



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.

UTILIZATION AND POTENTIAL OF BIOTECHNOLOGY FOR LIVESTOCK DEVELOPMENT IN BANGLADESH

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The Bangladesh livestock population includes some 23.4 million head of cattle, 0.82 million buffalo, 33.5 million goats, 1.11 million sheep, 138.2 million chickens and 13 million ducks. The animal owners are resource-poor, small scale operators and own little or no land and few animals. Livestock is becoming increasingly important to economic growth in Bangladesh and the current main focus of livestock development in this country is to assist farmers to produce and sustain livestock of high economic potential. Biotechnology can help to promote the conservation and development of native livestock genetic resources which will lead to better food security and the maintenance of Bangladesh's biodiversity.

The application of technologies in the crop sector of Bangladesh has made great progress, but due to long generation intervals, low reproduction rates, internal fertilization, high maintenance costs and lack of well planned science-bound programmes there are no satisfactory results on the application of livestock technologies except in poultry. The major technologies that are being used effectively in livestock production include: breeding programmes in different species, augmenting reproduction, embryo transfer (ET) and related technologies, diagnosing disease, vaccine production and controlling and improving nutrient availability. Different biotechnological work on livestock is going on in different institutions and universities in the country but the principal application of livestock/animal biotechnology

at present is in the artificial insemination (AI) of cattle and production of cheap and dependable vaccines.

No GM livestock produce could be found in the fields or markets of Bangladesh and the only area where this may possibly have a future is in the poultry sector with biotechnology-derived meat or eggs. The economic impact of transgenics in crops is far greater than in the livestock sector. However, research and development of biotechnological livestock in Bangladesh has, meanwhile, made some progress.

Notable organizations engaged in biotechnological activities in Bangladesh:

Organization	Biotechnological activities
Bangladesh Directorate of Livestock Services (DLS)	<ul style="list-style-type: none"> • cattle seed production and artificial insemination (AI) • poultry seed production • vaccine production • multiple ovulation and embryo transfer (MOET) protocol development
Bangladesh Agricultural University (BAU)	<ul style="list-style-type: none"> • genetic characterization of indigenous livestock species • model for breed development programme • conservation and development of indigenous livestock species • AI in cattle and goat • <i>in vitro</i> fertilisation • embryo culture • MOET protocol development • dairy product processing • feeding technology • vaccine development
Bangladesh Livestock Research Institute (BLRI)	<ul style="list-style-type: none"> • fodder bank • <i>in vitro</i> and <i>in vivo</i> livestock feeding • vaccine production protocol development

The main objectives of using reproductive biotechnologies in livestock are to increase production, reproductive efficiency and rates of genetic improvement. AI and preservation of semen are the main technologies that are being used extensively in Bangladesh. Assessing the fertilization capacity of sperm, synchronization and fixed-time insemination, super-ovulation, embryo transfer (ET) and *in vitro* embryo production (IVEP) are additional techniques that are being used to improve reproductive efficiency and pregnancy rates in Bangladesh livestock. Some examples are:

- estrus detection (BAU): ELISA kit development, both qualitative and quantitative measurement of progesterone hormone from milk in cattle;
- artificial insemination: AI has already had a major impact on genetic improvement programmes. In 1965, AI was first introduced in Bangladesh and now it is being widely used throughout the country. BRAC (cattle and goat) and Milk Vita (cattle; internal use only) are engaged in live-

CALENDAR OF EVENTS (INDIA)

Event	Organization	Date	Place
Workshops on Safety Assessment of Genetically Modified(GM) Foods	Indian Council of Medical Research (ICMR)	September 18-22, 2006 September 25-29, 2006	Hyderabad Lucknow
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 ftp://ftp.fao.org/ag/agn/infoods/asia_food_comp06.pdf	November 5-25, 2006	National Institute of Nutrition, Hyderabad, India

POLICY ROUND TABLE CONFERENCE HELD AT NEW DELHI

The International Food Policy Research Institute (IFPRI), South Asia Biosafety Program (SABP) and the Research and Information System for Developing Countries (RIS) jointly organized a two-day round table conference in New Delhi on August 24 and 25, 2006. The conference focused on economic considerations of biosafety and biotechnology regulations in India. Attended by about 70 participants from various international agencies, NGOs and the public and private sectors the conference received an encouraging response and generated productive discussions.

Prof. G.K. Chadha, a member of the Prime Minister of India's Economic Advisory Council inaugurated the conference and delivered

the keynote address. He summarized the history of Indian agriculture from the green revolution days, and made distinctions between the needs during that time and the current challenges faced by Indian agriculture. He pointed out that Indian farmers are increasingly losing interest in agriculture and productivity growth has stalled in the last few years saying the situation called for new technologies, such as biotechnology, that would serve as a tool for increasing yields and minimizing the need for natural resources such as water and land. Prof. Chadha, while describing biotechnology as a 'promising technology', reminded the participants of the challenges in making the regulatory system transparent and responsive and stressed the need for extending the technology to the farmers. The inaugural session was also addressed by Dr. Ashok Gulati, IFPRI's Director in Asia, Dr. Nagesh Kumar, Director General of RIS, and Dr. Mark Rosegrant, Director of the, Environment and Production Technology Division at IFPRI.

The inaugural session was followed by seven sessions, addressed by eminent panels representing the different stakeholders of agribiotechnology in India and from abroad. A variety of issues related to economic considerations, policy

and regulations were discussed, focusing on production, consumption, international trade as well as environmental aspects of regulation as well as some of the issues currently being debated by policymakers in India, such as the question of mandatory labeling of GM foods and its trade implications, or the spread of illegal (un-regulated) seeds. While the discussions were focused on India, a number of international case studies, and experiences were also shared by invited panelists from China and the Philippines.

The conference was attended by representatives from all the Government of India departments and ministries that are responsible for the policy and regulation of agribiotechnology including the Ministry of Health, the Ministry of Agriculture, the Ministry of Science and Technology, the Ministry of Environment and Forest and the Ministry of Commerce and

Industry. Their presence made the conference a platform for an exchange of ideas between the various ministries and gave them an opportunity to interact with non-government stakeholders from private organizations, consumer forums, farmers' organizations, and international development agencies.

In the valedictory session, while summarizing the various discussions and interactions held at the conference Dr. Rosegrant of IFPRI made the following points. First, there is a need for a practical, cost effective, and transparent regulatory system that is implementable and enforceable.

Second, public-private partnerships should be encouraged in technology development and dissemination. Third, the enforceability issues need to be seriously considered in the regulatory design, particularly in the case of mandatory labeling and the need to recognize the current capacity and international trade situation of the country and accordingly design the policies. The feasibility of voluntary labeling, as an option, was discussed.

The conference built consensus from all stakeholders regarding the importance of biotechnology for a country like India while recognizing the need for a transparent, conducive, and lucid regulatory environment that is responsive to the current situation in India and its global implications.

Presentations from the conference will be available soon at http://agbios.com/sabp_main.php?action=ActivitiesPage



Participants of policy round table conference held in New Delhi August 24 and 25, 2006.

Livestock - continued from page 1

stock seed production; Aftab Bahumukhi Farms Ltd., Kazi Farms, Paragon Poultry, Aga Poultry, Phoenix Hatchery are among the private organizations engaged in poultry seed production;

- c) embryo transfer protocol development: DLS and BAU;
- d) *in vitro* production of embryos: BAU.

At present, several obstacles limit the application of biotechnology in the country. Decline in fallow and grazing land and human population pressure are the main reasons for giving up livestock farming, which has resulted in a decline in the livestock population in Bangladesh. Other important issues include:

- a) absence of an accurate and complete database on livestock and animal owners so that programmes can be implemented;
- b) lack of trained scientists, technicians and fieldworkers to develop and apply the technologies, both in the government and in the private sector;
- c) absence of an interface between industry, universities and institutions, which is necessary to translate technologies into products;
- d) high cost of technological inputs such as materials, biologicals and equipment;
- e) failure to address issues of biosafety and to conduct risk analyses of new biologicals, gene products, transgenics and modified food items;
- f) negligible investment in animal biotechnology. In Bangladesh, no acts or policies pertaining to IPR, biosafety and food security are in existence. Information technology (IT) facilities are missing at all livestock institutes, universities and organizations.

There is a growing demand for biotechnological interventions to enhance livestock productivity. However, very poorly organized infrastructure, limited technical know-how and uncertain marketing possibilities are major constraints to sustainability in Bangladesh. The small-scale subsistence livestock farmers do not know the meaning of biotechnology but they are quite familiar with the artificial insemination (AI) of cattle (injection service), broiler and layer chick seeds. Urban and semi-urban based innovative farmers are familiar with the terms of high yielding cattle, commercial strains of chicks, etc. To all livestock farmers, the major constraints to livestock production are lack of quality seed (animal, bird, semen, and baby chicks), lack of feeds and fodder and their costs, disease outbreaks and lack of quality vaccines and medicines.

Rural farmers have sustained preference for indigenous livestock compared to high yielding biotechnology breeds mainly due to high yielding varieties' low adaptability and need for more care and cost. On the other hand, they desire improved indigenous animals or birds. Rigorous field screening of extraordinary indigenous livestock (in any species/breed/type) and their use in the industry through biotechnological tools (males through AI and females through MOET) can make quick progress in this respect. Farmers are interested in raising biotechnology breeds or strains provided they are given access to seed material, training and demonstrations. Some institutions and organizations have enough sufficiently trained scientists, but lack modern laboratories, equipment and running funds (e.g. universities and in particular BAU), while the opposite is true for some organizations (e.g. DLS and BLRI). Lack of trained technicians in biotechnology is observed everywhere, which is a seriously limiting factor for adoption of animal biotechnology programmes. Importantly, attention has to be paid to implementing biotechnological programmes that are geared to food production.

Action is needed in Bangladesh for rapid improvement in animal productivity to improve food security and livelihoods leading to poverty reduction. Launching collaborative biotechnological

programmes through active participation among various organizations in the areas of livestock production (breeding, nutrition and product processing) and health (disease surveillance, disease diagnosis and vaccine production) are essential. The following specific technical action programmes should get due priority to achieve food security:

- 1) Molecular characterization of valuable indigenous livestock genetic resources of Bangladesh;
- 2) Production of high yielding and quality livestock seed (semen, embryo, baby chick) using appropriate breeding systems;
- 3) Development of safe, inexpensive and effective vaccines for livestock and poultry diseases;
- 4) Implementation of Marker Assisted Selection (MAS) in the livestock breeding programmes of Bangladesh;
- 5) Development of ELISA based disease diagnosis.

POTENTIAL OF TRANSGENIC CROPS IN BANGLADESH: FINDINGS FROM A CONSULTATION OF BANGLADESHI SCIENTIFIC EXPERTS

The July 2006 Online First issue of Plant Cell, Tissue and Organ Culture featured an article by Guillaume P. Gruere, International Food Policy Research Institute (IFPRI); Imdadul Hoque, AGBIOS and University of Dhaka, Dhaka, Bangladesh; Rowena Valmonte-Santos, IFPRI; and Mark W. Rosegrant, IFPRI.

Abstract

This note summarizes the results of a consultation of scientific and regulatory experts in July 2005 on the potential of transgenic crops in Bangladesh. We find that Bangladeshi experts are optimistic on the potential of agricultural biotechnology to respond to biotic and abiotic stresses in their country in the future. Public research is constrained by human capacities, infrastructure and capital investment, and transgenic crop development will require the active involvement of outside partners, such as international organizations or collaboration with private companies. We also find that social acceptance of genetic engineering is not considered a major issue, but could become one, and prompted experts to call for a wider awareness campaign on the technology.

This research project was conducted as part of the South Asia Biosafety Program. The authors would like to thank the Bangladesh Agricultural Research Council and all the participants to the meetings in Dhaka and Mymensingh for their help.

The article is available at <http://www.springerlink.com> under the identification DOI: 10.1007/s11240-006-9127-x

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ISAAA & ICRISAT HOLD WORKSHOP FOR TELUGU NEWS MEDIA IN INDIA

The International Service for the Acquisition of Agri-Biotech Applications (ISAAA) and International Crops Research Institute for the Semi-Arid Tropic (ICRISAT) organized a media workshop for journalists from Andhra Pradesh reporting in the Telugu and English news media on agri-biotechnology. The workshop was conducted in both languages.



Participants at ISAAA/ICRISAT Telugu news media workshop. (ISAAA photo)

The workshop was held on August 7 and 8, 2006 at ICRISAT-Hyderabad, and was attended by 25 journalists from both print and electronic media and by scientists from ICRISAT. Presentations were made by the representatives of the Indian Council of Agricultural Research (ICAR), Department of Biotechnology (DBT), farmers, the Andhra Pradesh-Netherlands Program on Biotechnology and the Indian seed industry. The journalists were given the opportunity to experience transgenic technology first-hand with visits to biotech labs, a greenhouse and contained field trials at ICRISAT.



Journalists at Telugu news media workshop tour ICRISAT greenhouse. (ISAAA photo)

Dr. William Dar, Director General of ICRISAT, in inaugurating the workshop, said that with the overarching goals of ensuring food security, reducing poverty and protecting the environment, all science and science tools should be tapped, because by 2020 there would be around 6.5 billion people living in the world, which would result in the need to increase agricultural productivity by 70 per cent. Dr. Dar outlined the strides made by ICRISAT in agri-biotechnology, and also reiterated the institute's policy of using transgenic technology when no other options to deal with a particular problem were available through conventional breeding.

Mr. Bhagirath Choudhary, National Coordinator for ISAAA in India, said, among other things, that a total of 58 cotton hybrids with four different events using the *Bacillus thuringiensis* gene

have been approved for commercial cultivation in India.

Rex Navarro, Director of the ICRISAT Communication Office, informed the participants that this was the sixth in a series of workshops. He went on to explain that science cannot have an impact without effective communication, and only journalists have the means to report to the world about scientific research, which could result in improved agricultural productivity.

Presentations were made by scientists and a representative of the seed industry. Topics included agri-biotechnological research; the Indian regulatory system and guidelines for transgenic crops; intellectual property rights; pest resistance; and pest and resistance management in crop biotechnology.

Article submitted by Bhagirath Choudhary, ISAAA South Asia Office. For further information he can be contacted at b.choudhary@cgiar.org

DR. NORMAN BORLAUG GIVEN INDIA'S HIGHEST HONOUR

Rediff.com – August 24, 2006

At a function organized by the International Maize and Wheat Improvement Center, at the International Plant Breeding Symposium in Mexico City, Dr. Norman Borlaug, widely known as the father of India's green revolution, was presented the Padma Vibhushan, the highest award conferred by India on foreigners.

When told of the honour, Dr. Borlaug indicated he would be willing to accept it 'in the name of hundreds of Indian scientists, policy-makers and millions of farmers, without whom there would have been no Green Revolution'.

In presenting the award the, Indian Ambassador, R.K. Bhatia, said, "It was on the research stations and farmers' fields in Mexico that Dr. Borlaug developed successive generations of wheat varieties with broad and stable disease resistance, broad adaptation to growing conditions across many degrees of latitude, and with exceedingly high yield potential. These wheat and improved crop management practices transformed agricultural production" in several counties, including India, "sparking what is known as Green Revolution."

Dr. Borlaug, 92, is currently a Professor of International Agriculture at Texas A&M University. He won the Nobel Peace Prize in 1970.

See the full article at: <http://ia.rediff.com/news/2006/avg/24borlaug.htm?q=np&file=.htm>

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