of chemicals in fruits and their effects on human health.
- A group of scientists spoke about the prospects and opportunities of biotechnology in the industrial sector and shared their own experiences on creating scopes of biotechnology based industry.
- Ongoing research on developing a fungal resistant variety of lentil through *Agrobacterium* mediated transformation.

There were five scientific sessions with parallel sessions: medical biotechnology; agricultural biotechnology; economy, industry and environment; biotechnology research and development; and medical biotechnology, agriculture and environmental biotechnology, microbial and environmental biotechnology.

The conference concluded with a speech by Dr. A Majeed Khan, President, CARES, who spoke about the interface role of CARES in accelerating the industrial, agricultural and entrepreneurial development of the national economy and quality human resources.



The Reading List

... new and notable articles

RNAI-MEDIATED ULTRA-LOW GOSSYPOL COTTONSEED TRAIT: PERFORMANCE OF TRANSGENIC LINES UNDER FIELD CONDITIONS

Palle SR, Campbell LM, Pandeya D, Puckhaber L, Tollack LK, Marcel S, Sundaram S, Stipanovic RD, Wedegaertner TC, Hinze L, Rathore KS

Cottonseed remains a low-value by-product of lint production mainly due to the presence of toxic gossypol that makes it unfit for monogastrics. Ultra-low gossypol cottonseed (ULGCS) lines were developed using RNAi knockdown of δ -cadinene synthase gene(s) in *Gossypium hirsutum*. The purpose of the current study was to assess the stability and specificity of the ULGCS trait and evaluate the agronomic performance of the transgenic lines. Trials conducted over a period of 3 years show that the ULGCS trait was stable under field conditions and the foliage/floral organs of transgenic lines contained wild-type levels of gossypol and related terpenoids. Although it was a relatively small-scale study, we did not observe any negative effects on either the yield or quality of the fibre and seed in the transgenic lines compared with the nontransgenic parental plants. Compositional analysis was performed on the seeds obtained from plants grown in the field during 2009. As expected, the major difference between the ULGCS and wild-type cottonseeds was in terms of their gossypol levels. With the exception of oil content, the composition of ULGCS was similar to that of nontransgenic cottonseeds. Interestingly, the ULGCS had significantly higher (4%-8%) oil content compared with the seeds from the nontransgenic parent. Field trial results confirmed the stability and specificity of the ULGCS trait suggesting that this RNAi-based product has the potential to be commercially viable. Thus, it may be possible to enhance and expand the nutritional utility of the annual cottonseed output to fulfill the ever-increasing needs of humanity.

PLANT BIOTECHNOLOGY JOURNAL. 2013 APR;11(3):296-304. DOI: 10.1111/PBI.12013. EPUB 2012 OCT 18. [HTTP://ONLINELIBRARY.WILEY.COM/DOI/10.1111/PBI.12013/ABSTRACT](http://onlinelibrary.wiley.com/doi/10.1111/PBI.12013/ABSTRACT)

IRON BIOFORTIFICATION OF MYANMAR RICE

Aung MS, Masuda H, Kobayashi T, Nakanishi H, Yamakawa T, Nishizawa NK

Iron (Fe) deficiency elevates human mortality rates, especially in developing countries. In Myanmar, the prevalence of Fe-deficient anemia in children and pregnant women are 75 and 71%, respectively. Myanmar people have one of the highest per capita rice consumption rates globally. Consequently, production of Fe-biofortified rice would likely contribute to solving the Fe-deficiency problem in this human population. To produce Fe-biofortified Myanmar rice by transgenic methods, we first analyzed callus induction and regeneration efficiencies in 15 varieties that are presently popular because of their high-yields or high-quality. Callus formation and regeneration efficiency in each variety was strongly influenced by types of culture media containing a range of 2,4-dichlorophenoxyacetic acid concentrations. The Paw San Yin variety, which has a high-Fe content

in polished seeds, performed well in callus induction and regeneration trials. Thus, we transformed this variety using a gene expression cassette that enhanced Fe transport within rice plants through overexpression of the nicotianamine synthase gene HvNAS1, Fe flow to the endosperm through the Fe(II)-nicotianamine transporter gene OsYSL2, and Fe accumulation in endosperm by the Fe storage protein gene SoyferH2. A line with a transgene insertion was successfully obtained. Enhanced expressions of the introduced genes OsYSL2, HvNAS1, and SoyferH2 occurred in immature T2 seeds. The transformants accumulated 3.4-fold higher Fe concentrations, and also 1.3-fold higher zinc concentrations in T2 polished seeds compared to levels in non-transgenic rice. This Fe-biofortified rice has the potential to reduce Fe-deficiency anemia in millions of Myanmar people without changing food habits and without introducing additional costs.

FRONTIERS IN PLANT SCIENCE. 2013 MAY 27;4:158. DOI: 10.3389/FPLS.2013.00158. PRINT 2013. DOWNLOAD FULL-TEXT: [HTTP://WWW.FRONTIERSIN.ORG/PLANT_PHYSIOLOGY/10.3389/FPLS.2013.00158/ABSTRACT](http://www.frontiersin.org/PLANT_PHYSIOLOGY/10.3389/FPLS.2013.00158/ABSTRACT)

A LOOK AT PRODUCT DEVELOPMENT WITH GENETICALLY MODIFIED CROPS: EXAMPLES FROM MAIZE

Mumm RH

Plant breeding for crop genetic improvement involves the cycle of creating genetic diversity and exploiting that diversity to derive an improved cultivar with outstanding performance for specific traits of interest. Genetic modification through transformation essentially expands the genepool to facilitate access to genes otherwise not available through crossing. Transgenic events are defined by the DNA sequence that has been incorporated into the target genome and the specific point(s) of insertion. In the development of a new transgenic trait, typically many events are generated and evaluated with the aim of identifying one exhibiting consistent trait expression at or above specified thresholds, stable inheritance, and the absence of any negative effects. With transgenic traits for maize, once commercial candidates have been identified, these events are introgressed into elite lines, often through the use of molecular markers that can accelerate the breeding process and aid in producing a quality conversion. Converted elite lines are yield-tested to ensure performance equivalency with their unconverted counterparts. Finally, before commercial sale of seed, quality control monitoring is conducted to ensure event identity and purity and the absence of any unintended events. This monitoring complements other quality control measures to confirm seed viability and line/hybrid purity and uniformity in seed treatments, all in an effort to ensure customer satisfaction and to comply with governmental regulations. Thus, genetically modified (GM) cultivars are subject to significant testing and auditing prior to seed sale and distribution to farmers, more testing and auditing than with non-GM cultivars.

JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY. 2013 MAY 30. [EPUB AHEAD OF PRINT] SEE: [HTTP://PUBS.ACS.ORG/DOI/ABS/10.1021/JF400685Y](http://pubs.acs.org/doi/abs/10.1021/jf400685y)

CALENDAR OF EVENTS

Event	Organized by	Date and Venue	Website
INDIA			
BIO-AGRI 2013 Towards Productive Efficiencies & Farmers Growth	The Associated Chambers of Commerce and Industry of India (ASSOCHAM)	June 19, 2013 New Delhi	http://www.assochem.org/events/showevent.php?id=845
International Conference on Tropical Roots and Tubers For Sustainable Livelihood Under Changing Agro-Climate	Indian Society for Root Crops (ISRC) and Central Tuber Crops Research Institute (CTCRI)	July 9 - 12, 2013 Thiruvananthapuram, Kerala	http://isrc.in/internationalconference2013/Conference%20Brochure.pdf
4 th Annual Crop World India 2013	UBM India Pvt. Ltd.	July 16 - 17, 2013 Mumbai	http://cropworld-india.com/Download/Agenda_392.pdf
The 50 Pact "Renewing Borlaug's Promise"	Indian Council of Agricultural Research (ICAR), Borlaug Institute for South Asia (BISA) and International Maize and Wheat Improvement Centre (CIMMYT),	August 16 - 17, 2013 New Delhi	http://www.cimmyt.org/en/cimmyt-events/the-50-pact-renewing-borlaug-s-promise
ICAR Sponsored Summer School on New Horizons in Biotic Stress Management in Rice under Changing Climate Scenario	Central Rice Research Institute	September 10 - 30, 2013 Cuttack	http://www.crrri.nic.in/Summer%20School%20Brochure_CRRRI%202013.pdf
Advanced Training Course on Climatic Change and Abiotic Stresses	Department of Crop Physiology N.D. University of Agriculture & Technology	September 12 - October 1, 2013	
INTERNATIONAL			
International Workshop on Comparative Approaches to Safety Assessment of GM Plant Materials	AgriFood Health and Quality National Service (SENASA, Ministry of Agriculture), Argentina, and ILSI Argentina	June 26 - 28, 2013 Buenos Aires, Argentina	
Strategic Approaches in the Evaluation of the Science Underpinning GMO Regulatory Decision Making	ICGEB	July 1 - 5, 2013 Trieste, Italy	http://www.icgeb.org/tl_files/Meetings/2013/TS_BIOSAFETY_1-5%20July_2013_Rev7Feb2013.pdf
The 8th National Biotechnology Congress of Iran and the 4th Congress on Biosafety and Genetic Engineering	Iran Biotechnology Information Center (IRBIC), Biosafety Society of Iran (BSI), and Iranian Biotechnology Society	July 6 - 8, 2013 Tehran, Iran	http://www.irbic.ir/
12th International Wheat Genetics Symposium	Kihara Institute for Biological Research, Yokohama City University	July 8 - 14, 2013, Yokohama, Japan	http://www2.convention.co.jp/iwgs12/program.html
Biosafety: An International Short Course in Environmental Aspects of Agricultural Biotechnology	Michigan State University College of Agriculture and Natural Resources in Collaboration with the Plant Breeding and Genetics Program	August 4 - 9, 2013 East Lansing, Michigan, USA	http://worldtap.msu.edu/short-courses/biosafety/
International Conference on Genetic Engineering and Genetically Modified Organisms	OMICS Group	August 12 - 14, 2013 Raleigh, North Carolina, USA	http://www.omicsgroup.com/conferences/genetic-engineering-genetically-modified-organisms-2013/

SABP CONTACTS

India

Dr. Vibha Ahuja
General Manager
Biotech Consortium India Limited
Anuvrat Bhawan, 5th Floor
210, Deendayal Upadhyaya Marg
New Delhi 110 002 India
Email: vibhaahuja@biotech.co.in

Bangladesh

Prof. Dr. M. Imdadul Hoque
Department of Botany
University of Dhaka
Dhaka - 1000
Bangladesh
Email: mimdadul07@yahoo.com

Others

Center for Environmental Risk Assessment (CERA)
ILSI Research Foundation
1156 Fifteenth Street, NW
2nd Floor
Washington D.C.
20005-1743 USA
Email: info@cera-gmc.org



Center for
Environmental
Risk Assessment



To receive an electronic copy of this newsletter send your name, institutional information and e-mail address to: info@cera-gmc.org