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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.

BIOTECHNOLOGY POLICY OF BANGLADESH : A STEP TOWARDS SHAPING RESEARCH AND DEVELOPMENT OF BIOTECHNOLOGY

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Biotechnology, a frontier area of science, offers numerous opportunities in the fields of agriculture, health care, animal husbandry, industry and the environment. Worldwide, biotechnology-mediated enterprises are a multibillion-dollar industry. Biotechnology, along with information technology, is considered a knowledge-based technology with the potential to improve the quality of the life for poor and rich alike. Using biotechnology in agriculture helps to reduce crop production costs, increase quality and output and decrease chemical use by farmers; moreover, biotechnology contributes by controlling pest and diseases, providing genetic resistance, improving diagnostics, and by developing new vaccines and biocontrol agents. Biotechnology has the potential to improve the livelihoods of low-income communities by improving the nutritional quality of food, and through bioremediation and genetic conservation, all of which are critical to the Bangladesh economy. In view of this, the Bangladesh government has formulated a draft National Policy on Biotechnology.

The main goal of the policy is to ensure the sustainable development of agriculture, food and other crops and to improve nutrition and the health, environment and livelihoods of the people. The policy in Bangladesh also aims to improve global agricultural competitiveness.

The policy addresses the appropriate measures required to create an environment conducive to modern biotechnology research and development, extension and commercialization, infrastructure, strengthening laboratory and human resource development and the creation of a center of excellence in priority areas based on national needs. The policy also emphasizes the development of an appropriate regulatory framework for research and development. For the sake of transparency in its application, arrangements will be made for an informal public awareness programme and open, public debates on the benefits and risks of this technology.

Some of the opportunities for biotechnology in Bangladesh identified in the policy include:

- Agriculture-Food and Other Crops: Crop productivity, stress tolerance, enhancing nutritional value, reducing cost of production, bio-pesticides, etc.
- Fisheries and Livestock: Improvement of breeds and nutrition, protection of health, conservation of genetic resources, feed development.
- Forestry and Environment: Forest resource management, cash crop development, bioremediation, waste water treatment.
- Health Care and Nutrition: Diagnostic kits, vaccines.
- Products and Processes: Development of food and industrial enzymes, biopolymers, additives, and classical microbial products.
- Biodiversity Conservation: Production potential of plants, biodiversity management.

Human resource development is considered one of the key activities required to promote the sustained build-up of an elite knowledge cadre and knowledge base to address an administrative, regulatory, legal, technological and financial framework for the economic development of human welfare. Human resource development in modern biotechnology will concentrate on academic programs, short and long-term training, and orientation training for policy makers, scientists, entrepreneurs, legal personnel, and policy makers. Training in intellectual property rights has been considered a special issue for policy makers and for personnel of regulatory agencies. The policy encourages the establishment of links between research institutions, academia and industry. As with any new technology, the potential risks need to be assessed and monitored. Therefore, biosafety, bio-surveillance and bioethics have been given due consideration in the policy.

The establishment of biotechnology enterprise zones (Bio-Valleys); the proper utilization of bioresources for development of bio-products; the establishment of entities combining biotechnology research and development; the organization and creation of a network of stakeholders; and the creation of a biotechnology incubator park in collaboration with foreign organizations have been encouraged with a special focus on food and cash crops, medical biotechnology including herbal medicine, and industrial products having a market demand at home and abroad.

To effectively implement the National Policy on Biotechnology, a National Task Force has been formed with the Prime Minister

(continued on page 4 - see Biotechnology Policy)

CALENDAR OF EVENTS (INDIA)

Event	Organization	Date	Place
Communications Training for Agriculture Extension Personnel	South Asia Biosafety Program (SABP)	June 2006 (tentative)	Karnataka and Tamil Nadu

PUNJAB TRAINING OF TRAINERS WORKSHOP - MARCH 2, 2006

The South Asia Biosafety Program (SABP), in collaboration with the Punjab State Council for Science and Technology (PSCST), Chandigarh, organized a one-day awareness workshop on agricultural biotechnology for field-level functionaries and trainers who work with farmers at the grassroots level to strengthen understanding of current issues. The workshop was held on March 2, 2006, in Chandigarh, Punjab as part of a series of SABP-organized awareness-building workshops being delivered in different Indian states.



Group discussion during Punjab workshop in Chandigarh.

One hundred and twenty participants representing nine districts of Punjab attended the workshop, which attracted participation from government extension workers, state agricultural department personnel, representatives from NGOs and rural development banks, private company representatives, farm cooperative personnel and progressive farmers. The languages of the workshop were Punjabi and Hindi.

Punjab is considered to be one of the most progressive states of India and is often referred to as the 'Bread Basket' of the nation, producing about 50% of the wheat and rice for India. This state is also the pioneer state for adopting the first green revolution. Over the past decade, extremely high use of fertilizers (per-hectare consumption of fertilizer in Punjab is 196 kg as compared to the national average of 85 kg per hectare) has been an area of concern.

During the workshop, participants interacted with experts on the role of biotechnology in agricultural development. Presentations were made by Dr. K.C. Bansal, Professor and Principal Scientist, National Research Centre on Plant Biotechnology, Indian Agricultural Research Institute, New Delhi; Dr. R.P. Sharma, Ex-Director, National Research Centre on Plant Biotechnology, Indian Agricultural Research Institute, New Delhi; Dr. B.S. Sidhu, Director, Agriculture, Punjab Government and Purvi Mehta, SABP Country Coordinator for India. During the very animated interactive sessions, experts explained concepts on agricultural biotechnology and genetic engineering and participants

shared their experiences related to biotechnology and the questions posed to them in the field by farmers. Dr. S.S. Marwaha, Director (Biotechnology), Punjab State Council for Science and Technology (PSCST), Chandigarh; Dr. N.S. Tiwana, Executive Director, PSCST; and Dr. J.K. Arora, Joint Director, PSCST participated in the panel discussion in the last session.

Punjab Finance Minister Surinder Singla also joined the workshop and, in expressing his appreciation for SABP's initiative for organizing such a workshop, stated that, "Punjab is ready for second green revolution and ag-biotechnology can be one of the most powerful tools for fostering agriculture growth, such workshop is an important step in helping Punjab 'bring home' the second green revolution."

An easy-to-use, spiral bound training manual in Punjabi, covering frequently asked questions about GM crops, biotechnology and biosafety along with two wall posters on aspects of GM crop development, use and biosafety was distributed to all the participants for disseminating the information to farmers.

The Punjabi version of the documentary film 'The Story of Bt Cotton in India', produced by SABP in collaboration with ISAAA, was screened at the workshop.

With the exception of the 1999-2000 year, Punjab state was continuously awarded a National Productivity Award for Agriculture Extension service between 1991 to 2004. The state has a very well established extension system, however delegates, especially those representing government extension services, expressed concerns about the very limited availability of information on biotechnology. In view of this deficit there is a clear need for such workshops as evidenced by the overwhelming response received from all districts of the state and the number of delegates attending the workshop, which had the highest attendance of all the workshops given in this series conducted by SABP in India.



A panel discussion at the Training of Trainers Workshop in Punjab. From left, Purvi Mehta-Bhatt, Dr. N.S. Tiwana, Dr. B.S. Sidhu, Dr. S.S. Marwaha and Dr. J.K. Arora.

CALENDAR OF EVENTS (BANGLADESH)

Event	Organization	Date	Place
Regional Workshop on the Awareness Building on the Recent Advances of Agricultural Biotechnology & Biosafety	South Asia Biosafety Program (SABP)	April 2006	Khulna & Barisal Divisions

AWARENESS BUILDING WORKSHOP HELD IN COMILLA FEBRUARY 5 AND 6

SABP, in collaboration with Bangladesh Agricultural Research Council (BARC), held a workshop at the Bangladesh Academy for Rural Development (BARD), Comilla on February 5 and 6, 2006. The inaugural ceremony was held under the chairmanship of Dr. Md. Abdur Razzaque, Member Director (Crops), Bangladesh Agricultural Research Council (BARC). He was joined by the chief guest Mr. Muhammad Nazrul Islam, Director General, BARD, and special guest Mr. Md. Hamidur Rahman, Director General, Department of Agricultural Extension. Dr. M. Khalequzzaman Akando Chowdhury, Chief Scientific Officer (Crops), BARC offered the address of welcome and Dr. Donald MacKenzie, Executive Vice President, AGBIOS highlighted the workshop programs and the SABP activities in Bangladesh. The ceremony included a screening of the new SABP / ISAAA-produced Bt Cotton Video.



Participants of the SABP / BARC Awareness Building Workshop held in Comilla February 5 and 6, 2006.

In their speeches, the chief and special guests stressed the application of biotechnological tools for the development of high yielding, disease resistant and stress tolerant crop varieties. They also opined that through the use of biotechnology it might be possible to help alleviate poverty and hunger in the country.

While the majority of the 65 participants were officers of the Agricultural Extension Department working at the District and Upazilla levels of Chittagong Division, some were selected from the scientists of Bangladesh Rice Research Institute (BRRI), Bangladesh Agricultural Research Institute (BARI), Bangladesh Jute Research Institute (BJRI) working at the regional stations/sub-stations in the Chittagong Division. The remainder were from the private sector, NGOs, or were college level teachers. Dr. Swapan Kumar Datta, Professor of Botany, Calcutta University and Former Principal Biotechnologist, IRRI was the invited speaker. He was joined by Dr. Donald MacKenzie, and local resource persons.

The workshop had presentations on recent developments in agricultural biotechnology, biosafety related issues including global status of biotech crops and their benefits and potential risks. There were also presentations on field trials of biotech crops and the assessment of foods derived from GM crops, etc. After the inaugural ceremony Dr. M. Imdadul Hoque, SABP, Bangladesh Country Coordinator, briefly introduced the resource persons and workshop participants.

Some of the presentations included "Opportunities and Challenges of Agricultural Biotechnology: Bangladesh Perspective" by Dr. Md. Abdur Razzaque; "Principles of Genetic Engineering and their Application" by Prof. M. Imdadul Hoque; "Status of Biotech Research and Development in Bangladesh" by Dr. M. Khalequzzaman A. Chowdhury, C.S.O. (Crops), BARC; "Improvement of Nutritional Quality of Crop Plants through Genetic Engineering" by Dr. Swapan Kumar Datta. Highlights of the Biosafety Guidelines of Bangladesh were presented by Prof. Syed Hadiuzzaman of the Department of Botany, Dhaka University, and Dr. Emdadul Haque Chowdhury of the Department of Pathology, Bangladesh Agricultural University, Mymensingh presented his paper on the "Safety Assessment of Foods derived from GM Crops". Dr. Donald MacKenzie, gave a presentation on the "Principles of Risk Analysis and Their Application to Experimental Field Trials of Biotech Crops for the Confined Field Trial of Transgenic Crops". An open discussion followed each presentation. Several questions related to the benefits and possible risks associated with the transgenic crops were raised. Most of the questions about biotech crops concerned their effect on allergenicity, biodiversity, high cost of biotech derived seeds and their availability to poor farmers. The goal of the workshop was to show that genetic engineering technology may be one of the options for combating the food deficiency through the development of improved crop varieties including disease and stress tolerant varieties and crops with improved nutrition. Participants were divided into six groups and introduced to the various issues to be considered during the group exercise.

Group exercises were used to illustrate the process of conducting confined field trials of transgenic crops. The participants were divided into six groups with three groups using Golden Rice and three using Bt Brinjal as examples. The task assigned to the groups was to develop an inspection protocol for their crop during planting, harvesting and post-harvest, including storage. Participants became quite engaged during the group work.

Prior to the conclusion, selected participants gave their views on the workshop, workshop certificates were awarded to the participants and votes of thanks were given by Dr. Donald MacKenzie and Dr. Khalequzzaman A. Chowdhury.

Biotechnology Policy - continued from page 1

in the Chair. This task force is the highest policy direction body. The National Executive Committee, headed by the Principal Secretary to the Prime Minister, will be responsible for the implementation of the policy as directed by the National Task Force. A policy plan in different areas of biotechnology will be developed by the Ministry of Science and Information and Communication Technology to keep pace with the fast advancing field of biotechnology. There is a provision for updating the policy from time to time, depending on the needs of the country as it moves forward. Moreover, five national technical committees have been formed to deal with crop biotechnology, biosafety, biodiversity, fisheries and livestock, and medical biotechnology.

To properly implement the National Policy on Biotechnology several other acts and guidelines need to be harmonized. The most important of these are the Quarantine Act, Plant Variety and Farmer's Right Protection Act (Draft), Biodiversity and Community Knowledge Act (Draft), Seed Policy and Seed Act, and Biosafety Guidelines of Bangladesh. Recently the Department of Environment initiated the preparation of the National Biotechnology Framework addressing regulatory, administrative, decision-making, and public participation systems. The policies and the initiatives taken so far will facilitate the promotion and risk management systems of biotechnology in Bangladesh.

GMO PUBLIC HEARING WORKSHOP

A day-long regional public hearing workshop on GMOs, organized by IUCN, IPSU and DANIDA, was held at IDB Bhaban in Dhaka on February 12, 2006.

The workshop was attended by scientists, policy makers, marketing experts, GO, NGO and private officials including other biotech stakeholders. Twelve papers were presented by speakers of diverse backgrounds from home and abroad. The papers addressed biodiversity; the Cartagena Protocol on Biosafety; and the opportunities, issues, concerns, and policy and legal aspects surrounding GMOs.

In his speech, Mr. Kazi Abul Kashem, Secretary, Ministry of Agriculture, said that by 2050, 90% of the world's population will be in developing countries. He continued by saying that to feed the increased population, biotech initiatives need to be advanced. Bangladesh has the National Agriculture Policy 1999 and National Biotech Policy 2004 whose initiatives range from the National Taskforce Committee on Biotechnology under the Prime Minister to field-level Biotech committees (4 tiers). Participatory debate can clarify the public's understanding of the benefits and probable risks of adoption of GMOs under the guidance of the Cartagena Protocol.

Dr. Veena Chhotray of TERI outlined the process of GMO approval in India mentioning that they had formulated a Biosafety Framework in 1989 and that Bt Cotton has been approved for commercial cultivation since 2002. In 2002, the acreage was 72,000 ha and had increased to 1.3 million ha in 2005 with 20 GM cotton varieties released.

Prof. Bonpart Napompeth of Kesersart University, Thailand reported that they are a signatory of the Cartagena Protocol and that a number of GM crops such as Bt and RR corn and cotton, PRSV resistant papaya, pineapple, rice, tomato, cassava, chili pepper and orchids have been approved following risk assessment for field trials, and many of which are locally developed. Other GMOs approved for research in containment and other contained uses include a few microorganisms

for the food industry and transgenic inflorescent zebra fish for a science fair exhibition.

Danish speakers explained that the EU has more than 2,000 crops and Denmark had approved 39 crops (sugar beet, OSR, potato, maize, fodder beet, etc.) for experimental field release up to 2005. They are going to release *Arabidopsis* for mine detection (bio-sensor) and potato/carrot for vitamin B12 experimentally. They also advised that in the 10th year of commercial release of GMOs, 8.5 million farmers (90% resource poor) from 21 countries covering all the continents are producing GMOs on 90 million hectares.

Dr. Razzaque of BARC and Prof. Dr. Zeba Islam Seraj of Dhaka University mentioned that the revised Biosafety Guidelines are with the National Taskforce Committee and have not yet been approved. Dr. Razzaque also disclosed that all the institutes working on biotech have their Institutional Biosafety Committees (IBC). With the increasing population and decreasing crop land, we need to exploit the full use of modern biotechnology to sustain crop production and the environment. Bt eggplant and other Bt crops may help to save the environment by reducing the use of toxic pesticide sprays. There are tremendous benefits of the technology and it is necessary to follow the biosafety measures as directed by the Cartagena Protocol.

Dr. Shahidur Rahman Bhuiyan of USAID explained their activities regarding capacity building, human resource development at home and abroad, product development, public awareness building, sensitizing policy planners and science administrators. It was explained that the USAID funded projects ABSPII, SABP, ISAAA, PBS, CIMMYT (papaya) are trying to convey the scientific message to the stakeholders in a manner that could be easily understood.

There was a lot of discussion on the benefits and potential risks of GM crops and consensus that biotech derived crops have enormous potential. However, participants felt that before releasing a GM crop in the country it should be properly assessed for its effect on human and animal health. They also stressed the importance of holding more such meetings/workshops including wider participation from various stakeholders. The meeting concluded with a speech by Mr. Kazi Abul Kashem, Secretary, Ministry of Agriculture which was followed by a vote of thanks by Prof. Ainun Nishat, Country Representative, IUCN.

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