1-4 MARCH 2010

Detailed programme for all four days of the FAO international technical conference on Agricultural Biotechnologies in Developing Countries (ABDC-10). Last updated 26 February 2010. Note, all documents prepared for ABDC-10 can be downloaded from http://www.fao.org/biotech/abdc/backdocs/

1 March	2 March	3 March	4 March
OPENING CEREMONY	**PLENARY** Summary - output of day 1 Investing in agricultural research and agricultural biotechnologies (IFAD) Enabling R&D in agricultural biotechnologies	**PLENARY** Summary - output of day 2 Biotechnologies in international agricultural research centres (CGIAR) Ensuring access to the benefits of R&D	**PLENARY** Summary - output of day 3 Moving beyond business-as-usual: Options for developing countries
COFFEE BREAK	**COFFEE BREAK**	**COFFEE BREAK**	**COFFEE BREAK**
PLENARY Targeting biotechnologies to the poor	**PLENARY** Enabling R&D in agricultural biotechnologies (cont.)	**PLENARY** Technology transfer aspects of the Multilateral System of the ITPGRFA South-South collaboration	**PLENARY** Moving beyond business-as-usual: Priorities for Action for the international community
LUNCH BREAK	**LUNCH BREAK**	**LUNCH BREAK**	**LUNCH BREAK**
PARALLEL SESSIONS Sector-specific: Background documents	**PARALLEL SESSIONS** Cross-cutting issues	**PARALLEL SESSIONS** Region-specific	**PLENARY** Adoption of conference report
COFFEE BREAK	**COFFEE BREAK**	**COFFEE BREAK**	**COFFEE BREAK**
PARALLEL ROUNDTABLES Sector-specific: Case studies of successful applications	**PARALLEL SESSIONS** Cross-cutting issues (contd.)	**PARALLEL SESSIONS** Cross-cutting issues	**CLOSING CEREMONY**
KNOWLEDGE SHARE FAIR	**KNOWLEDGE SHARE FAIR**	**KNOWLEDGE SHARE FAIR**	

Detailed programme for Day 1 of the FAO international technical conference on Agricultural Biotechnologies in Developing Countries (ABDC-10).

9:00-10:45	**OPENING CEREMONY** Opening of the conference Election of the Chairperson and Vice-Chairpersons Adoption of the agenda and timetable Appointment of the Rapporteur Introductory remarks by FAO and the Government of Mexico Keynote message: M.S. Swaminathan				
10:45-11:15	**COFFEE BREAK**				
11:15-13:00	**PLENARY** **Targeting biotechnologies to the poor** a) Developing national biotechnology policies b) Governance structures and organization c) Priority setting for R&D in biotechnology				
13:00-14:30	**LUNCH BREAK**				
14:30-16:15	**PARALLEL ROUNDTABLES**				
	Sector-specific: Case studies				
	Crops	**Livestock**	**Forestry**	**Fisheries/aquaculture**	**Agro-industry**
16:15-16:45	**COFFEE BREAK**				
16:45-18:30	**PARALLEL SESSIONS**				
	Sector-specific: Background documents				
	Crops	**Livestock**	**Forestry**	**Fisheries/aquaculture**	**Agro-industry**
18:45-21:00	**KNOWLEDGE SHARE FAIR**				

9.00 -10.45: Opening Ceremony

- Opening of the conference

- Election of the Chairperson and Vice-Chairpersons

- Adoption of the Agenda and Timetable (see FAO document ABDC-10/2)

- Appointment of the Rapporteur
- Introductory remarks by Mr. Modibo Traoré, Assistant-Director General, FAO Agriculture and Consumer Protection Department, Rome, Italy

- Introductory remarks by the Government of Mexico

- Keynote message: From Professor M.S. Swaminathan, M S Swaminathan Research Foundation in Chennai, India, who is serving as the Honorary Chair of the ABDC-10 Steering Committee. *(See document ABDC-10/Swaminathan).*

11.15 – 13.00: Plenary Session: Targeting biotechnologies to the poor

Relevant background information is contained in Section A of the background document "*Policy options for agricultural biotechnologies in developing countries"* (ABDC-10/8.1; its synthesis is provided in document ABDC-10/8.2). Section A is entitled "Targeting agricultural biotechnologies to the poor" and it comprises four main sections:
- Agricultural and national development policy contexts;

- National biotechnology policy/strategy frameworks;
- Governance structures and organization; and
- Setting priorities for research and development (R&D).

14.30 – 16.15: Parallel Roundtables: Sector-specific case studies of successful applications of biotechnologies in developing countries

As part of the 'learning from the past' exercise in ABDC-10, the sector-specific roundtables include the presentation of a small number of case studies of successful application of biotechnologies in developing countries, followed by a facilitated discussion. They provide an opportunity to evaluate the key factors responsible for the successful application of biotechnologies in developing countries and assist developing countries to learn from the past and empower them to implement appropriate biotechnologies more successfully in the future. Some of the case studies presented have been described in the Case Studies section of the FAO documents prepared for ABDC-10. In those situations, reference is made to the relevant document.

The structure of each session is as follows:
a) Introduction by the Facilitator, max 5 mins
b) Case studies of successful use of biotechnologies in the sector – 10 mins each. The presenters should be people that have actually been involved in their successful application
c) Open discussion, with a facilitator – 70-80 mins

1. Crops session:

Facilitator: Karin Nichterlein, FAO Office of Knowledge Exchange, Research and Extension, Rome, Italy

Case Study 1: Rhizobium-based biofertiliser for the common bean (Phaseolus vulgaris) in Mexico.
Presented by Humberto Peralta, Center for Genomic Sciences, National University of Mexico, Cuernavaca, Mexico.

Case Study 2: New Rice for Africa (NERICA)
Presented by Sidi Sanyang, West and Central African Council for Agricultural Research and Development (CORAF/WECARD), Dakar, Senegal
(see Case Study 4.i in document ABDC-10/3.1)

2. Livestock session:

Facilitator: Gigi Manicad, Global Strategies and Alliances, Oxfam International, The Hague, The Netherlands

Case Study 1: Sustainable intensification of sheep rearing on the Deccan plateau in India: The FecB mutation
Presented by Chanda Nimbkar, Nimbkar Agricultural Research Institute, Phaltan, India
(see Case Study 6.1 in document ABDC-10/5.1)

Case Study 2: Community-based artificial insemination, veterinary and milk marketing services in Bangladesh
By Mohammed Shamsuddin, Bangladesh Agricultural University, Mymensingh, Bangladesh ((presented on his behalf by Paul Boettcher, FAO Animal Production and Health Division, Rome, Italy) *(see Case Study 6.4 in document ABDC-10/5.1)*

3. Forestry session:

Facilitator: Sandra Sharry, Facultad de Ciencias Agrarias y Forestales, Universidad Nacional de La Plata, Buenos Aires, Argentina

Case Study 1: Use of micropropagation and molecular markers for clonal forestry with improved teak in Sabah, Malaysia
Presented by Doreen Goh, Yayasan Sabah Group, Kota Kinabalu, Malaysia
(see Case Study 5.2 in document ABDC-10/4.1)

Case Study 2: The use of molecular tools to understand forestry dynamics and to assist in recommendations for managing forests in Central Africa
Presented by Dyana Ndiade-Bobouro, Centre National de la Recherche Scientifique et Technologique (CENAREST), Libreville, Gabon

4. Fisheries and aquaculture session:

Facilitator: Victor Martinez, Faculty of Veterinary Sciences, Universidad de Chile, Santiago, Chile

Case Study 1: PCR-based pathogen detection in shrimp aquaculture in India
By Chadag Vishnumurthy Mohan, Network of Aquaculture Centres in Asia-Pacific, Bangkok, Thailand (presented on his behalf by John Benzie, University College Cork, Ireland)
(see Case Study 4.1 in document ABDC-10/6.1)

Case Study 2: Application of biotechnologies to the conservation of inland fisheries resources in Malaysia.
Presented by Poh Chiang Chew, Freshwater Fisheries Research Centre, Glami Lemi, Malaysia

Case Study 3: Genetically improved farmed tilapia **(**GIFT**)**
By Ravelina Recometa-Velasco, Central Luzon State University, Science City of Muñoz, the Phillipines (presented on her behalf by Matthias Halwart, FAO Fisheries and Aquaculture Management Division, Rome, Italy)

5. Agro-industry session:

Facilitator: Ruth Frampton, independent consultant, Christchurch, New Zealand

Case Study 1: Pozol - a Mexican fermented maize dough
Presented by Carmen Wacher, Food and Biotechnology Department, Universidad Nacional Autonoma de Mexico, Mexico City, Mexico

Case Study 2: Fermented soy sauce production in Thailand
By Ruud Valyasevi, National Center for Genetic Engineering and Biotechnology (BIOTEC), Klong Luang, Thailand (presented by Rosa Rolle, FAO Regional Office for Asia and the Pacific, Bangkok, Thailand) *(see Case Study 4.1 in document ABDC-10/7.1)*

16.45 – 18.30: Parallel Sessions: Sector-specific background documents

FAO has prepared five sector-specific documents, covering the current status and options for biotechnologies in developing countries in crops, livestock, forestry, fisheries and aquaculture and, finally, in food processing and food safety. Each of the sector-specific documents, numbered ABDC-10/3.1 to ABDC-10/7.1, is organized in two parts, the first focusing on learning from the past and the second on preparing for the future. The first part documents the current status of application of biotechnologies in developing countries in the specific sector and analyses the reasons for success or failure, presenting also relevant case studies. The second part of each document deals with key unsolved problems in the sector where biotechnologies could be useful; identifies options for

developing countries to assist them in making informed decisions about adoption of biotechnologies; and presents a set of Priorities for Action for the international community (FAO, UN organizations, NGOs, donors and development agencies). The documents are quite extensive and available in English. For each one, an easy-to-read synthesis has also been prepared, numbered ABDC-10/3.2 to ABDC-10/7.2. The synthesis documents are provided in Arabic, Chinese, English, French and Spanish.

These parallel sessions are dedicated to the presentation and discussion of these documents. The structure of each session is as follows:
a) Presentation of the document, 15 mins
b) 'Reflections on the document' by discussants, 10 mins each (from people who will have read the paper and present their impressions/insights on the document from their own specific angle, to enrich the later discussions)
c) Open discussion, with a facilitator – 70 mins

1. Crops session:

Presenter: Andrea Sonnino, Secretary, FAO Working Group on Biotechnology, Rome, Italy

Facilitator: Karin Nichterlein, FAO Office of Knowledge Exchange, Research and Extension, Rome, Italy

Discussants:
1. Dominic Glover, Technology and Agrarian Development Group, Wageningen University, The Netherlands
2. Pat Mooney, Action Group on Erosion, Technology and Concentration (ETC Group), Ottawa, Canada
3. Eija Pehu, Agriculture and Rural Development Department, World Bank, Washington DC, United States

2. Livestock session:

Presenter: Paul Boettcher, FAO Animal Production and Health Division, Rome, Italy

Facilitator: Gigi Manicad, Global Strategies and Alliances, Oxfam International, The Hague, The Netherlands

Discussants:
1. Arthur Mariante, Embrapa Recursos Genéticos e Biotecnologia, Brasilia, Brazil
2. Adama Traore, Comité National de la Recherche Agricole, Bamako, Mali

3. Forestry session:

Presenter: Oudara Souvannavong, FAO Forest Conservation Service, Rome, Italy

Facilitator: Sandra Sharry, Facultad de Ciencias Agrarias y Forestales, Universidad Nacional de La Plata, Buenos Aires, Argentina

Discussants:
1. Jeff McNeely, International Union for Conservation of Nature (IUCN), Gland, Switzerland
2. Milton Kanashiro, Embrapa Amazônia Oriental, Belém, Brazil

4. Fisheries and aquaculture session:

Presenter: Matthias Halwart, FAO Fisheries and Aquaculture Management Division, Rome, Italy

Facilitator: Victor Martinez, Faculty of Veterinary Sciences, Universidad de Chile, Santiago, Chile

Discussants:
1. Mohammad Pourkazemi, International Sturgeon Research Institute, Rasht, Iran
2. María Cristina Chávez Sánchez, Unidad Mazatlán en Acuicultura y Manejo Ambiental, Mazatlán, México

5. Agro-industry session:

Presenter: Rosa Rolle, FAO Regional Office for Asia and the Pacific, Bangkok, Thailand

Facilitator: Masami Takeuchi, FAO Nutrition and Consumer Protection Division, Rome, Italy

Discussants:
1. Morven McLean, International Life Sciences Institute (ILSI) Research Foundation, Washington, United States
2. Marilia Nuti, Embrapa Agroindustria de Alimentos, Rio de Janeiro, Brazil.

18.45 – 21.00: Knowledge Share Fair

The Knowledge Share Fair will take place in the foyer of the Conference rooms in the Hilton Guadalajara Hotel on the evenings of 1-3 March. Its purpose is to promote good knowledge sharing practices in the field of agricultural biotechnologies (for crops, forestry, livestock, fisheries and aquaculture, agro-industry) for rural development and food security. This event will offer ABDC-10 participants a place to meet informally, discuss and share ideas, experiences, and information. There are 20 information booths available, 20 boards for posters and 20 tables for information materials (leaflets, brochures, publications etc). There will also be limited opportunity for 'Open Space', a method for suggesting an idea/theme and then convening small groups around a specific question, task, or area of importance. The groups thus formed would create their own agenda and examine the issues on hand. Proposals for Open Space initiatives can be submitted directly during the conference in Guadalajara.

Detailed programme for Day 2 of the FAO international technical conference on Agricultural Biotechnologies in Developing Countries (ABDC-10).

9:00-10:45	**PLENARY**				
9:00-9:45	**Summary- output of day 1**				
9:45-10:15	**Investing in agricultural research and agricultural biotechnologies (IFAD)**				
10:15-10:45	**Enabling R&D in agricultural**				
10:45-11:15	**COFFEE BREAK**				
11:15-13:00	**PLENARY** **Enabling R&D in agricultural biotechnologies (continued)** a) Capacity development b) Funding c) Regulation				
13:00-14:30	**LUNCH BREAK**				
14:30-16:15	**PARALLEL SESSIONS**				
	Cross-cutting issues				
	Development of genomic resources: Current status and future prospects (CGIAR)	**Enhancing human capacities: Training and education (ICGEB)**	**Ensuring equitable access to technology, including gender issues (Oxfam International)**	**Empowering public participation in informed decision-making (IUCN-CEC)**	**Prioritising the role of the farmer (FAO/IFAP)**
16:15-16:45	**COFFEE BREAK**				
16:45-18:30	**PARALLEL SESSIONS**				
	Cross-cutting issues (contd.)				
	Genomic applications: Molecular breeding in developing countries (CGIAR)	**Enhancing human capacities: Training and education (ICGEB)**	**Ensuring equitable access to technology, including gender issues (Oxfam International)**	**Empowering public participation in informed decision-making (IUCN-CEC)**	**Public-private partnerships (FAO/IFAP)**
18:45-21:00	**KNOWLEDGE SHARE FAIR**				

9.00 -10.45: Plenary Session

1. Presentation of short reports summarising results of the 10 sector-specific parallel sessions and roundtables held on afternoon of 1 March

2. Investing in agricultural research and agricultural biotechnologies

By: Rodney Cooke, Director, Technical Advisory Division, International Fund for Agricultural Development, Rome, Italy.
See document ABDC-10/IFAD.

3. Enabling R&D in agricultural biotechnologies

Relevant background information is contained in Section B of the background document "*Policy options for agricultural biotechnologies in developing countries"* (ABDC-10/8.1; its synthesis is provided in document ABDC-10/8.2). Section B is entitled "Enabling policies for agricultural biotechnologies" and it comprises three main sections:
- Building scientific, technical and innovation capacities
- Funding: Instruments and options
- Regulation

11.15 -13.00: Plenary Session: Enabling R&D in agricultural biotechnologies (continued)

Enabling R&D in agricultural biotechnologies (continued)

14.30 – 16.15: Parallel Sessions: Cross-sectoral issues

For these parallel sessions, FAO invited relevant intergovernmental and non-governmental organisations to organise parallel sessions on a specified issue of cross-sectoral importance. For each one, the programme for the session was developed by the organizers, with guidance from FAO. The

structure that FAO suggested for each session to the organizers was one with 2-3 speakers/panellists, each of whom would speak for 15 minutes (providing a brief background on the topic and setting the scene) followed by an open discussion moderated by a facilitator. The organizers were also invited to contribute an Issue paper, focussing on the key topics to be discussed during the session, and those provided can be downloaded from http://www.fao.org/biotech/abdc/backdocs/en/. They were also invited to provide a short abstract describing the session content. These abstracts are provided at the end of this document. Both the Issue papers and the abstracts are the responsibility of the session organizers.

a) Development of genomic resources: Current status and future prospects

Organized by the Consultative Group on International Agricultural Research (CGIAR)

Speakers:
1. Rajeev K Varshney, Centre of Excellence in Genomics, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India
2. Roberto Tuberosa, Department of Agroenvironmental Sciences and Technology, University of Bologna, Bologna, Italy
3. Jasper G Rees, Department of Biotechnology, University of Western Cape, Bellville, South Africa
4. Jeremy Taylor, Animal Sciences Center, University of Missouri, United States

Facilitator: Rajeev K Varshney

b) Enhancing human capacities: Training and education

Organized by the International Centre for Genetic Engineering and Biotechnology (ICGEB)

Speakers:
1. Godelieve Gheysen, Department of Molecular Biotechnology, Ghent University, Ghent, Belgium
2. Sudhir Sopory, Plant Molecular Biology, ICGEB, New Delhi, India
3. Idah Sithole-Niang, Department of Biochemistry, University of Zimbabwe, Harare, Zimbabwe
4. Jorge Allende, Research and Development, Universidad de Chile, Santiago, Chile

Facilitator: Roger Beachy, National Institute of Food and Agriculture, United States Department of Agriculture, Washington, United States.

c) Ensuring equitable access to technology, including gender issues

Organized by Oxfam International

Speakers:
1. Luz Amparo Fonseca, Confederación Colombiana del Algodón, Bogota, Colombia
2. Patricia Zambrano, International Food Policy Research Institute, Washington, United States
3. Wilhelmina Pelegrina, South East Asian Regional Institute for Community Empowerment (SEARICE), Quezon City, Philippines
4. Andew Mushita, Community Technology Development Trust (CTDT), Harare, Zimbabwe

Facilitator: Gigi Manicad, Global Strategies and Alliances, Oxfam Novib, The Hague, The Netherlands

d) Empowering public participation in informed decision-making

Organized by the International Union for Conservation of Nature Commission on Education and Communication (IUCN-CEC)

Speakers:
1. John Francis, National Geographic Society, Washington, United States
2. Sarah Stokes Alexander, Sustainability and Leadership Programs, The Keystone Center, Keystone, United States
3. Joseph M. Russo, ZedX Inc., Bellefonte, United States
4. Marcos Algara Siller, Sistema Nacional de Vigilancia Epidemiológica Fitosanitaria (SINAVEF), Universidad Autonoma De San Luis Potosi, San Luis Potosi, Mexico.

Facilitator: Keith Wheeler, IUCN Commission on Education and Communication, Pennsylvania, United States

e) Prioritising the role of the farmer

Organized by FAO, with support from the International Federation of Agricultural Producers (IFAP)

Speakers:
1. Herman Kumera, General Secretary of the World Forum of Fisher Peoples (WFFP), Negombo, Sri Lanka
2. Miguel Altieri, Department of Environmental Science, Policy, and Management, University of California Berkeley, United States

Facilitator: Karin Nichterlein, FAO Office of Knowledge Exchange, Research and Extension, Rome, Italy

16.45 – 18.30: Parallel Sessions: Cross-sectoral issues

a) Genomic Application: Molecular breeding in developing countries

Organized by the Consultative Group on International Agricultural Research (CGIAR)

Speakers:
1. Roberto Tuberosa, Department of Agroenvironmental Sciences and Technology, University of Bologna, Bologna, Italy
2. Carmen de Vicente, Generation Challenge Program, The International Maize and Wheat Improvement Center (CIMMYT), Mexico

Facilitator: Jean-Marcel Ribaut, Generation Challenge Program, CIMMYT, Mexico

b) Enhancing human capacities: Training and education

Organized by the International Centre for Genetic Engineering and Biotechnology (ICGEB)

Speakers and facilitator given above

c) Ensuring equitable access to technology, including gender issues

Organized by Oxfam International

Speakers and facilitator given above

d) Empowering public participation in informed decision-making

Organized by the International Union for Conservation of Nature Commission on Education and Communication (IUCN-CEC)

Speakers and facilitator given above

e) Public-private partnerships

Organized by FAO, with support from the International Federation of Agricultural Producers (IFAP)

Speakers:
1. Francisco Aragão, Embrapa Recursos Genéticos e Biotecnologia, Brasília, Brazil.
2. Jacob D.H. Mignouna, Technical Operations, African Agricultural Technology Foundation (AATF), Nairobi, Kenya.
3. Denis Murphy, Division of Biological Sciences, University of Glamorgan, United Kingdom

Facilitator: Michael Baum, Biodiversity and Integrated Gene Management Program, International Center for Agricultural Research in the Dry Areas, Aleppo, Syria.

18.45 – 21.00: Knowledge Share Fair

The Knowledge Share Fair will take place in the foyer of the Conference rooms in the Hilton Guadalajara Hotel on the evenings of 1-3 March. Its purpose is to promote good knowledge sharing practices in the field of agricultural biotechnologies (for crops, forestry, livestock, fisheries and aquaculture, agro-industry) for rural development and food security. This event will offer ABDC-10 participants a place to meet informally, discuss and share ideas, experiences, and information. There are 20 information booths available, 20 boards for posters and 20 tables for information materials (leaflets, brochures, publications etc). There will also be limited opportunity for 'Open Space', a method for suggesting an idea/theme and then convening small groups around a specific question, task, or area of importance. The groups thus formed would create their own agenda and examine the issues on hand. Proposals for Open Space initiatives can be submitted directly during the conference in Guadalajara.

ABSTRACTS

Abstracts provided by the organizers for the parallel sessions they are organizing on 2 March

Development of genomic resources: Current status and future prospects (Organized by the CGIAR)

Recent years have witnessed the importance and utility of genomic resources for genetic analysis and breeding applications. The first sets of genomic resources in the form of molecular markers were developed sometimes in 1980s. Since then a variety of molecular markers such as RFLPs, RAPDs, AFLPs, SSRs, DArTs, SNPs have been developed for a range of agricultural species including crops, livestocks, forest trees, fisheries, etc. While these resources can be used for molecular characterization of genetic resources, they have important roles in genetics and breeding applications. For instance, genetic maps based on molecular markers can be used for mapping the trait of interest to the breeders and subsequently promising molecular markers linked with the trait can be used in breeding programmes through marker-assisted selection (MAS). On the other hand, large insert genomic DNA libraries (e.g. BAC library) can be used to develop the physical map for cloning of genes involved in expression of trait of interest as well as sequencing the genome of species to understand the genome architecture and dynamics. Genome sequencing, in fact, has been possible for model/major species in different crop, animals, microbe, fish as well as forest tree species. Genome wide sequence/marker data has also shown conservation of gene sequences/orders in related species and thus facilitated transfer of marker/sequence information from model/major species to orphan/less important species through comparative genomics. Functional genomics approaches either by using microarrays or second generation sequencing also provide the candidate genes involved in expression of traits of interest to enhance understanding the mechanism of trait.

This session will start with a few lead presentations that would provide an overview on current status as well as future prospects of genomic resources in crop, livestock and forest tree species. Subsequently, the session will have general discussions among participants to assess the current stocks, constraints as well as well as future prospects on availability/development of genomic resources in a range of agricultural species, especially in context of several major genomics initiatives and second generation of sequencing and genotyping technologies, so that agriculture community have access to genomic resources for applying them in breeding programme.

Genomic Application: Molecular breeding in developing countries (Organized by the CGIAR)

Molecular Breeding (MB) is the generic term used to describe several modern breeding strategies including: marker-assisted selection (MAS) – the selection of specific alleles for traits conditioned by a few loci; marker-assisted backcrossing (MABC) – the transfer of a limited number of loci from one genetic background to another, including transgenes, more recently, marker-assisted recurrent selection and probably soon genome wide selection.

MB holds great promise for developing countries. However, developing countries are hardly homogenous in this regard. While newly industrialised countries (NICs) routinely use several MB applications and are exploring the latest approaches, developing countries with mid-level economies are testing marker applications and taking the first steps towards adopting MB in day-to-day breeding. Various bottlenecks still impede adoption in these countries. Limited human resources, inadequate field infrastructure, limited access to technologies remain major challenges, although through virtual platforms aided by the ICT revolution, breeders can now access genomic resources, advanced laboratory services, and robust analytical and data management tools.

By nature, MB is expected to improve the efficiency of crop breeding, but comparing the cost-effectiveness of MB with phenotypic selection is not always straightforward, especially if MB is conducted at low scale. Where operating capital is not a limitation, MB maximises the net present value. With the easy access to marker service laboratories and the cost decline per marker data point,

costs of MB activities are shrinking, which from an economical perspective increases the attractiveness of this approach.

Access to technology, capacity building, cost and potential impact of MB in developing countries for both crop and animals will be discussed, among others.

Enhancing human capacities: Training and education (Organized by the ICGEB)

In today's ever-changing world, the relentless progress of scientific knowledge is coupled not only to the growing influence of the economic, scientific and technological capabilities of some “developing” countries, but also to the increasing social and cultural divide with those left behind. Serious thought is urgently needed to define the most effective methods to train future generations of scientists, in particular those from the developing world, to ensure that they are able to both anticipate and assimilate future trends in agricultural biotechnology and molecular biology, and thus provide their countries with all the ensuing potential benefits. ICGEB has operated since 1987 as a centre of excellence for research and training in biotechnology, with a major focus on building capacities in the developing world; it has been entrusted by its Board of Governors to develop this side event to consider the future challenges of scientific training and education. The session, which foresees an active interaction between the facilitator, speakers and participants, will be articulated along specific broad and intra-sectorial themes such as:

- re-positioning the younger generation of scientists in a changing world;
- new strategies to be adopted by the international scientific community to take into account the influence of some "developing" countries;
- changes in the relationship of science and society;
- the need to develop new PhD curricula that take into account the above-referred changes, as well as the relationship between research centers and universities and the requirements of interdisciplinary training;
- teaching students in assessing the reliability and quality of the data produced and/or analysed;
- teaching the teachers: prepare for curricula changes at all levels;
- the need to consider the development of science managers and entrepreneurs in the biotechnological industry;
- the role of biosafety considerations to effect regulatory oversight and market entry.

Ensuring equitable access to technology, including gender issues (Organized by Oxfam International)

In many farming communities world-wide, quite simply, no seeds mean no food. This session looks at the stress and resilience of farmer seeds systems in 3 instances, one with the introduction of Bt cotton in Colombia; two, the up-scaling and mainstreaming of participatory plant breeding of rice in Asia; and three, how Farmers Rights, especially focused in Africa, can help capture the policy space for ensuring farmers access and control of technology. The session will specifically look at the perspective of women, starting form their position of strength and agency: as managers of biodiversity and their role in ensuring food security.

The three regional experiences will draw lessons on ensuring the equitable access and control of technology for poor farmers, including women. Factors will include:
1. Role of international and national agriculture research systems in facilitating the steady and constant supply of genetic materials (parent breeding lines) so that farming communities can select and develop their own seeds under their specific conditions, which are constantly changing
2. Complementary role of the formal seed systems for the supply of finished varieties, which farmers can test and select from.

3. Cooperation with research institutes for the use of biotechnologies (e.g. genomics, molecular assisted breeding) for the characterization and breeding of crops
4. Market support to enable farmers to produce and sell their seeds and crops.
5. Capacity building approaches to help farmers organize, manage their seeds and production systems and engaged in corresponding plant genetic resources (PGR) policy development and governance
6. Engaging women in the management of PGR.

Empowering public participation in informed decision-making (Organized by the IUCN-CEC)

The IUCN Commission on Education and Communication (CEC) has had a 60-year history of shaping and bridging the communication, learning and knowledge management strategies for the world's conservation and sustainability issues. This session will draw upon the many lessons learned to focus on the coming challenges of food insecurity. Climate change will serve as a threat multiplier to food security throughout the world. Water and energy scarcity, plant disease, and increased population will push the limits of food security to critical levels. The need to provide innovative agricultural, forestry and fisheries biotechnological solutions will be paramount to mitigate and adapt to impacts of climatic change. Public participation and user empowerment will be key to the overall success in implementing effective biotechnology strategies. The "*Empowering public participation in informed decision-making*" session will explore a variety of strategic communication strategies that work to empower stakeholders throughout the technology innovation and implementation cycles. These strategies will include moving beyond the jargon that serves as a barrier to the widespread understanding of the key scientific issues, to the application of integrated communication, education and public awareness (CEPA) strategies that have been extensively and successfully deployed across a wide range of developing country sustainable natural resource management programs, to the utilization of role-based knowledge management and decision support tools in international plant disease and monitoring, to web-based tools for creating opportunities across the agricultural supply chain for continuous improvements in productivity, environmental quality, and human well-being. The communication strategies to be discussed are critical if we are going to achieve a "bottom-up" demand driven approach to research and development that will meet the needs of the greatest cross section of stakeholders in agricultural, forestry and fisheries communities throughout the developing world. The key to the success of future biotechnologies will be empowering stakeholders to actively participate in the design demand, development framework articulation and implementation strategies.

Programme for Day 3 of the FAO international technical conference on Agricultural Biotechnologies in Developing Countries (ABDC-10).

9:00-10:45 9:00-9:30 9.30-10.00 10:00-11:00	PLENARY Summary- output of day 2 Biotechnologies in international agricultural research centers Ensuring access to the benefits of R&D				
11:00-11:30	COFFEE BREAK				
11:30-12:00 12:00-13.00	PLENARY Technology transfer aspects of the multilateral system of the ITPGRFA South-South collaboration				
13:00-14:30	LUNCH BREAK				
14:30-16:15	PARALLEL SESSIONS				
	Region-specific				
	Latin America and the Caribbean (IICA, REDBIO/FAO)	Near East and North Africa (AARINENA)	Sub-Saharan Africa (FARA)	Asia-Pacific (APAARI)	Europe and Central Asia (FAO Regional Office for Europe and Central Asia)
16:15-16:45	COFFEE BREAK				
16:45-18:30	PARALLEL SESSIONS				
	Cross-cutting issues				
	Policy coherence at the regional level (UNCTAD)	Biosafety in the broader context of biosecurity (FAO)	intellectual property rights in agricultural biotechnology (WIPO)	Utilisation of plants for non-food uses: Challenges and perspectives (UNIDO)	Conservation and sustainable use of genetic resources for food and agriculture (CGIAR)
18:45-21:00	KNOWLEDGE SHARE FAIR				

9.00 -11.00: Plenary Session

1. Presentation of short reports summarizing results of the 10 parallel sessions held on afternoon of 2 March

2. Biotechnologies in international agricultural research centers

By Thomas Lumpkin, Director General, International Maize and Wheat Improvement Center (CIMMYT), El Batan, Mexico.

3. Ensuring access to the benefits of research and development

Relevant background information is contained in Section C of the background document "*Policy options for agricultural biotechnologies in developing countries"* (ABDC-10/8.1; its synthesis is provided in document ABDC-10/8.2). Section C is entitled "Ensuring access to the benefits of agricultural biotechnologies" and it comprises three main sections:
- Intellectual property rights
- Public awareness and participation
- Agricultural extension

11.30 -13.00: Plenary Session

1. Technology transfer aspects of the Multilateral System of the International Treaty on Plant Genetic Resources for Food and Agriculture

By Shakeel Bhatti**,** Secretary of the International Treaty on Plant Genetic Resources for Food and Agriculture, Rome, Italy

2. South-South collaboration

14.30 – 16.15: Parallel Sessions: Region-specific

For these parallel sessions, FAO invited relevant regional organizations to organize parallel sessions for their region. The scope of each regional session is to address the potential role of biotechnologies for agricultural development in the region and to cover the entire range of biotechnologies across all the food and agricultural sectors. In addition, FAO suggested that it would be important to address both cross-sectoral and sector-specific themes and that, in this context, the SWOT analysis method would be utilized to evaluate the Strengths, Weaknesses, Opportunities, and Threats (SWOT) related to the generation, adaptation and adoption of appropriate biotechnologies in the region, with both technical and policy issues being addressed. Based on the SWOT analysis, the expected outputs from each session will be to formulate regional/sub-regional priorities (taking into account the existing capacities), that could feed into and be considered while dealing with discussions on options for developing countries and on Priorities for Action for the international community on the last day of the conference.

The organizers of each session were also invited to contribute an Issue paper providing an overview and potential analysis of the current strengths, weaknesses, opportunities and threats for the generation, adaptation and adoption of appropriate biotechnologies for food and agriculture in the region, to facilitate the discussions during the session. Analysis in the Issue paper should be done at three levels: strategy/policy options, institutional and human resources. Those provided can be downloaded from http://www.fao.org/biotech/abdc/backdocs/en/. The organizers were also invited to provide a short abstract describing the session content. These abstracts are provided at the end of this document. Both the Issue papers and the abstracts are the responsibility of the session organizers.

The structure that FAO suggested for each session to the organizers was one with 1-2 speakers/panellists, each of whom would speak for 10 minutes (providing a brief background on the topic and setting the scene) followed by an open discussion moderated by a facilitator.

a) Generation, adaptation and adoption of appropriate biotechnologies in the Latin America and the Caribbean Region: Concrete actions for the near future

Organized by the Inter-American Institute for Cooperation on Agriculture (IICA), the International REDBIO Foundation and the Technical Cooperation Network on Plant Biotechnology in Latin America and the Caribbean (REDBIO).
A background document has been provided, see document ABDC-10/IICAREDBIO

This session will take place mostly in Spanish.

Speakers:
1. Rodomiro Ortiz, international consultant, Lima, Perú
2. Moises Burachik, Dirección de Biotecnología, Secretaría de Agricultura, Ganadería y Pesca, Buenos Aires, Argentina
3. Arthur Mariante, Embrapa Recursos Genéticos e Biotecnologia, Brasilia, Brazil

Facilitator: Michelle Chauvet, Universidad Autónoma Metropolitana, Mexico City, Mexico

b) Developing priority actions for agricultural biotechnology in West Asia and North Africa (WANA) to face the challenges of food insecurity and climate change

Organized by the Association of Agricultural Research Institutions in the Near East and North Africa (AARINENA).
An Issue paper has been provided, see document ABDC-10/AARINENA.

Speakers:
1. Osama Momtaz, Agricultural Genetic Engineering Research Institute (AGERI), Agricultural Research Center (ARC), Giza, Egypt

2. Ahmed Abdul Kader, Department of Biotechnology, General Commission for Agricultural Scientific Research (GCSAR), Damascus, Syria
3. Michael Baum, Biodiversity and Integrated Gene Management Program, International Center for Agricultural Research in the Dry Areas, Aleppo, Syria.

Facilitator: Alexander Percy-Smith, Faculty of Agricultural Sciences at the University of Aarhus, Denmark

c) Harnessing biotechnology for agriculture in sub-Sahara Africa in the era of climate change: challenges and options

Organized by the Forum for Agricultural Research in Africa (FARA).
An Issue paper has been provided, see document ABDC-10/FARA.

Speaker:
1. Jane Morris, African Center for Gene Technologies, Pretoria, South Africa
2. Adama Traore, Comité National de la Recherche Agricole, Bamako, Mali

Facilitator: Diran Makinde, NEPAD African Biosafety Network of Expertise (ANBE), University of Ouagadougou, Burkina Faso

d) Harnessing biotechnologies for food security in the Asia-Pacific region
Organized by the Asia-Pacific Association of Agricultural Research Institutions (APAARI)
An Issue paper has been provided, see document ABDC-10/APAARI.

Speakers:
1. Jawahir Karihaloo, Asia-Pacific Consortium on Agricultural Biotechnology, APAARI, New Delhi, India
2. Chanda Nimbkar, Nimbkar Agricultural Research Institute, Phaltan, India

Facilitator: Sudhir Sopory, Plant Molecular Biology, International Centre for Genetic Engineering and Biotechnology, New Delhi, India

e) Agricultural biotechnologies in Europe and Central Asia: New challenges and opportunities in a view of recent crises and climate change

Organized by the FAO Regional Office for Europe and Central Asia (REU), Budapest, Hungary
An Issue paper has been provided, see document ABDC-10/ECA

Speakers:
1. Atanas Atanassov, Black Sea Biotechnology Association, Sofia, Bulgaria
2. Guy Van den Eede, Biotechnology and GMOs Unit, European Commission - Joint Research Centre Institute for Health and Consumer Protection (EU-JRC), Ispra, Italy

Facilitator: Joachim Schiemann, Julius Kühn Institute, Federal Research Centre for Cultivated Plants, Braunschweig, Germany

16.45 – 18.30: Parallel Sessions: Cross-sectoral issues

For these parallel sessions, FAO invited relevant intergovernmental and non-governmental organizations to organize parallel sessions on a specified issue of cross-sectoral importance. For each one, the programme for the session was developed by the organizers, with guidance from FAO. The structure that FAO suggested for each session to the organizers was one with 2-3 speakers/panellists, each of whom would speak for 15 minutes (providing a brief background on the topic and setting the scene) followed by an open discussion moderated by a facilitator. The organizers were also invited to

contribute an Issue paper, focussing on the key topics to be discussed during the session, and those provided can be downloaded from http://www.fao.org/biotech/abdc/backdocs/en/. They were also invited to provide a short abstract describing the session content. These abstracts are provided at the end of this document. Both the Issue papers and the abstracts are the responsibility of the session organizers.

a) Policy coherence and the status of biotechnology policy-making, regulations and development. The experience of COMESA, ASEAN and CARICOM regions

Organized by the United Nations Conference on Trade and Development (UNCTAD)

Speakers:
1. Banpot Napompeth, National Biological Control Research Center, Kasetsart University, Bangkok, Thailand
2. Wendy Hollingsworth, Policy NetWorks International Inc, St. Lucy, Barbados
3. Walter S. Alhassan, African Biotechnoloy and Biosafety Policy Platform, FARA, Accra, Ghana

Facilitator: Thomas Dubois, International Institute of Tropical Agriculture, Kampala, Uganda

b) Biosafety in the broader context of biosecurity

Organized by the FAO Nutrition and Consumer Protection Division.
An Issue paper has been provided, see document ABDC-10/Biosecurity

Speakers:
1. Ruth Frampton, independent consultant, Christchurch, New Zealand
2. Marilia Nuti, Embrapa Agroindustria de Alimentos, Rio de Janeiro, Brazil
3. Bertrand Dagallier, Organisation for Economic Co-operation and Development (OECD), France.
4. Sol Ortiz-Garcia, Consejo Nacional de Ciencia y Tecnología (CONACYT), Colonia del Valle, Mexico
5. Sridhar Dharmapuri, FAO Nutrition and Consumer Protection Division, Rome, Italy

Facilitators:
1. Ruth Frampton
2. Masami Takeuchi, FAO Nutrition and Consumer Protection Division, Rome, Italy

c) Intellectual property rights in agricultural biotechnology

Organized by the World Intellectual Property Organization (WIPO)

Speakers:
1. Jorge Cabrera Medaglia, National Biodiversity Institute (INBio), San José, Costa Rica
2. Raimundo Ubieta Gomez, Intellectual Property Department, Centre for Genetic Engineering and Biotechnology, Havana, Cuba
3. Decio Ripandelli, Administration and External Relations, International Centre for Genetic Engineering and Biotechnology, Trieste, Italy

Facilitator: Anja von der Ropp, Public Health and Life Sciences Section, WIPO, Geneva, Switzerland

d) Utilisation of plants for non-food uses: Challenges and perspectives

Organized by the United Nations Industrial Development Organization (UNIDO)

Speakers:

1. Luis Herrera, Laboratorio Nacional de Genómica para la Biodiversidad, Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional (CINESTAV), Irapuato, Mexico
2. Antonio Paes de Carvalho, Federal University of Rio de Janeiro and Extracta Moleculas Naturais S/A, Rio de Janeiro, Brazil
3. Ivan Ingelbrecht, Institute of Plant Biotechnology for Developing Countries, Ghent University, Belgium.
4. Jonathan Gressel, Plant Sciences, Weizmann Institute of Science, Rehovot, Israel

Facilitator: George Tzotzos, UNIDO, Vienna, Austria

e) Conservation and sustainable use of genetic resources for food and agriculture (in collaboration with the CGIAR)

Speakers:
1. Thomas Payne, Wellhausen Anderson Genetic Resource Center, CIMMYT, Mexico
2. Arthur Mariante, Embrapa Recursos Genéticos e Biotecnologia, Brasilia, Brazil
3. Jean-Christophe Glaszmann, Centre de Coopération Internationale en Recherche Agronomique pour le Developpement (CIRAD), Montpellier, France
4. William Roca, Coordinator LAC-Biosafety Project, Lima, Peru

Facilitator: Dave Hoisington, International Crops Research Institute for the Semi-Arid Tropics, Hyderabad, India

18.45 – 21.00: Knowledge Share Fair

The Knowledge Share Fair will take place in the foyer of the Conference rooms in the Hilton Guadalajara Hotel on the evenings of 1-3 March. Its purpose is to promote good knowledge sharing practices in the field of agricultural biotechnologies (for crops, forestry, livestock, fisheries and aquaculture, agro-industry) for rural development and food security. This event will offer ABDC-10 participants a place to meet informally, discuss and share ideas, experiences, and information. There are 20 information booths available, 20 boards for posters and 20 tables for information materials (leaflets, brochures, publications etc). There will also be limited opportunity for ‘Open Space’, a method for suggesting an idea/theme and then convening small groups around a specific question, task, or area of importance. The groups thus formed would create their own agenda and examine the issues on hand. Proposals for Open Space initiatives can be submitted directly during the conference in Guadalajara.

ABSTRACTS

Abstracts provided by the organizers for the parallel sessions they are organizing on 3 March

14.30 – 16.15: Parallel Sessions: Region-specific

Generation, adaptation and adoption of appropriate biotechnologies in the Latin America and the Caribbean Region: Concrete actions for the near future (Organized by IICA, REDBIO Foundation and REDBIO)

The Latin America and the Caribbean (LAC) Region Parallel Session of the ABDC-10 will focus in two major pillars of such endeavor.

First, it is necessary to assess which biotechnologies are already available and suited for application to food/feed crop production and their status in the Region. The creation, screening and selection of new or "orphan" genetic variation in the present production and management systems considering also sustainable crop production intensification and climate change is a must. This analysis may be focused in smallholders and family agriculture to consider national and/or sub regional biotechnology institutional capacity for R&D and on-farm participatory plant breeding programmes issues including regional and sub regional operating networks. There are key unsolved critical problems as biotic and biotic stresses, genetic base narrowing and yield gap, nutritional enhancement and sustainable and environmental friendly crop production that are of first order consideration.

Second, and not last, the parallel session will need to consider the needed biosafety regulations and the corresponding perspectives, needs and actions to strengthening at national level. As countries differ in their biological diversity they harbor (some are mega-diverse), the size and suitability of agricultural areas, and the balance between agro-ecosystems and protected ecosystems, these facts give the region its rich and diversified character at the same time they demand particular environmental considerations for each particular case, as a result, different environment protecting goals will reflect on biosafety criteria. In particular, the parallel session may focus in the need for harmonization and coordination efforts on biosafety regulations. The on-going FAO and REDBIO sub regional project TCP/RLA/3109: "*Development of reference technical tools for Biosafety Management in Extended Mercosur Countries*," is a critical example for national capacity reinforcement. Harmonization also entails the recognition of areas in which work is still needed to achieve the desired status.

Biotechnology and biosafety research are rapidly evolving fields. It is also a field in which journals are often misled by flawed "scientific" reports. Active exchange and information sharing, as well as discussions about pertinent literature could be a possible action that will tend to build a rational approach and to harmonize views on conflictive issues. This may in turn impact on regulatory harmonization as results of biosafety research are relevant to regulators for their day-to-day work and also for conceptual reshaping regulations when needed. Joint regional projects would be a way of achieving this.

The ABCD-10 parallel session for the LAC session has an important task and challenge ahead. Presentations will open the discussions and bring to us an updated vision regarding the biotechnology and biosafety regional status. It is expected, that in a short but active session, with the help of a facilitating mechanism and counting with the experience of national R&D, academics, private and NGO experts and the proactive role of networks as REDBIO/FAO and of IICA, a set up of initiatives will start to be defined with proper and responsible follow up.

Developing priority actions for agricultural biotechnology in West Asia and North Africa (WANA) to face the challenges of food insecurity and climate change (Organized by AARINENA)

The aim of this session is to achieve a shared understanding among various stakeholders on:

- The strengths, weaknesses, challenges and opportunities for agricultural biotechnology in the WANA region
- The priority actions required, addressing priority research themes, policy-issues, institutional and human resources development.

The WANA region is characterized by high water scarcity, high vulnerability to climate change and growing food insecurity. Hence the generation, development, application and scaling-up of agricultural biotechnology improvements will be crucial for adapting to climate change and improving food security.

The participants of the session are expected to represent various stakeholders, such as the research and extension community, policy makers and government institutions, farmer organizations and regional and international organizations and the private sector. The session will draw on an *Issue Paper*, prepared by the AARINENA biotechnology network. The two speakers will briefly present the Issue Paper, which includes a SWOT-analysis for agricultural biotechnology in WANA region as well as suggestions and recommendations for priority actions.

The SWOT-analysis will not only focus on scientific issues, but will equally address policy, institutional and capacity building issues for the region. The priority actions are resulting form the SWOT analysis, building on the existing opportunities and core strengths in agricultural biotechnology in the WANA region. The session will discuss and provide constructive feedback on the Issue paper and will conclude by a broad consensus on the priority actions for the WANA region, which will feed into the global session on the final day.

Since agricultural biotechnology covers a large number of sub-disciplines, a number of priority themes with high relevance for the WANA region will be used to focus the discussion. The priority themes for the WANA region are Genomics, GMO-detection, Bio-safety. As mentioned above, not only research priorities will be addressed but also issues as intellectual property rights, government regulatory capacity, standardization procedures and innovations in extension services to allow adoption and scaling-up of the use of improved plant and animal resources by farmers, including the resource-poor farmers. Capacity development and the role of regional cooperation and south-south learning will also be discussed.

Harnessing biotechnology for agriculture in sub-Sahara Africa in the era of climate change: challenges and options (Organized by FARA)

Given the right investment in research in a generally favourable policy environment a few successes have been chalked in agricultural productivity in sub-Sahara Africa **(**SSA). Conventional plant breeding techniques supported by conventional biotechnology application contributed to the development of the *Nerica* rice that has revolutionalised upland rice production in Africa. The application of tissue culture techniques to banana production in Kenya is another example of the extent to which the application of conventional biotechnology, namely tissue culture, can heighten rural incomes through increased yields and the expansion in area under banana.

The use of modern biotechnology depends on molecular techniques that further enhance the potential of conventional techniques in crop improvement. The tools of modern biotechnology range from the use of molecular markers as aids to selection by plant breeders to genetic engineering or so-called genetic modification (GM) techniques. These tools in combination with traditional approaches have led to the development of new plant varieties with qualities that would have been extremely difficult to develop from conventional techniques alone.

This session will examine the strengths, weaknesses, opportunities and threats associated with the deployment of the various tools of biotechnology spanning conventional techniques to molecular/GM techniques and assist in the development of priority actions to harness biotechnology for food security in sub-Sahara Africa in the era of climate change.

Harnessing biotechnologies for food security in the Asia-Pacific region (Organized by APAARI)

Recognising the opportunities provided by biotechnology tools and techniques, several developing countries of the Asia-Pacific region have made policy commitments towards adoption of biotechnology for agricultural development. There have also been some prominent successes in farm level application of biotechnology with positive impacts on production and farmer income. Tissue culture based propagation and planting material production in banana, potato, sugarcane, citrus, orchids and other ornamental plants has been adopted in a number of countries. Genetically modified cotton and maize hybrids have become popular in India and the Philippines, respectively. In the livestock sector, reproductive biotechnologies have been used with good success in farm animal improvement. While there successes are noteworthy, there is still a large gap between the potential of biotechnology and its effective implementation to address agricultural productivity issues in the region.

This session will address the potential of entire range of conventional and modern biotechnologies in agricultural development of the Asia-Pacific region. Two brief presentations, one on crops and forestry and another on livestock, poultry, fisheries and aquaculture will provide the background and set the scene for ensuing discussion. The objective will be to review the progress in application of biotechnology highlighting some successes and failures, and evaluate the policy and technical strengths, weaknesses, opportunities and threats (SWOT) related to the generation and adoption of biotechnologies in the region. Following discussion on the identified issues, regional and sub-regional priorities will be identified that would feed into the discussions on options for developing countries and on Priorities for Action for the international community on the last day of the conference. Some of the issues identified during earlier regional meetings on biotechnology for agricultural development in the region that could be considered for discussion are:

1. Strengthening biotechnology adoption (technologies, commodities, supporting policies, public investments, infrastructure)
2. Regulatory management (policy framework, infrastructure, transboundary movement)
3. Awareness and participation (improving communication, education, public participation)
4. Capacity building (areas, regional and interregional collaboration, funding)
5. Linkages (regional, south-south, north-south, public-private)

Agricultural biotechnologies in Europe and Central Asia: New challenges and opportunities in a view of recent crises and climate change (Organized by REU)

Climate change is a complex global issue with regional implications and location specificity, whose impact on agriculture and related sectors, coupled with recent food and economic crises is likely to aggravate its chronic problems and negatively affect the sustainability of the sector. Biotechnology, which includes tissue culturing, gene transfer, immunological techniques, molecular genetics and recombinant DNA, is recognized as a powerful tool that, if properly focused, can offer new solutions for a number of old challenges and significantly contribute to the sustainable development of agriculture, fisheries and forestry, as well as the food industry, particularly for developing countries and transition economies like most of the countries in CEE and Central Asian region.

Notwithstanding the great potential for benefits that this technology could bring to the environment and society, there is a common understanding within the community at large that a balanced and comprehensive approach of biosafety is needed for evaluating the possible adverse effects from the deliberate release of GMOs into the environment, as well as their use in human and animal diets.

The session will address first the potential of biotechnologies for agricultural development in Europe and Central Asia (ECA) by covering the entire range of biotechnologies across the food, agriculture, fisheries and forestry sectors against the background of the new challenges posed by recent crises and climate change and highlighting the biotechnology applications developed locally and adapted to

prevailing and expected conditions in the region. An emphasis will be given to biotechnology applications in the countries with economies in transition in ECA

Further, the cross sectorial issues as capacity-building, information and knowledge-sharing and networking, as well as policy and regulatory frameworks development and implementation, including co-existence will be addressed in the context of several examples from EU and the ECA region as a whole.

During the discussion, the SWOT method will be used to analyse the generation, adaptation and adoption of appropriate biotechnologies in the ECA region, taking into consideration policy and legal framework, human resources, among other relevant factors. As a main output, the regional session for ECA will identify regional/subregional priority areas that require further assistance and which will be considered while discussing Priorities for Action for the international community

16.45 – 18.30: Parallel Sessions: Cross-sectoral issues

Policy coherence at the regional level (Organized by UNCTAD)

This session on policy coherence in biotechnology at the national, regional and international levels presents the experiences of the ASEAN (Association of Southeast Asian Nations), CARICOM (Caribbean Community and Common Market) and COMESA (Common Market for Eastern and Southern Africa) regions in developing and implementing regional and national biotechnology policies in agriculture. The session identifies steps taken to develop regional guidelines and a road map to assist national action. It identifies gaps and highlights critical areas for: enhancing the capacity of regional groupings to present and advocate policies, regulations, procedures, and guidelines for national consideration in order to make informed decisions; and effectively deal with policy challenges and promote policy coherence related to the handling and managing of biotechnologies in the areas of agriculture, trade and emergency food aid.

In Africa, COMESA is the largest trading economic bloc on the continent, has 19 member states, a population of over 389 million people, Agriculture looms large in the economies of COMESA countries in terms of livelihood, employment and intra regional trade. However, cyclical droughts and abiotic stresses such as diseases and pests affect productivity of most staple crops predisposing the region to food security problems and chronic poverty. Biotechnology has been highlighted as having the potential to contribute to the food security and poverty alleviation goals of these countries.

However, biotechnology applications can only occur under conditions of an enabling regulatory environment. Consequently, countries have taken and are taking steps to develop regional and national regulatory frameworks to ensure the safety of humans and the environment in the application of biotechnology.

An assessment of the status of biotechnology and biosafety policies and frameworks within Member States and regions shows that countries are at different levels of development in terms of biotechnology and biosafety policy and legislative frameworks. In the case of COMESA, member countries would benefit greatly from a regional approach to development and implementation of biotechnology and biosafety policies and legal frameworks.

Biosafety in the broader context of biosecurity (Organized by the FAO Nutrition and Consumer Protection Division)

Biosecurity is a strategic and integrated approach that encompasses the policy and regulatory frameworks (including instruments and activities) for analysing and managing relevant risks to human, animal and plant life and health and associated risks to the environment. In this context advocated by the Food and Agriculture Organization of the United Nations, biosafety is generally taken to mean “the safe use for human, animal and plant health, and the environment, of new biotechnologies.” This

working definition is somewhat broader than that adopted elsewhere. It is well recognised that the application of biotechnologies for biosecurity purposes, including improving food safety and quality presents new opportunities and potential benefits. Fast and efficient biotechnology based processes are aiding the production of new food additives, preservatives and supplements. Molecular and biochemical methods are making quick and large scale detection of potential biological and chemical hazards possible.

Further technical advances and cost reductions are easing the adoption process for developing countries. It is foreseeable that biotechnology will play a major role in agriculture and safeguarding food supply in most parts of the world in the future. However, the evolution of biotechnologies as detection, safety and/or quality tools needs to go hand in hand with regulation. Biosecurity encourages a risk-based approach to regulatory programmes – that is, decisions and actions based on specific knowledge of risks to health or life. Risk analysis in biosecurity is a scientifically-based process that enhances cross-sectoral cooperation at the national level among all stakeholders. It is used to identify hazards and characterize their adverse health impacts so as to objectively determine the risk (benefits and threats) and select any controls needed. In the context of biosecurity, robust risk/safety assessment applies to managing risks to human, animal and plant life and health and associated threats to the environment, including the case by case evaluation of the biosafety of new biotechnologies. Significant experience in the conduct of risk/safety assessments has been gained by developed and developing countries in the past two decades. For example, such an assessment process had to be established for genetically-engineered crops and for human foods and animal feeds derived from them.

This session will highlight success stories in developing countries in utilising biotechnologies for food and environmental safety. It will relate national and regional efforts at drawing up biosecurity frameworks and the actions to implement biosafety related measures. The process of holding stakeholder consultations, framing appropriate legislations and setting up institutional frameworks to implement a biosecurity strategy will be underscored. At the multilateral level, these experiences can be utilised by developing countries as a source of sound and unbiased advice.

Detailed programme for the session

Wednesday 3 March 2010		
5 minutes	**Welcome**	**Takeuchi**
15 minutes	Presentation 1: Principles and concepts of biosecurity • Context of biotechnologies in food and agriculture. • Incorporating new and emerging technologies into biosafety policy. • Importance of legislative and institutional arrangements for biosafety issues. • Co-ordination mechanisms at national and regional levels (biosecurity ministry in New Zealand). • Establishing biosecurity frameworks in developing countries (examples from the Asia-Pacific).	**Frampton**
5 minutes	Q and A	
15 minutes	Presentation 2: Risk and safety assessment of modern biotechnology products – OECD harmonized approach and tools • OECD biosafety work • Generating “Consensus Documents” relevant for environmental assessment and decision making process: maize, cucurbits *(Mexico)* • One success story example on food/feed safety: *(Brazil)*	**Dagallier** **Ortiz-García** **Nutti**

5 minutes	Q and A	
15 minutes	Presentation 3: Implementing the FAO biosecurity approach in developing countries. • FAO's role in assisting countries to develop biosecurity programmes (including dealing with GM, nano, emerging technologies) • Food safety is a fundamental public health concern in developing countries and biotechnology offers valuable tools to enhance it. • FAO's assistance to countries (Bhutan, Gambia) in enhancing food safety. • Capacity building for food inspectors, quarantine officials, regulators and training of food safety scientists in Bhutan in the biosafety context. • Identifying and adopting useful biotechnologies for analysis of food safety and quality. • Biosafety + biosecurity approach - hand-in-hand with biotechnologies	**Dharmapuri**
5 minutes	Q and A	
40 minutes	Open discussion • Co-operation – between organisations • Risk assessment and communication • Costs of biotechnologies • Regulatory issues – oversight • Capacity building – trainers and laboratories (what international organizations can offer etc)	

Intellectual Property Rights in Agricultural Biotechnology (Organized by WIPO)

Intellectual property (IP) rights play a role in addressing the challenge of food security insofar as it promotes technological innovation that permits attaining this goal. The IP system cannot be a standalone mechanism for creating the infrastructure for innovation, the development of agricultural biotechnologies and their diffusion. Yet it can provide options for managing knowledge to ensure that inputs are properly respected and to ensure that outputs are effectively leveraged to achieve the goals of the program for innovation and access to agricultural biotechnologies.

This parallel session is expected to address the following questions:

1. What are the elements of a legal framework for innovative products and processes in the area of agricultural biotechnology that fosters food security? (Conventional IP, sui generis plant variety protection, protection of traditional knowledge?) How does the IP system interact with systems that regulate access to genetic resources, biodiversity conservation and health and environmental safety?

2. To what extent are certain technologies protected? How can the ability to assess the freedom to operate in developing countries be enhanced?

3. How can the ability of public sector researchers to access protected technology be improved? (E.g. through agreements with the private sector?)

4. What strategies of protection can be used to maintain a say over how research results will be used in a way consistent with the strategic goals and to attract new partners from the private sector?

5. What are best licensing practices for IPR owners that allow wide diffusion of agricultural biotechnologies?

6. What are elements of agreements between the public and the private sector that favour the development of technologies for the benefit of society?

Utilisation of plants for non-food uses: Challenges and perspectives (Organized by UNIDO)

Industry, governments, international development agencies and academia are uniting their efforts to design new value chains based on the use of plant biomass as a renewable feedstock for the production of energy, fuels and chemicals. This transition from the present petrochemical-based industry is driven by the convergence of a number of global opportunities and challenges: On the one hand, concerns over the polluting consequences of an economy built on non-renewable resources, the sustainability of these resources and widespread acknowledgement of food security issues are significant global problems that must urgently be addressed. At the same time, the unprecedented upsurge in knowledge of the value inherent in biological systems presents a coherent solution in new business strategies to offset some of these issues.

Biotechnology can make significant contributions to eliminating pollution and waste generation at the source of industrial production. Recent advances of high-throughput screening technologies and breakthroughs in 'omics' technologies and systems biology is making available an increasing number of much needed products and processes that require less amounts of chemical and energy inputs than conventional solutions. The application of novel biotechnologies to develop high-added value products from plants offers developing countries unique opportunities to leverage their rich endowment in biological resources for sustainable economic development.

During this session the utilisation of biodiversity and crops for non-food applications will be discussed. Major examples of industrial biotechnology for biomass crops will be highlighted and awareness generated on technological, regulatory and socio-economic opportunities and challenges posed by the emergence of bio-based industries. Furthermore, mechanisms will be discussed how developing countries could better access technological known-how through partnerships, the engagement of small and medium sized enterprises (SMEs) in such partnerships and, whenever necessary, strengthening their capacities in research, regulatory compliance and technology management.

Conservation and sustainable use of genetic resources for food and agriculture (Organized by the CGIAR)

Global genetic resources are the founding blocks on which improvements in future food production will be based. Plant and animal species have evolved under varying environmental conditions and thus, contain potentially useful genetic variants that when introgressed into modern domesticated species can provide improved performance and value-added traits. Even many domesticated species have undergone significant selection over many years by farmers and are also important sources of improved nutrition and resistances/tolerances to environmental stresses and diseases. Much effort has already been focused on the collection and preservation of a wide range of important food species. Many of these have also been characterized for several key phenotypic traits. More recently, molecular genomic techniques have been applied to further characterize and analyze large collections of many species. As molecular technologies become even larger scale and lower cost, plans are being discussed to sequence the genomes of entire collections (e.g., in rice). Such combination of phenotypic and genotypic characterization provides unique opportunities to discover novel genetic diversity in these vast collections. Once uncovered, the novel alleles can now be crossed into new germplasm via a range of techniques. The session will discuss the status of the global collections of important plant and animal genetic resources, efforts to effectively characterize these and how modern molecular methods enhance their use in breeding programs. Special attention will be given on how to better enable the use of genetic resources in research and breeding programs in developing countries.

Programme for Day 4 of the FAO international technical conference on Agricultural Biotechnologies in Developing Countries (ABDC-10).

9:00-10:45 **9:00-9:45** **9:45-10:45**	**PLENARY** **Summary- output of day 3** **Moving beyond business-as-usual: Options for developing countries**
10:45-11:15	**COFFEE BREAK**
11:15-13:00	**PLENARY** **Moving beyond business-as-usual: Priorities for Action for the international community**
13:00-14:30	**LUNCH BREAK**
14:30-16:15	**PLENARY** **Adoption of the conference report**
16:15-16:45	**COFFEE BREAK**
16:45-17:30	**CLOSING CEREMONY** **Closing remarks** **Closure of the conference**

9.00 -10.45: Plenary Session

1. Presentation of short reports summarizing results of the 10 parallel sessions held on the afternoon of 3 March

2. Moving beyond business-as-usual: Options for developing countries

Relevant background information is contained in Section 2 of the background document "*Agricultural biotechnologies for food security and sustainable development: Options for developing countries and Priorities for Action by the international community"* (ABDC-10/9), which synthesizes the lessons learned and options available to developing countries for making informed decisions regarding adoption of agricultural biotechnologies within their national food security and rural development plans and policies.

11.15 -13.00: Plenary Session

Moving beyond business-as-usual: Priorities for Action for the international community

Relevant background information is contained in Section 3 of the background document, *Agricultural biotechnologies for food security and sustainable development: Options for developing countries and Priorities for Action by the international community* (ABDC-10/9), which presents a set of Priorities for Action for the international community regarding agricultural biotechnologies for food security in developing countries. The Priorities for Action are organized in three categories covering: priorities for policy-level decision-making; capacity development; and financing mechanisms and coordination options. In the context of ABDC-10, the term "international community" encompasses FAO and other United Nations (UN) organizations and bodies, non-UN intergovernmental and non-governmental organizations, international and regional organizations, including donors, development agencies, the private sector, philanthropic foundations and academic or scientific institutions

14.30 – 16.15: Plenary Session

Adoption of the conference Report

16.45 – 17.30: Plenary Session: Closing Ceremony

1. Closing remarks

- Modibo Traoré, Assistant-Director General, FAO Agriculture and Consumer Protection Department, Italy

- Víctor M. Villalobos, Director General, Inter-American Institute for Cooperation on Agriculture (IICA), Costa Rica

- Representative of the Government of Mexico

2. Closure of the conference