

# Report: Fifth Asian Biotechnology and Development Conference

15-17 December 2010, Kandy, Sri Lanka

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The Fifth Asian Biotechnology and Development Conference (ABDC) on 'Bringing Benefits of Biotechnology to Small Economies' was held at Kandy, Sri Lanka on 15-17 December 2010. It was organized by the Council for Agricultural Research Policy (CARP), Sri Lanka; and the Research and Information System for Developing Countries, India in collaboration with the Michigan State University (MSU), United Nations Educational, Scientific and Cultural Organization (UNESCO), and International Development Research Centre (IDRC) and was supported by many organizations from public and private sectors.

This report provides an overview of the ABDC and summarizes the proceedings and deliberations of the Conference. Presentations made at the conference are available at RIS website <http://ris.org.in/asianbio2010.php>.

Ninty-eight delegates from 24 countries and representatives of seven international organizations/agencies participated in this conference. About 50 per cent of the participants were from outside of Sri Lanka. The Fourth Conference was held in Katmandu, Nepal in 2009.

## **December 15, 2010**

The Conference was formally inaugurated with singing of National Anthem of Sri Lanka and lighting of the traditional lamp. In his inaugural address, His Excellency Mahinda Yapa Abayawarndane, the Hon' Minister of Agriculture, Sri Lanka emphasized that though Sri Lanka has made progress in applying biotechnology in agriculture, there is further need for consolidating the gains from these technologies in agricultural and other sectors. Agriculture constitutes 13 per cent of GDP and provides employment to 33 per cent of workforce. Over the years, Government has given priority to agriculture and the strategies in this has borne fruit. As a result, Sri Lanka could manage its food needs during the recent global food crisis. He also discussed the steps being taken by his government for

enhancing agricultural productivity and increasing yields of commercially significant crops and food crops and mentioned that ten policy directives have been issued to realize multiple goals in the agricultural sector.

The theme 'Bringing Benefits of Biotechnology to Small Economies' was chosen to highlight the point that small economies can also benefit from biotechnology even if they lack the capacity to undertake research on and apply all available biotechnologies. Further, as different countries are in different stages of applying biotechnology there is a need for countries to learn from successful experiences in other countries that have advanced significantly in applying biotechnology. Biotechnology sector in Asia is growing rapidly and most of the governments have been supporting setting up regulatory frameworks and enhancing their capacity to apply and regulate the technology. Given the diverse needs and priorities of different countries, it is not logical to think in terms of convergence in applying regulation. In this context, the Conference provided a forum to discuss and debate, explore and exchange views and facilitate better understanding of the issues and challenges faced by various countries, particularly those in Asia-Africa, in applying biotechnology for development.

Dr. Sachin Chaturvedi, Senior Fellow, RIS made the welcome remarks, introduced the theme of the Conference and highlighted the relevance of ABDC and its evolution since 2002. Dr. S.R. Rao, Coordinator, Asian Biotechnology, Innovation and Development Initiative (ABIDI), provided a historical overview of the origins and growth of ABIDI and spoke about the future paths it could take. H.E. Mr. K. E. Karunathilake, Secretary, Ministry of Agriculture, Sri Lanka spoke about the issues faced by agricultural sector in Sri Lanka and explained the initiatives taken by the government in this sector. He pointed out that biotechnology has been identified as a national priority area in agriculture. Hon'ble Tikiri Kobbekaduwa, Governor of Central Province was also present during the inauguration.

Dr. J.D. Samarasinghe, Chairman, Sri Lanka Council for Agricultural Research Policy extended the vote of thanks. This was followed by inauguration of the Market Place, that is exhibition area by the Hon'ble Minsiter. There were several stalls displaying products and information about services offered by different private companies. Many prominent companies from the South Asia region were present. Michigan State University (MSU) also had a stall in which their publications and information resources were made available. The inaugural session had participation of policy think tanks, eminent scholars, students and policy

makers from more than 24 countries. On 15 December a Pre-Conference Workshop 'Responsible Conduct of Research Workshop' was organized by Dr. Shobha Ramanand of Michigan State University at the PG Institute of Agriculture at Peradeniya University, Kandy,

### **December 16, 2010**

The first technical session 'Special Session on Biotechnology and Development in Sri Lanka' was chaired by Dr. William G. Padolina, Deputy Director General, International Rice Research Institute (IRRI), the Philippines. The session was moderated by Dr. Cholani Weebadde, Michigan State University. Dr. William G. Padolina was present at the first ABDC at Manila in 2002 and since then he had been a supporter of ABDC. Hence, he opened his speech with a remark that he had come here to see the growth of the baby and expressed happiness about its growth. Prof. Athula Perera, Post Graduate Institute of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka made a presentation on the status of biotechnology and biosafety capacity in Sri Lanka. Dr. Anil Jayasekera made a presentation on Biotechnology policy and strategy in Sri Lanka. Mr. Dilip de Silva of Serendib Horticulture Technologies Pvt. Ltd made a presentation on the applications of plant biotechnology in Sri Lanka with a case study from the private sector. Dr. G.Gunawardene, Veterinary Research Institute in his presentation gave examples on biotechnology applications in dairy and livestock sector, focusing on enhancing productivity through biotechnology. Dr. Radhika Samarasekera, Industrial Technology Institute provided a case study of using Bt technology for mosquito control. Dr. Veranja Karunaratne

From the presentations and the talks of the Minister and Secretary, it was clear that Sri Lanka is giving a big push to biotechnology particularly in agriculture. Prof. Veranja Karunaratne, Sri Lanka Institute of Nanotechnology made a presentation on nanotechnology and nanobiotechnology and illustrated with using nanotechnology for slow release of fertilizers. He described the research being done at the Institute in developing slow release fertilizer compositions using nanoparticles.

Dr. Sachin Chaturvedi, Senior Fellow, RIS, chaired the Panel Discussion on Benefits from Advances in Biotechnology: Strategies and Policy Options for Small Economies. Dr. Padolina's from IRRI, the Philippines made the first presentation in which he explained how small economies can use biotechnology for fulfilling various objectives by illustrating the various ways in which this could be done. He cited *inter alia*, harnessing

microbiology and use of new tools for rapid study of molecules and suggested that global partnerships can play an important role in making the best use of biotechnology. After this, Prof. Vu Nguyen Thanh's of Food Industries Research Institute, Vietnam, presentation dealt with the biotechnology industry and applications of biotechnology in Vietnam. He highlighted the economic growth theory of flying geese to make a point on nature of industries chosen for economic development by countries at different stages of developments. Prof. Thanh pointed out that biotechnology in Vietnam is making rapid strides as there are 12 Universities working on biotechnology, 44 research institutes and research centers besides six key laboratories while the R&D Investment is about USD10 millions per year. Animal biotechnology and vaccine production are among the priority areas. He expressed his desire that Vietnam should be self-sufficient in enzymes. The presentation by Prof. Syed Saleheen Qadri, Faculty of Biological Sciences, University of Dhaka, Bangladesh was on the role and potential of biotechnology in Bangladesh. Dr Diren Makinde, ABNE/New Partnership for Africa's Development (NEPAD) spoke about the NEPAD-supported initiative on biosafety network in Africa.

Session 3 ABIDI: International Review was chaired by Dr.S.R.Rao. The presentation by Dr.Li Zhe CASTED, China gave a historical overview on origins and growth of biotechnology in China and highlighted the current developments in biotechnology, particularly the large scale investments being made in all areas of biotechnology. Dr. Dongsoon Lim Dong-EUI University, South Korea provided data on biotechnology in South Korea and discussed about the phenomenal growth of biotechnology in South Korea and the key role played by the state in supporting the industry and its growth. In his presentation Dr. Bambang Purwantara, Southeast Asian Center for Tropical Biology, discussed the status of agricultural biotechnology in Indonesia and pointed out that major players are the public sector research institutions working on food crops and other crops in plantation sector. He gave an overview of the current status on approval of transgenics in Indonesia and the issues in biosafety assessment. Dr. Benigno Peczon, Council for Agriculture, Natural Resources, and Forestry Research, Philippines gave a presentation on status of agricultural biotechnology in the Philippines and observed that while area under Bt maize had grown considerably since its approval, cultivation in many more is in the pipeline or is in various stages of testing and evaluation. Dr. Hari Bimb from Nepal and Dr.Nand Joshi from MSU gave a presentation on status of biotechnology in Nepal, the current applications and the challenges ahead. Dr.Dorji,

National Biodiversity Centre, Bhutan described the rich biodiversity of Bhutan and the unique development philosophy of the Bhutan government that strives to achieve a balance between protecting natural environment and socio-economic development and gave an account of the various bioprospecting initiatives in Bhutan.

The second half was chaired by Dr. Huanming Yang, Director, Beijing Genomics Institute, China. Prof. Phua Kai Hong, National University of Singapore made a presentation on the biomedical industry and medical tourism in Singapore. He explained the initiatives of the Government of Singapore in support of biomedical industry and described its progress. He explained how the medical tourism industry contributes to the growth of services sector and compared the experience. Dr. S.R. Rao's presentation on biotechnology in India gave an account of the growth of biotechnology and the current status of biotechnology, various initiatives by the government and private sector and amply demonstrated that biotechnology in India has come a long way and is surging ahead. Dr. Syed Qadri of Dhaka University, Bangladesh made a presentation on status of biotechnology in Bangladesh and informed that the Biotechnology Policy was updated in 2010. He gave an overview of the various research projects being undertaken in Bangladesh. The successful sequencing of jute genome was a landmark in biotechnology in Bangladesh. Dr. Anwar Nasim, Adviser Science, COMSTECH made a presentation on biotechnology in Pakistan. He traced the origins of biotechnology in Pakistan in the early 1980s and gave an account of the growth of biotechnology research in Pakistan. He pointed out that there are 29 research institutions in Pakistan and major applications include transgenics and tissue culture.

The presentation by Dr. Hamideh Ofoghi, Iranian Research Organization for Science and Technology (IROST), focused on biotechnology in West Asian region and Prof. Aggrey John Douglas Ambali, New Partnership for Africa's Development (NEPAD), gave an overview of biotechnology in Africa. According to Dr. Ofoghi, there are 46 research institutes in Iran working on various aspects of biotechnology while 42 universities are also involved in biotechnology research, which are by and large funded by the government. Iran approved GM rice in 2005 for human consumption and several GM plants with different traits such as insect-resistant maize, cotton, potato and sugar beets, herbicide-resistant canola, salinity and drought-tolerant wheat; and blight-resistant maize and wheat are being developed in the laboratories. In animal biotechnology, cloning and transgenic animals have been produced. In health biotechnology, Iran is giving importance to stem

cell research. According to Prof. Ambali, human resource development in biotechnology is a key challenge before African countries and this issue is being addressed in the countries. Among the ongoing biotech R&D activities in Africa, developing GM plants with specific traits is important as these would meet the needs of the countries. Besides public sector, private sector players like Monsanto, Bayer are also working in this area. He highlighted the role of ABNE which aims to develop capacity in Biosafety in Africa.

The Fourth Session was organized as two parallel sessions with Agricultural Biotechnology and Health Biotechnology as themes. The session 'Utilization of Agriculture Biotechnology: There is more to Biotechnology than GM Crops' was chaired by Prof. Karim Maredia, Michigan State University in which examples from success applications of biotechnology were discussed.

Dr. Sanjay Saxena from The Energy & Resources Institute (TERI), India made a presentation on the micro propagation Technology Park established by TERI and described the facilities available and the services being rendered by the Park. Dr.Kodi Kandasamy, Vice-President Malaysian Biotechnology Corporation and Head of the Tissue Culture Laboratory at Forest Research Institute of Malaysia made a presentation on the Malaysian experience in biotechnology. He described the Biotechnology Policy Framework in Malaysia and explained the application of biotechnology and genetic engineering in plant biotechnology and in forestry, particularly in tissue culture. Dr. Mahesh Edirisinghe of Institute for Agro-Technology and Rural Sciences, University of Colombo, made a presentation on Sri Lankan experience with tissue culture, particularly in horticulture. He described a project initiated by the institute to train and transfer the technology for banana cultivation using tissue culture technology in rural Sri Lanka and highlighted the fact that this had increased the earnings of the farmers besides earning export revenue for the country.

Dr. Kiran Sharma, ICRISAT, Hyderabad, made a presentation on the Translational Platform for Transgenics being set up at ICRISAT with funding from DBT, Government of India. Dr. Arvind Kapur of Rasi Seeds highlighted the issues in access to germplasm and impacts of intellectual property rights on genes, research tools and other techniques for accessing both materials and technologies. He underscored the negative impacts of monopoly by some companies over key technologies.

The parallel session 'Access to Medicines and South-South Cooperation' was chaired by Prof. Phua Kai Hong, National University of Singapore, Singapore on "Health Biotechnology Access to Medicines and South-South Cooperation". Health Biotechnology is a rapidly emerging technology that has wide ranging applications in public health. In the post-genomics era, it opens up many options for interventions in the level of individual health (personalized medicine, sequencing of individual genome) to mass applications like rapid diagnostic kits, better vaccines, genetic screening/testing and assessing the susceptibility of groups to diseases on account of their genetic inheritance and make-up. Countries like South Korea, China and India have made good progress in this regard. This in turn has resulted in suggestions for South-South Collaboration in this area and there has been some progress in this although this is yet to catch up in a big way. The session on Health Biotechnology focused on Access to Medicines and South-South Cooperation. Both the presentations by Dr. Halla Thorsteinsdottir, University of Toronto, Canada and Dr. Sachin Chaturvedi, explored this in detail drawing upon a large scale study done by them. In the panel discussion that followed the scope, potential and limitations in this were discussed. There was almost a consensus that South-South collaboration had an important role to play and developing countries should explore options in this besides encouraging this.

The above parallel session was followed by a Poster Session. About 40 posters from various institutions in Sri Lanka, highlighting the research being undertaken in different areas of biotechnology in Sri Lanka, were displayed. It was obvious from these that agricultural applications were the major thrust area and applications in veterinary sector were also being undertaken. Given the importance of tea, coconut, rice and potato for both exports and consumption within Sri Lanka it was not surprising to find that many projects were on enhancing productivity, finding biomarkers and applying tissue culture technology in such crops.

### **December 17, 2010**

On Day 2, the first session on 'Biotechnology and Society Interface' was chaired by Prof. Govindan Pariyal, United Nations University - Institute of Advanced Studies, Japan. Dr. Krishna Ella, from Bharat Biotech pointed out the potential of innovative pharmaceutical companies in developing countries to develop appropriate products at affordable costs and called for more support for innovation by them. He laid emphasis on the global

health inequities and the trend in R&D for diseases and argued that market driven approach gives priority to R&D in diseases like cancer, while many diseases that afflict millions in South are not given the needed importance. Taking the case of agriculture, he argued that product differentiation could be used for produces from developing countries and suggested many approaches like Public-Private Partnerships to solve the problems faced by small economies. Prof. Diran Makinde gave an overview of biotechnology sector in Africa and identified biosafety as an issue of concern. He then described the activities of AU-NEPAD Agency African Biosafety Network of Expertise in capacity building in this area. Prof. Karim Maredia gave US perspective on biotechnology and society interface. He took developments in as a case study and pointed out the concerns and expectations of different stakeholders. He argued that society was open to innovation and would accept new products if concerns of stakeholders are addressed.

The second session of the second day 'Accelerating South-South Cooperation' was chaired by Prof. Ambali. Dr. Huanming Yang, Director, Beijing Genomics Institute, China in his presentation explained the importance of Human Genome Mapping and the significance of Post Human Genome Mapping in terms of knowledge and its applications in health. He argued that as costs of sequencing and analysis have been decreasing over the years, developing nations should see this as an opportunity and it is not necessary for all countries to invest heavily in this. The facilities in developing countries should be shared and called for closer cooperation. Ms. Lena Sthapit, Asian Institute of Technology (AIT), Bangkok, Thailand gave an overview of the IDRC project on bioinnovation that had the objective of enhancing biological innovative capabilities, policies and institutions to support just, equitable and sustainable social and economic development in developing countries. The project is in the initial stage to start. Prof. Dongsoo Lim, Dong-EUI University, Busan, Korea made a presentation on South-South cooperation in biotechnology industry and used South Korea as a case study. He analyzed the trends in South-South cooperation in this and examined the strategies that were used and the frameworks that facilitated this. Further, he pointed out that Korea had worked with many developing countries in South-South cooperation in biotechnology and this was not limited to any specific sector in biotechnology. Rather the need of the country and desire for mutual cooperation enabled this. Mr. N. Srinivasan of UN Asia-Pacific Center for Technology Transfer (APCTT), New Delhi spoke about the issues in technology transfer and the problems faced



in actualizing this. He pointed out that countries often lacked capacity to absorb technology.

The third session of the day Emerging Policy Trends in IPR, Access and Benefit Sharing (ABS) was chaired by Prof. Russell Freed. The speakers addressed the issues relating to Nagoya Protocol under ABS of CBD and IP rights in biotechnology. Prof. Govindan Parayil, United Nations University, Shibuya-ku, Japan traced the origin of the Nagoya Protocol and the contentious issues in ABS that were the cause for protracted negotiations and explained the features of the Protocol. He identified the challenges before developing countries in this and pointed out that some of them necessitated immediate attention while the big problems could be considered as opportunities also. Dr. K. K. Tripathi, Department of Biotechnology, New Delhi, India, addressed the issues relating to patenting in biotechnology and transfer of technology with India as a case study. He explained the important issues for developing countries in international forum like WTO and WIPO.

Dr. Sachin Chaturvedi discussed the interface between global trade regime under WTO and biotechnology. He explained the salient features of the global trading regime and organizations like Codex in the context of transborder trade in biotechnology, particularly GM food. Taking the USA-EU dispute in WTO as a case study, he pointed out that there was no uniformity in regulation particularly in threshold levels of GM foods and labelling requirements. Drawing upon these diverse trends and conflicting positions he listed some key policy issues and the ways to address them.

The next session 'Emerging Research Trends: Biotechnology, Sustainability and Climate Change' was chaired by Dr. Dongsoon Lim. Dr. Kiran Sharma in his talk discussed the issues in integrating biotechnology in agricultural R&D agenda and pointed out the immense scope offered by biotechnology in developing strategies in agriculture to deal with impacts of climate change. Dr. K. Ravi Srinivas, RIS, India, in his presentation acknowledged the role of biotechnology in finding solutions to problems faced by agriculture in the wake of climate change and put forth some issues. He pointed out that a top down approach might not be the right solution and there is a need to address the issue of the capacity of developing nations in using biotechnology for this purpose.

The penultimate session had two parallel events: The NSF panel on Ethical and Responsible Conduct of Research was coordinated by Dr.

Shoba Ramanand. She made a presentation on NSF International Research and Educational Opportunities for Building Collaborations between US Institutions and International Institutions. The Editorial Advisory Board meeting of Asian Biotechnology and Development Review (ABDR) coordinated by Dr. K. Ravi Srinivas

The final session was on 'Recommendations, Way Forward and Closing Remarks. Prof. Frank Fear, Michigan State University, discussed about MSU's approach in capacity building and its experiences with different countries. The session was chaired by Prof. J. D. Samarasinghe. The panelists were Dr. Huanming Yang, Prof. Aggrey John Douglas Ambali, Prof. Karim Maredia, and Prof. Govindan Parayil. Dr. S. R. Rao moderated the session. The Panelists gave their views on the conference, way forward and how the conference process could act as a forum to bring together different stakeholders. It was observed that South-South cooperation, issues in capacity building, regulatory issues and bringing together private sector and public sector deserve more attention in the future and the conference as well as ABIDI can play a positive role in this.

Dr. Rao made the session highly inter-active and the views of many participants were sought. Delegates who had participated in the ABD Conference for the first time expressed happiness and were of the view that the conference gave them an opportunity to learn and interact with delegates from other countries. Participants like Dr. Ben who organized earlier conference at Manila and Prof. Hari Bimb who organized the conference at Katmandu noted that each year the conference series has evolved and many new dimensions are added. It was observed by many that the conference had addressed biotechnology with a broader perspective by including health technology. Some participants noted that the presentations on status of biotechnology in different countries were an eye opener. The consensus was that the conference process should continue and during the interregnum there should be more interaction among the delegates. It was suggested that joint studies should be undertaken in this period. Dr. Sachin Chaturvedi proposed the vote of thanks. He thanked Dr. Dr. J. D. Samarasinghe, Dr. Padmini of CARP for excellent arrangements and efforts in organizing the conference. He thanked Dr. Cholani, Dr. Harshini of MSU and Mr. Dileep deSliva, Dr. Anil Jeyasekara for their help in organizing the conference and in logistics. He thanked the UNU-IAS, IRRI, ICRISAT, UNESCO, IDRC, MSU and AIT for their encouraging support to the conference. The participants expressed their thanks to the

organizers, particularly to the team led by Dr. Padmini and Dr. Cholani for the hospitality and travel arrangements to reach Kandy.

The Conference concluded with a positive note and optimistic feeling that the next conference will be a bigger event with more number of delegates and sessions.