

**FAO International Symposium on
“The Role of Agricultural Biotechnologies in Sustainable Food Systems and Nutrition”**

**Report of the Advisory Panel Meeting¹
3-4 June 2015
India Room (A327), FAO Headquarters, Rome, Italy**

Introduction

The Food and Agriculture Organization of the United Nations (FAO) is planning to organize a Symposium on "The Role of Agricultural Biotechnologies in Sustainable Food Systems and Nutrition" from 15 to 17 February 2016 at FAO Headquarters in Rome. An FAO Task Force (TF), composed of representatives from different departments across FAO, serves as the executing body of the Symposium. An external Advisory Panel (AP) has been established to provide advice to the TF. The first meeting of the AP took place on 3-4 June 2015, which was also attended by several members of the TF. This is the report of the meeting.

Wednesday afternoon, 3 June 2015 (14:00 - 17:00 hrs)

Agenda Item 1: Welcome and opening remarks

Mr Daniel Gustafson, FAO Deputy Director-General (Operations), welcomed the participants to FAO for this first meeting of the AP. He thanked the Panel members for their willingness to advise FAO in this important area. Mr Gustafson noted that FAO provides a neutral forum that informs high level decision makers in member countries; this access to decision makers should be kept in mind when considering the agenda and the outcomes from the Symposium. The Symposium may not reach consensus on all issues but it should enable informed debate on the subject, he further advised.

Agenda Item 2: Welcome remarks by the Advisory Panel Co-Chair

Mr Shadrack Moephuli, President and Chief Executive Officer of the Agricultural Research Council, South Africa and Co-Chair of the AP, welcomed the participants. He noted the apology received from the other Panel Co-Chair, Ms Louise Fresco of Wageningen University, as well as from some other Panel members who were unable to attend the meeting. The two Co-Chairs met recently in South Africa and had some initial discussions. In addition, Ms. Fresco visited FAO on 25 May and met with several members of the TF. Outcomes of this visit were taken into account in finalizing the AP meeting agenda (Annex 1) and the AP meeting background document, entitled "Thematic areas and content of the Symposium" (Annex 2). These were sent to the AP members before the meeting, together with the Symposium concept note and the AP's terms of reference.

Agenda item 3: Brief self-introduction by Advisory Panel members

The Panel members introduced themselves and gave a brief note of their background and their expectations for the Symposium. The TF members present also introduced themselves and their areas of expertise. The list of participants is provided in Annex 3. Mr Ren Wang, Assistant Director-General (Agriculture and Consumer Protection Department) and Chair of the TF, also gave a short

¹The meeting was chaired by Mr Ren Wang, FAO Assistant Director-General (Agriculture and Consumer Protection Department) and Chair of the TF, and Mr Shadrack Moephuli, President and Chief Executive Officer of the Agricultural Research Council, South Africa and Co-Chair of the AP. The Panel meeting was organized by Mr Chike Mba and Mr John Ruane of the TF. The Panel discussions were facilitated by Gabrielle Persley from the Global Change Institute University of Queensland Australia, who acted as rapporteur for the meeting.

introduction of the Panel members who were unable to attend the meeting. Before the meeting, the absent members were sent the AP meeting background document and invited to provide written inputs. For their information, a document with these written inputs (provided by three members) was circulated to the attendees before the meeting and also provided in hardcopy at the meeting.

Agenda Item 4: Purpose, scope, dates and timeline of the Symposium

Mr Wang noted that the Symposium was a continuation of FAO's work on agricultural biotechnologies, which had included the organization of the FAO international technical conference on Agricultural Biotechnologies in Developing Countries² (ABDC-10) in Mexico in 2010. FAO is a neutral broker and is using this role to convene the Symposium. In a similar way, FAO had recently used its neutral broker role to convene the International Symposium on Agroecology for Food Security and Nutrition³. FAO consulted widely within and beyond the organization when deciding whether to proceed with a Symposium on agricultural biotechnologies. The view was that it would be timely and interesting for FAO to convene such a Symposium.

Regarding the scope, Mr Wang noted that the Symposium will focus on the applications of currently available biotechnologies and products that can be used to help farmers now; and those that are in the near pipeline as promising technologies and near market products that will be available for farmer use soon (within 5 years?). While the main focus is on biotechnologies that can be applied now, this does not exclude the Symposium also considering the exploration of emerging opportunities, such as new developments in genome editing; and in genomics, with new possibilities to characterize and use genetic diversity.

In considering the scope of 'agricultural biotechnologies', the Symposium uses the Convention on Biological Diversity (CBD) definition of biotechnology, so the Symposium encompasses a broad range of agricultural biotechnologies, including genetically modified organisms (GMOs), although the focus is not on GMOs.

Climate change and nutrition are top priorities for FAO in the near future. These two thematic areas will therefore be addressed in the Symposium in the context of the attainment of 'sustainable food systems' as the title indicates. The Symposium shall also explore the enabling environment for the uptake of agricultural biotechnologies.

Regarding the timing of the Symposium, Mr. Wang noted that it was originally planned for November 2015. However, because of time pressures and a series of important events requiring considerable inputs from FAO in the second part of 2015, particularly the launch of the Sustainable Development Goals (SDGs) and the UN Conference on Climate Change (COP21), it was now proposed to hold the Symposium on 15-17 February 2016.

In discussions on the scope of the Symposium, the Panel members agreed on the following main points:

- The focus would be on agricultural biotechnologies that are currently available and ready for use by small scale farmers.

² FAO. 2011. Biotechnologies for Agricultural Development: Proceedings of the FAO international technical conference on "Agricultural Biotechnologies in Developing Countries: options and opportunities in crops, forestry, livestock, fisheries and agro-industry to face the challenges of food insecurity and climate change" (ABDC-10). <http://www.fao.org/docrep/014/i2300e/i2300e00.htm>

³ FAO. 2015. Final report for the international symposium on agroecology for food security and nutrition. 18-19 September 2014. <http://www.fao.org/3/a-i4327e.pdf>

- The Symposium would also include some assessment of pipeline technologies and products likely to become available for use in the near future (within 5 years), such as those involving new plant breeding technologies.
- The Symposium should address the spectrum of available biotechnologies, including microbial food fermentation, tissue culture in plants, reproductive technologies in livestock, use of molecular markers, genetic modification and other technologies.
- Case studies that illustrate the applications of agricultural biotechnologies in food and agriculture by small scale producers should be showcased at the Symposium, as they are an excellent medium for communicating what biotechnologies are and where/how they can be applied in practice. Emphasis will be on case studies of applications that enhance the resilience of agricultural systems to climate change, improve the nutritional quality of foods and contribute to the development of sustainable food systems.
- A recent FAO publication⁴ gives numerous examples of the successful applications of agricultural biotechnologies for smallholders. This book as well as others could be drawn upon to identify examples to showcase at the Symposium.
- The Symposium will take a multi-sectoral approach, covering food, feed and fibre crops; livestock; fisheries; forestry; biodiversity and the natural resource base (soils and water); as well as socio-economics and policy.
- The Symposium will also address issues along the whole value chain, from production to consumption.
- The Symposium also needs to address the social and regulatory issues that affect the successful use of agricultural biotechnologies, including community concerns and equity issues.
- The Symposium should also consider barriers and challenges to use, including the issues of availability, accessibility and affordability.

Agenda Item 5: Role of the Advisory Panel

Mr Wang noted that FAO considered it important to have a high-level AP. In carefully choosing the members, FAO had given consideration to criteria such as geographical representation and areas of technical expertise. Two members of the Panel, from the private sector and the civil society, were identified through a standard process managed by FAO's Office for Partnerships, Advocacy and Capacity Development (OPC). The remainder were chosen by the TF and sit on the AP in their personal capacities. The role of the AP is to provide advice and guidance to the TF on the thematic areas and overall structure of the Symposium. It is the TF's responsibility to take the decisions regarding the development and delivery of the Symposium.

Agenda Item 6: Overall structure of the Symposium

Mr Chike Mba, Senior Officer, Plant Genetic Resources and Seeds, introduced the overall programme structure, as described in the background document (Annex 2).

⁴ FAO. 2013. Biotechnologies at work for smallholders: Case studies from developing countries in crops, livestock and fish, edited by J. Ruane, J.D. Dargie, C. Mba, P. Boettcher, H.P.S. Makkar, D.M. Bartley and A. Sonnino. <http://www.fao.org/docrep/018/i3403e/i3403e00.htm>

Participants: FAO expects there will be about 400 participants, that will include representatives of FAO member country governments and non-state actors, e.g. research and development organizations, academia, civil society, grassroots organizations and the private sector participants.

Themes: There are three main themes proposed for the Symposium

- Climate change
- Sustainable food systems and nutrition
- The enabling environment for agricultural biotechnologies

Draft programme structure: The Symposium is set for 2.5 days and the draft programme comprises:

- Three keynote addresses, in an opening plenary session
- Nine parallel sessions to address the three themes
- Final plenary session, with two parts, namely Part A: Reporting and discussion of the outcomes from the three themes (discussed in the parallel sessions) and Part B: High level segment – Ministers from FAO member countries

Format of sessions: The format should be flexible and FAO is seeking advice from the AP on this issue. The parallel sessions can serve as amplification of the themes first treated in the keynote addresses (at least in some cases). Some keynote speakers may be invited to speak on a broader topic in setting the scene for the Symposium.

Panel members noted the advantage of using different formats, especially in the parallel sessions. Depending on the content, some of these sessions could be with a selection of speakers making presentations; other sessions could involve panel discussions; others could include case studies presented by video followed by an audience discussion; as well as some other ways. The Panel emphasized the illustrative value of including case studies in the parallel sessions.

A key would be to keep flexibility in the formats while the programme is being developed. Using a variety of IT approaches will help to engage with constituencies in different ways. For example, live streaming could be used to make the Symposium accessible in real time globally to a wider range of interested persons beyond those participating physically.

Social media was also encouraged by the Panel, as part of the means to dialogue and engage with different stakeholders.

Exhibits and posters: The Panel members considered that having a variety of exhibits; posters (especially to encourage students to display their work); and case studies on display outside the parallel sessions would also encourage informal dialogue over the course of the Symposium.

Side events: A strategic set of side events were recommended by the Panel, to facilitate dialogue and partnerships and enable deeper discussion of case studies. It was underlined that they should be strictly limited in number.

Agenda item 7: Participants of the Symposium

Rodrigo Castaneda, FAO's Office for Partnerships, Advocacy and Capacity Development (OPC), introduced this item. He noted that, aside from the member states, FAO has four main sets of stakeholders, i.e. non-state actors, all of whom will be interested to participate in the Symposium:

- Civil society organizations (including NGOs and social movements)
- Grassroots organizations (farmers and rural communities)
- Private sector
- Academia and research institutes

Gender and age of participants are among the criteria that might be used to ensure balance in the programme and participants. Geographic balance is also important to reflect FAO member country participation from various regions. Broad stakeholder engagement in the process and in the content of the Symposium will help validate the outcomes of the Symposium.

There is some experience within FAO in setting up multistakeholder platforms (e.g. on climate-smart agriculture). This experience can be drawn upon when seeking Symposium speakers, panelists, session chairs and other participants that reflect the breadth of stakeholder interests in this topic. FAO networks can help identify participants in various segments of the Symposium.

Participation criteria: The Symposium organizers can develop criteria for eligibility to participate (drawing, for example, on the experience of the recent agroecology symposium).

Resources: It would be helpful to sponsor some stakeholders to participate. The Symposium budget (which is provisionally USD 350k) currently envisages funding the speakers and session chairs only.

Thursday 4 June 2015 (9:00 – 17:30 hrs)

Agenda Item 8: Thematic areas and content of the Symposium

Mr Moephuli introduced the agenda item.

Sub-agenda item a): The main themes and sub-themes for the Symposium (including sub-agenda item b): The nine parallel sessions)

The AP discussed the 3 main thematic areas proposed by FAO in the meeting background document (Annex 2). They are:

- Climate change
- Sustainable food systems and nutrition
- The enabling environment for agricultural biotechnologies

The Panel agreed that these themes were appropriate ways to frame the discussion. Some members noted that there may be a better title for the third one and it was suggested that it be called “Agricultural biotechnologies: People, policies, institutions and communities”. The AP then discussed each main theme in detail with the view to identifying sub-themes that could be the titles of parallel sessions. For each theme, the Panel chose to identify three sub-themes.

The Panel’s discussions around the main themes and sub-themes are summarized below.

Theme 1: Climate change

Regarding the application of biotechnologies for smallholders in the context of climate change, the Panel agreed that their application for adaptation was more relevant than for mitigation purposes for the smallholder farmers – whose food systems are the main focus of the Symposium.

Sub-theme 1.1: Climate change, agricultural biotechnologies and adaptation in crops

This sub-theme should consider agricultural biotechnologies and their contributions to resource use efficiency and other mechanisms that help small-scale farmers adapt to the consequences of climate change

Introduction

Overview of theme and issues to be addressed

Future opportunities and threats – e.g. new diseases to be addressed due to changing climate

Case studies – what are the challenges in agriculture coming from climate change? How are applications of agricultural biotechnologies contributing to their resolution?

Ready to use agricultural biotechnologies and their products – what are they?

Examples of the deployment of agricultural biotechnologies – and lessons learned in uptake (or not)

Examples from food crops – tolerance to biotic and abiotic stresses caused by climate change

e.g. Rice – submergence tolerance

e.g. Crops - tolerance to salinity

e.g. Maize - drought tolerance

Other examples?

Examples from feed crops

How agricultural biotechnologies help resolve livestock feed deficits?

Sub-theme 1.2: Climate change: Agricultural biotechnologies for adaptation of livestock, forestry and fisheries

Forestry

Response to desertification e.g. tissue culture for rapid propagation for tree replanting

Livestock

Use of biotechnologies (genomics) to identify breeds that tolerate drought and heat

Emerging infectious diseases – detecting changing diseases patterns due to climate change

Fisheries applications (to be identified)

Sub-theme 1.3: Climate change: Agricultural biotechnologies for unlocking the potential of land and other resources

Explores new technologies and future prospects - for example

- Biofuels and bioenergy (2nd generation biofuels)
- Biodiversity and its relation to climate change
- Water use efficiency e.g. new ways to use water, also bioremediation
- Land use
- Soil use – fix more carbon in soils

Theme 2: Sustainable food systems and nutrition

Overview of issues

Background on FAO's emerging thinking on sustainability and food systems

- Definition of sustainability to include impact on society
- FAO common vision of sustainable agriculture⁵ – integration of human dimension with biophysical interventions;
- Sustainability is about people, productivity and biodiversity
- Sustainable intensification is an element for increasing productivity along the value chain

⁵ FAO. 2014. Building a common vision for sustainable food and agriculture: Principles and approaches www.fao.org/3/a-i3940e/

- Post-harvest issues – including distribution systems along the value chain
- FAO initiative on sustainable food systems for cities (urban agriculture - vertical farming)

Other issues in setting the scene

- Market demand – response to consumers' increasing demand for safe and nutritious food
- Identify opportunities to solve emerging problems using applications of biotechnologies (e.g. how countries respond to new pest and disease outbreaks in crops and livestock)
- Case studies – address issues of availability, accessibility and affordability of current and pipeline products of agricultural biotechnologies

Sub-theme 2.1: Improving productivity through enhanced resource use efficiency

Case studies – examples of applications of biotechnologies in the sectors below

Crops - Crop improvement – use of molecular markers and other speed breeding techniques;

- Examples of genetic improvement through applications of biotechnologies (e.g. use of marker assisted selection to reduce time taken to develop new varieties)
- Examples of availability and use of genetically modified crops in developing countries and emerging economies;

Livestock

- Overarching issue - Can applications of biotechnologies make livestock productivity more resource use efficient? – animal source foods important for nutrition
- Livestock productivity through better genetics, health and nutrition – genetic improvement through genome selection, new reproductive technologies; role of vaccines and diagnostics

Pest and disease control using biotechnological approaches

- Pest control - biocontrol e.g. tsetse fly control using sterile insect techniques (Senegal)
- Pest and disease control (e.g. banana - bacterial blight resistance in East Africa)
- Rapid production systems – e.g. tissue culture for clean planting material (e.g. cassava)

Fisheries and aquaculture – add examples of applications of biotechnologies as possible case studies?

Forestry – add examples of applications of biotechnologies as possible case studies?

Sub-theme 2.2: Post production issues

- *Food loss and waste* – agricultural biotechnologies to help reduce food loss and waste
 - Reduce losses – extend shelf life; control post-harvest diseases;
 - Case studies – extend shelf life – e.g. of genetic approach to extend shelf life available – but not commercialized - why not? E.g. tomato
 - Other case studies of available biotechnologies for post-harvest technology
 - Biopackaging – examples?
 - Reduce food spoilage – how?
- *Multi-purpose crops for food and feed* – e.g. whole plant use, such as rice breeding for multiple traits, including increased biomass
- *Biomaterials* - Fibre crops – biological ways to expand use of fibre crops e.g. jute

- *Food safety* –
 - *Mycotoxins/aflatoxins* in food e.g. aflatoxins detection – rapid detection methods and biocontrol methods for aflatoxin control (IITA, BecA examples)
 - *Food and water borne zoonotic diseases* – e.g. rapid detection and better management

Sub-theme 2.3: Nutrition and health, food quality

- Consumer demands and changing dietary patterns
- Changing food sources – positive and negative changes
- Biofortification and micronutrient enhancement of crops (Golden rice, Harvest Plus examples)
- Metabolic engineering of food – changing food composition
- Biotechnologies to enhance utilization of underutilized crops and livestock that have specific nutritional value (e.g. Bioversity International's work on new or underutilised crops and livestock with improved nutritional value)
- Enhance local foods that have been displaced by large scale production e.g. LAC – soybean - cultural biodiversity

Theme 3: Agricultural biotechnologies: People, policies, institutions and communities

Context

- Availability, accessibility and affordability of biotechnologies that are safe and useful to communities; address scalability of product that deliver sustainable solutions
- Address issues in relation to the broad definition of agricultural biotechnologies (beyond genetic modification)
- Develop key messages for policy makers

Sub-theme 3.1: Socio-economic impacts of agricultural biotechnologies

- Current impacts of biotechnologies in food and agriculture, veterinary medicine, crop protection
- Case studies – demonstrating value of agricultural biotechnologies in use - examples
- Risk assessment includes technology assessment. There are new approaches (e.g. from Norway and Switzerland) to address the social and economic impacts of new technologies.
- Innovation systems – public and private partnerships (private partners may be not-for-profit entities; and commercial companies, including SMEs/local companies e.g. local seed companies)

Sub-theme 3.2: Instruments in place / necessary for agricultural biotechnologies

- Policy – Science and technology (S&T) policy in countries – key elements (see Africa Union S&T agenda for the transformation of African agriculture)
- Institutional architecture required
- Innovation systems – moving knowledge to delivery
- Product regulation
 - Evidence based regulatory systems; (CBD Cartagena Protocol)
 - Other regulatory issues – e.g. intellectual property rights; product registration;
 - Socio-economic impact (?)
- Capacity – people and labs, infrastructure; (extent of in-country capabilities required?)
 - Case studies of countries at different stages of economic development

- Export quality standards
- Role of regional entities to support countries in applications of biotechnologies
- Communications strategies and participation
 - Communications – public education on scope of biotechnologies – risks and benefits
 - How to communicate the suite of agricultural biotechnologies available
- Responsible Research and Innovation (RRI)
- Ethics – access, equity and inclusion

Sub-theme 3.3: Incentives

- Markets – reflecting market demands
- Investment - Role of private sector in production and delivery of products (e.g. seeds, breeds, vaccines, diagnostics)
- Innovation systems – open innovation systems
- World Bank - new approach to promotion of enterprises
- Information sharing – sharing information and knowledge amongst countries to accelerate innovation; sharing technologies and analytical capacity (e.g. genomics, bioinformatics)

Sub-agenda item c): The opening plenary session

The AP discussed some options for the plenary session and possible speakers for consideration. Given the thematic importance of climate change for the Symposium and given that it takes place just after COP21, the Panel suggested that one keynote address (maybe by someone from the IPCC) should be dedicated to the theme of climate change and the COP21 outcomes relevant to theme of the symposium – sustainable food systems and nutrition. The Panel also suggested that consideration be given to having plenary sessions each day, thus spreading the keynote speakers over the Symposium, rather than concentrating them in the opening plenary session. This would also serve the practical purpose of bringing the participants together for announcements. Regarding keynote speakers, the AP members brainstormed and suggested that high-profile inspiring and influential people should be considered for this task and that they should come from different geographical regions of the world. A number of specific names were proposed.

Sub-agenda item d): The final plenary session

In this discussion, TF members clarified that the Symposium will not result in any political declaration or recommendations. Instead, the Symposium report/proceedings will be prepared and there will be conclusions. These may be presented to relevant FAO governing bodies, such as its Committee on Agriculture (COAG).

Part A: Reporting and discussion of the outcomes from the three themes (discussed in the parallel sessions): Rather than reporting back to plenary with the reports of nine individual parallel sessions, it was proposed that one report be presented for each of the three main themes (as done recently in the Biovision conference in Alexandria).

Part B: High level segment: The Panel discussed which background material might ideally be provided to Ministers who participate in the high level segment. It was suggested that the reports for the three main themes (from the parallel sessions) would be very useful.

Agenda Item 9: Communication issues

Mr Mba introduced this item. He noted that it was planned to develop a communications strategy with the FAO Media Group about the Symposium (including preparation of FAQs etc.). By mid-September, it was planned to launch the Symposium website. Information meetings with Permanent Country Representatives to FAO were envisaged in October 2015 and in January 2016 to inform them about the Symposium.

Agenda Item 10: Any other business

Mr Clayton Campanhola, Director of the FAO Plant Production and Protection Division and TF member, expressed his apologies for being unable to attend the previous stages of the meeting, as he had originally planned. He nevertheless wished to express FAO's gratitude to the AP members for their willingness to contribute to the successful planning and development of the Symposium. He noted that FAO has strong expectations from the Symposium and that it was been organized by FAO in its role as a neutral broker. Ultimately, it is the countries themselves who decide which approaches and tools they should use to pursue their own food security goals.

Agenda Items 11 and 12: Next steps for the Advisory Panel and Closing remarks

Following this very successful and participatory meeting, the next steps are to finalize the report of the meeting and then circulate it to the AP members who were unable to attend in order to get their inputs on the main outcomes of the meeting, particularly regarding the main themes and sub-themes. The Co-Chair invited AP members to suggest names of suitable keynote speakers and session chairs and also specific case studies to illustrate experiences.

In closing, Mr Moephuli and Mr Mba thanked all the panel members present, as well as those who had sent their apologies and suggestions on the agenda items, for their time and their contributions towards the planning of the Symposium.

Annex 1: Agenda of the Advisory Panel Meeting, 3-4 June 2015

India Room (A327), 3rd floor, Building A, FAO Headquarters
Facilitated by Gabrielle Persley

Wednesday afternoon, 3 June 2015 (14:00 - 17:00 hrs)

1. Welcome and opening remarks – Daniel Gustafson, FAO Deputy Director-General (Operations)
2. Welcome remarks by the Advisory Panel Co-Chair – Shadrack Moephuli, President and Chief Executive Officer of the Agricultural Research Council, South Africa
3. Brief self-introduction by Advisory Panel members
4. Purpose, scope, dates and timeline of the symposium – Ren Wang, Assistant Director-General (Agriculture and Consumer Protection Department)
5. Role of the Advisory Panel – Ren Wang
6. Overall structure of the Symposium – Chike Mba, Senior Officer, Plant Genetic Resources and Seeds
7. Participants of the Symposium - Rodrigo Castaneda, FAO's Office for Partnerships, Advocacy and Capacity Development (OPC)

19.30 Informal Dinner

Thursday morning, 4 June 2015 (9:00 – 12:30 hrs)

8. Thematic areas and content of the Symposium⁶
 - a) The main themes and sub-themes for the Symposium
 - b) The nine parallel sessions
 - c) The opening plenary session
 - d) The final plenary session

12:30: Lunch break

Thursday afternoon, 4 June 2015 (14:00 - 17:00 hrs)

8. Thematic areas and content of the Symposium (Continued)
9. Communication issues - Chike Mba, Senior Officer, Plant Genetic Resources and Seeds
10. Any other business
11. Next steps for the Advisory Panel
12. Closing remarks by FAO

⁶ A document entitled 'Thematic areas and content of the Symposium' will be sent to Panel members before the meeting

Annex 2: Thematic areas and content of the Symposium

Background document to the Advisory Panel Meeting, 3-4 June 2015

The single most critical task of the Advisory Panel during its meeting with FAO Task Force members on 3 and 4 June 2015 is to provide advice and guidance on the thematic areas and content of the Symposium's plenary and parallel sessions. To assist the Panel in this task, this document has been prepared for the use of members of the Panel and of the FAO Task Force who will attend the FAO – Advisory Panel meeting.

1. Symposium Context:

This Section describes the main context in which FAO is holding the Symposium. It provides a general framework within which the main themes and sub-themes of the Symposium have to be developed. These main points have been elaborated over time through a series of discussions of the FAO Task Force and also reflect guidance and inputs provided by FAO Senior Management.

- The Symposium explores the application of biotechnologies for the benefit of smallholders in developing sustainable food systems and improving nutrition in the context of climate change.
- When considering the contributions of biotechnologies to sustainable food systems, attention should be given to the entire food and value chain, from producers all the way to consumers, and to the importance of reducing food loss/waste therein.
- The Symposium takes a multisectoral approach, covering the crop, livestock, forestry and fisheries/aquaculture sectors.
- While they may be discussed, the focus of the Symposium is not on future biotechnologies under development but on those that are already available (or will soon be available) and can be applied.
- The term 'agricultural biotechnologies' is based on the definition from the Convention for Biological Diversity (CBD) and encompasses a broad range of technologies used in food and agriculture for a variety of different purposes⁷.

2. Overall Structure of the Symposium:

This Section gives an overview of the overall structure of the Symposium, which is expected to be attended by up to 400 participants. It begins in the morning of Monday, 15 February and finishes at lunchtime on Wednesday, 17 February 2016. These two and a half days shall be structured into five half-day (HD) segments dedicated to:

- An opening plenary session;
- Nine parallel sessions; and
- A closing plenary session.

⁷ The purposes include genetic improvement of plant and animal populations; characterization and conservation of genetic resources; plant or animal disease diagnosis; vaccine development and food processing. Some of these technologies may be applied to all the food and agricultural sectors, such as the use of molecular markers or genetic modification, while others are more sector-specific, such as tissue culture (in crops and forest trees), embryo transfer (livestock) or sex-reversal (fish). The term agriculture includes the production of crops, livestock, fish and forestry products, so the term 'agricultural biotechnologies' encompasses their use in any of these sectors.

The first and fifth (i.e. last) HDs are plenary sessions, taking place in the Green Room. Each of the second, third and fourth HDs consist of three parallel sessions (in the Green, Red and Iran rooms), making a total of nine parallel sessions (Table 1). The Green and Red Rooms hold ca. 400 people while the Iran room holds about 130 people.

Table 1: Symposium Structure

Session	Green Room	Red Room	Iran Room
15 February morning: Opening Plenary	a) 9.00:FAO welcome address b) 9.30-11.00: Keynote addresses c) 11.00-12.00: Discussion		
15 February afternoon: First Set of Parallel Sessions	Parallel Session 1	Parallel Session 2	Parallel Session 3
16 February morning: Second Set of Parallel Sessions	Parallel Session 4	Parallel Session 5	Parallel Session 6
16 February afternoon: Third Set of Parallel Sessions	Parallel Session 7	Parallel Session 8	Parallel Session 9
17 February morning: Final Plenary	a) 9.00-11.00: Reporting and discussion of the 9 parallel sessions b) 11.00-13.00:High- level segment with Ministers		

3. Some thoughts on the organizational aspects

This Section provides some thoughts on organizational aspects, most of which have emerged from a series of internal brainstorming meetings in FAO and a subsequent meeting of FAO Task Force members with the Advisory Panel Co-Chair Louise Fresco on 25 May.

Times: It is proposed that each morning and afternoon session will be three hours long (i.e. 9.00-12.00 and 14.00-17.00), while the final morning session will run from 9.00 to 13.00.

Opening plenary: Identifying good keynote speakers may be more important than identifying good subjects for the keynote speeches. We should aim high and get people with solid track records. They should be ‘doers’ who consistently seek for solutions, are highly articulate, command global visibility and can influence public opinion. There may be 3 keynote speeches, each 30 minutes long, and one hour for discussion. In seeking out these speakers and negotiating the themes of their addresses, efforts may be invested in aligning their lectures to the three main themes (see Section 4) proposed for the Symposium (i.e. climate change; sustainable food systems and nutrition; and enabling environment). But, if this ideal (i.e. having three keynote addresses corresponding to these three main themes) cannot be achieved, a speaker who meets the above criteria may present on a related theme.

Parallel sessions: The format of the individual nine parallel sessions is not decided. For example, some might consist of a series of presentations followed by questions & answers, while others may involve a panel discussion.

Correspondence between the opening plenary and the parallel sessions: The themes of the keynote speeches do not necessarily have to correspond to those considered in the parallel sessions but it would be worthwhile to explore if some of the parallel sessions could be devoted to the further development of the topical issues addressed in the opening plenary.

The High-level Segment with Ministers: Ministers should be selected with a regional balance in mind. FAO's mechanisms for organization of such events will be followed. A possible theme for the segment could be the "socio-economic impacts of agricultural biotechnologies".

4. Some thoughts on the main themes and sub-themes for the Symposium

This Section provides some thoughts on the main themes and sub-themes of the Symposium which have emerged from a series of internal brainstorming meetings in FAO and a subsequent meeting of FAO Task Force members with the Advisory Panel Co-Chair Louise Fresco on 25 May.

A number of parallel sessions could be organized under each main theme, and it could also be the subject of a keynote address. Each sub-theme, instead, could be the topic of a parallel session.

a) Main themes

Here are the three main themes proposed for the Symposium, including a justification for their inclusion as a main theme:

Climate Change: Climate change is of critical importance for agriculture today and is expected to remain so for the foreseeable future. Agricultural production systems must adapt to the effects of climate change while practices that mitigate the effects of climate change must also be adopted. In essence, therefore, while climate change can impact negatively on agricultural production, agricultural practices can also contribute to climate change. The importance of this theme for the Symposium, and for addressing it from the dual perspectives of adaptation and mitigation, has been stressed in internal FAO discussions about the Symposium.

Sustainable Food Systems and Nutrition: The sustainable food system and nutrition perspective for addressing food insecurity and malnutrition goes beyond the usual production centered approach to encompass the critical dimensions of processing, distribution, consumption and waste. This symposium seeks to adopt this value chain approach in exploring the contributions of biotechnologies to food security and nutrition. The need for sustainable food systems has increasingly been brought to the forefront because of the challenges of feeding a growing global population using the available natural resources (such as arable land and water) that are increasingly threatened. Through the Second International Conference on Nutrition (ICN2) and other global initiatives, the importance of improving nutrition has also become increasingly recognized on the international development agenda.

The Enabling Environment for Agricultural Biotechnologies: In order to apply agricultural biotechnologies for the benefit of smallholders in developing sustainable food systems and improving nutrition in the context of climate change, a nurturing environment is required for the outputs of interventions to take hold. Laws, policies, strategies, regulations, etc. that govern the access to and deployment of biotechnological tools and products should therefore be explored in the symposium.

b) Sub-themes.

The following are some of the topics that can be used to explore in greater detail the agricultural biotechnologies that are available and that may be deployed in the service of the smallholder farmer under climate change scenarios:

- Climate change (adaption and mitigation);
- Resource use efficiency (drought tolerance etc.);
- Green technology (2nd generation biofuels etc.);
- Waste reduction;
- Food quality and nutrition;
- Food safety;
- Intellectual property rights
- Capacity building
- Government policies

The focus of the parallel sessions should be on concrete solutions, i.e. they should focus on proven biotechnologies (or soon to be proven biotechnologies), with examples, that can benefit smallholders and make a difference now.

5. Specific kinds of inputs expected from AP members during the AP meeting:

The kinds of areas where the AP members are expected to give advice and guidance to the FAO Task Force include:

Opening plenary: Names for the keynote speakers and themes of the keynote speeches

For each of the nine parallel sessions: The theme and format of the parallel session, plus names for speakers and/or panelists.

Closing plenary:

- Format for reporting the highlights of the parallel sessions.
- The theme(s) and format of the High Level Segment of Ministers

**Annex 3: List of Participants of the
Advisory Panel Meeting, 3-4 June 2015.**

A) Members of the Advisory Panel

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**B) Members of the FAO Task Force (all
based in FAO Headquarters, Rome)**

Devin Bartley,
Senior Fishery Resources Officer
Fisheries and Aquaculture Resources Use and
Conservation Division

Paul Boettcher
Animal Genetics Resources Branch
Animal Production and Health Division

⁸ Representing the private sector on the Panel. The other
Panel members sit on the Panel in their personal
capacity.

Jarkko Koskela,
Forestry Officer,
Forest Assessment, Management and
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Chike Mba,
Senior Officer,
Plant Genetic Resources and Seeds
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C) Facilitator and Rapporteur

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