INTRODUCTION

The Global Conference on Green Development of Seed Industries is a means for Food and Agriculture Organization to provide a neutral forum for its members, partners, industry leaders, opinion leaders and other stakeholders to engage in focused dialogues on how best to make quality seeds of preferred productive, nutritious and resilient crop varieties available to farmers.

The event will generate evidence to enhance the realization of the aspirations of FAO’s Strategic Framework 2022–31 for the transformation to more efficient, inclusive, resilient and sustainable agri-food systems for Better Production, Better Nutrition, a Better Environment and a Better Life, thus contributing to achieving the United Nations’ Sustainable Development Goals (SDGs), especially SDGs 2 and 1.

ABOUT THE CONFERENCE

FAO’s new Strategic Framework is aimed at aligning the organization’s work most precisely with supporting its Members to achieve the 2030 Agenda. It envisions MORE efficient, inclusive, resilient, and sustainable agri-food systems that result in Better Production, Better Nutrition, a Better Environment, and a Better Life for all.

Farmers should use quality seeds and planting materials of well-adapted, climate-smart crop varieties in order that we have the resilient cropping systems to underwrite the 50 percent increase in food production required to feed and nourish an ever-increasing human population in the face of global challenges such as climate change and the finite and dwindling natural resources base.

Yet, in sub-Saharan Africa, for instance, where crop productivities are low and countries don’t appear on track to attain most of the SDGs, the average adoption rate of improved crop varieties is about 30 percent and up to 90 percent of seeds are sourced from insecure and informal supply channels that lack quality control. This implies that genetic gains, i.e. improvements in yield, productivity, production and quality, through the cultivation of new improved crop varieties, and which account for at least 50 percent of yield increases, are not being fully exploited by those who need them the most.
To enable farmers to benefit from genetic gains, FAO works with its Members and diverse stakeholders to:

• Deploy the most appropriate scientific and technological advances for research and development.
• Safeguard the sources of the desirable crop traits.
• Make available a diverse suite of progressively superior crop varieties to farmers.
• Enhance farmers’ access to quality seeds and planting materials.
• Create the enabling environment for diverse partners to provide effective solutions.

Interventions typically address the strengthening of institutional and human capacities in the scientific and technological advances in concert with an enabling environment of adequate policies, regulations and laws that facilitate the participation of all relevant actors as partners in the co-creation of solutions. There is a substantial body of knowledge on successful interventions that could be replicated.

Objectives

• Increase awareness of the contributions of the seed industry to green innovation in plant production.
• Promote cooperation between sectors, especially for public-private partnerships.
• Foster priority setting and the targeted mobilization and pooling of scientific, technical and financial resources for strengthened seed systems.
• Debate evidence and share updated knowledge about green development of the seed industries.

Expected outcomes

• Identification of priority intervention areas where key stakeholders, including FAO, can support countries to strengthen their seed systems; and of potential actions and strategies that will best support countries to assist their farmers to increase their access to quality seeds of preferred crop varieties.
• Increased recognition of FAO as a trusted convener of evidence-based discourse on the green development of seed industries.
• Proceedings of the conference to advocate the green development of the seed industry.
THEMES

The conference is made up of plenary sessions (opening, keynote addresses, reports on conference themes and recommendations, high-level ministerial segment and closing), and eight parallel sessions, two for each of the themes: advanced technologies, conservation of plant genetic resources for food and agriculture, crop varietal development and adoption, and seed systems. A fifth theme, policy and governance, is embedded in these sessions.

Advanced technologies

Advances in molecular biology make it possible to bring together hereditary materials from more than one source in the laboratory to produce new DNA sequences that express novel traits.

Genetic modification (GM) or genetic engineering is one such recombinant DNA technique. More recently, genome editing (or gene editing), which refers to a new set of techniques for making precise changes to the genetic constitution of a living organism, is also being used to develop new improved crop varieties. Furthermore, next generation sequencing enables the decoding of genomes of almost all crop species.

The combination of phenotypic and complementary genomics data permits the use of various forms of genomics-assisted breeding to improve crops. Other advances such as...
Conservation of plant genetic resources for food and agriculture

The full range of the diversity of our crops should be safeguarded, their heritable variations characterized, variants evaluated for agronomic performance and associated data published.

**Plant genetic resources for food and agriculture, which are essential for crop varietal development, must be safeguarded and made available for research.**

Known as plant genetic resources for food and agriculture (PGRFA), this diversity is conserved *in situ* – whereby crop wild relatives, which are repositories of novel traits, and wild food plants, which are sources of micronutrients, are safeguarded in their native habitats where they may continue to evolve adaptive traits; on-farm – through enhanced intra- and interspecific diversity of crops, including farmers’ varieties/landraces; and *ex situ* – whereby PGRFA are safeguarded under partially or wholly controlled conditions in specific genebank facilities or areas outside their natural habitats. The conference will be a forum for reviewing the state of knowledge of crop diversity, the overall status of its conservation and availability and its underpinning role in resilient and sustainable agri-food systems. The sessions of this theme will further explore the overarching need for enhanced access to the conserved resources and the mechanisms for equitable and fair benefit-sharing mechanisms.

**Crop varietal development and adoption**

Plant breeding should aim at the continuing generation of a diverse suite of progressively superior crop varieties that are nutritious and adapted to the farmers’ changing environments and meet end-users’ preferences. In this regard, result-oriented crop improvement programmes increasingly target the incorporation of traits that enhance input-use efficiency, resilience to climate change, and the nutritional qualities of staple crops.

**Plant breeding should aim to produce crop varieties that are nutritious, productive and better adapted to farmers’ production systems.**

Other strategic traits that are crucial to creating and expanding commercial opportunities for smallholder farmers to generate more income...
for enhanced livelihoods should equally be prioritized. Effective mechanisms for the official release of varieties, the wide dissemination of their associated information and for the production of early generation seeds must also be in place. The conference offers a unique opportunity to review select case studies with a view to identifying the drivers of success.

Particular attention will be paid to the validated means for the deployment of scientific progress in nurturing environments that permit, in particular, partnerships amongst the multiplicity of mutually enriching actors.

Effective seed systems enhance farmers’ timely access to affordable quality seeds and planting materials of preferred crop varieties.

of agents to seeds in order to protect them and enhance the overall performance of seedlings and the eventual crops, is being used to enhance the prospects of attaining the desired outcomes. Seed systems that enhance the access of small-scale farmers of food security crops to quality seeds and planting materials are characterized by an enabling environment of appropriate seed policies, laws, and regulations. Their value chains – consisting of seed production, processing, quality assurance, storage and marketing – are also typically effective while the entrepreneurial skills for small- and medium-scale seed enterprises are fit for purpose.

The conference will explore what has worked in transforming ineffective systems to responsive and dynamic ones that provide the solutions which farmers need – including through international seed trade and the requisite harmonization of legal frameworks.

Effective and innovative seed systems, typically comprising the so-called formal and informal sectors, are the vehicles for translating the genetic potentials bred into improved crop varieties into the envisaged enhancements on farmers’ fields and in the end-products. Environmentally sustainable seed treatment, i.e. the application
Policy and governance

For the farmer, the tangible output of the significant efforts and resources invested in the conservation and sustainable use of PGRFA – from safeguarding crop germplasm through plant breeding to seed systems – are the quality seeds and planting materials of the preferred varieties.

An enabling environment, consisting of sound policies, regulations and laws, is essential for a well-functioning seed system.

A system of policies, regulations and laws – some of which are harmonized at regional levels or agreed upon as international norms – is required in order to realize the benefits of innovations. The predictability and, hence, security for investments engendered by the applications of normative and regulatory instruments and processes serves as an incentive for the gainful participation of the relevant multiplicity of partners across the seed value chain.

The conference will be an opportunity to explore the enabling environment – at national, regional and global levels – for seed systems and the associated upstream domains of germplasm conservation and plant breeding.
ORGANIZATION

The Global Conference on Green Development of Seed Industries was organized by FAO with the support of a Steering Committee, a Scientific Advisory Panel, and a Secretariat.

Steering Committee

The Steering Committee has the following responsibilities: provide advice on all aspects of the conference; provide advice to the Scientific Advisory Panel regarding the programme; act as the event’s ambassador among the respective organizations/networks/countries of the Steering Committee members; encourage people to attend the conference; and provide advice on potential follow-up to the conference.

COMPOSITION

Chairperson:
- Beth Bechdel, Deputy Director-General, FAO.

Vice-Chairperson:
- Hanzhong Wang, Vice President, Chinese Academy of Agricultural Sciences (CAAS).
- Yemi Akinbamijo, Executive Director, Forum for Agricultural Research in Africa (FARA), Ghana.
- Marco Ferroni, Chair, CGIAR System Board.

Members:
- Lorena Basso, President of the family company, Basso Semillas, Argentina. President of the Argentinian Seed Association (ASA) and the Seed Association of the Americas (SAA).
- Robert Delve, Lead Global Technical Advisor (Agronomy), Sustainable Production, Markets and Institutions Division, International Fund for Agricultural Development (IFAD)
- Ismahane Elouafi, Chief Scientist, FAO and Scientific Advisory Panel Chair.
- Michael Keller, Secretary General, International Seed Federation (ISF).
- Alberto Lipparini, Secretary General, Italian Seed Association (Assosementi).
- Mauricio Lopes, Research Scientist, Embrapa Agroenergy, Brazilian Agricultural Research Corporation (Embrapa), Former President of Embrapa (2012-2018).
- Kent Nnadozie, Secretary, International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), FAO.
- Fatma Ben Rejeb, Chief Executive Officer, Pan-African Farmers’ Organization (PAFO).
- Rakesh K. Singh, Program Leader and Principal Scientist (Plant Breeding), Crop Diversification and Genetics, International Center for Biosaline Agriculture (ICBA).
- Jingyuan Xia, Director, FAO Plant Production and Protection Division.
Scientific Advisory Panel

The Scientific Advisory Panel for the Conference has the specific role of developing a draft programme covering the main conference topics. In doing so, the panel provided proposals for the names of potential keynote speakers, presenters, panelists and chairs for the different sessions, ensuring gender and geographical balance in the proposals.

COMPOSITION

Chairperson:
- Ismahane Elouafi, Chief Scientist, FAO and Scientific Advisory Panel Chair.

Vice-Chairs:
- Rachel Chikwamba, Group Executive: Chemicals, Agriculture, Food and Health, Council for Scientific and Industrial Research (CSIR), South Africa (Co-Lead Conference Theme 5: Policy and governance).
- Niels Louwaars, Director of Plantum, the Netherlands Seed Association, the Netherlands (Co-Lead Conference Theme 4: Seed systems).

Members:
- Chikelu Mba, NSP Team Leader, Seeds and Plant Genetic Resources.
- Maria Andrade, Sweet potato breeder and 2016 World Food Prize winner, International Potato Centre.
- Vivienne Anthony, Senior Scientific Advisor, Syngenta Foundation for Sustainable Agriculture.
- Peter Button, Vice Secretary-General, International Union for the Protection of New Varieties of Plants (UPOV).
- Lamis Chalak, Professor, Head of Plant Production Department, Faculty of Agronomy, The Lebanese University and Head of the National Committee for Plant Genetic Resources (Co-Lead Conference Theme 2: Conservation of Plant Genetic Resources for Food and Agriculture).
- Martin Ekvad, Former President, Community Plant Variety Office (CPVO).
- Shaun Ferris, Senior Technical Advisor, Agriculture/Livelihoods and Markets, Catholic Relief Services
- Csaba Gaspar, Programme Manager, OECD Forest Seed and Plant Scheme, Organisation for Economic Co-operation and Development (OECD).
- Keshavulu Kunusoth, Managing Director, Telangana State Seed Corporation and Director, Telangana State Seed & Organic Certification Authority, India (Co-Lead Conference Theme 4: Seed systems).
- Charlotte Lusty, Head of Programs and Genebank Platform Coordinator, Global Crop Diversity Trust (Co-Lead Conference Theme 2: Conservation of Plant Genetic Resources for Food and Agriculture).
- Long Mao, Head, Research Group of Wheat Complex Traits Dissection, Institute of Crop Sciences, Chinese Academy of Agricultural Sciences (CAAS) (Co-Lead Conference Theme 5: Policy and governance).
- Cathie Martin, Professor, Department of Metabolic Biology, John Innes Centre, United Kingdom (Co-Lead Conference Theme 3: Crop varietal development and adoption).
- Nigel Maxted, Professor of Plant Genetic Conservation, School of Biosciences, University of Birmingham, United Kingdom.
- John McMurdy, Vice-President of Innovation and Development, CropLife International.
- Emmanuela Okogbenin, Director, Programme Development and Commercialization, African Agricultural Technology Foundation (AATF) (Co-Lead Conference Theme 3: Crop varietal development and adoption).
- Okoth Mbogo Peter, Senior Maize Breeder, Seed Co.
- Tilabilenji Phiri, Senior Programmes Officer, In-Situ Conservation and Southern African Development Community (SADC) Seed Centre Coordinator, SADC Plant Genetic Resource Centre (SPGRC).
- Alison Powell, Chair of the ISTA Seed Science Advisory Group to the ISTA Executive Committee and Chair of the ISTA Vigour Technical Committee.
- Rajeev Varshney, Research Program Director, Genetic Gains and Director, Center of Excellence in Genomics & Systems Biology, International Crops Research Institute for the SemiArid Tropics (ICRISAT), & Adjunct Professor, Food Futures Institute, Murdoch University (Co-Lead Conference Theme 1: Advanced technologies).
- Vittorio Venturi, ICGEB Scientific Coordinator and Group Leader, Bacteriology and Strains4Plants, International Centre for Genetic Engineering and Biotechnology (ICGEB) (Co-Lead Conference Theme 1: Advanced technologies).
Seed Conference Secretariat

The Secretariat is in charge of the organization of the conference, including its programme, logistics and communication.

COMPOSITION

Executive Secretary:
- Jingyuan Xia, Director, FAO Plant Production and Protection Division (NSP).

Deputy Executive Secretary:
- Rémi Nono Womdim, Deputy Director, NSP.

General Coordinator:
- Chikelu Mba, NSP Team Leader, Seeds and Plant Genetic Resources.

Coordination:
- Ndeye Ndack Diop, Agricultural Officer.
- Stefano Diulgheroff, Information Management Officer.
- Bonnie Furman, Agricultural Officer.
- Wilson Hugo, Agricultural Officer.
- Haekoo Kim, Technical Adviser.
- Shawn Mccuire, Agricultural Officer.
- Preetmoninder Lidder, Technical Adviser.
- Arshiya Noorani, Agricultural Officer.
- Lucio Olivero, Seed Specialist.
- John Ruane, Senior Agricultural Innovation Specialist.
- Alexandra Sokolova, Programme Officer.

Communication:
- Mirko Montuori, Communication Officer.
- Maria Soledad Fernández González, Digital Communication Specialist.
- Ginevra Virgili, Graphic Designer.

Operations:
- Alessia Laurenza, Clerk Typist.
- Elena Rotondo, Office Assistant.
- Sara Tripodi, Assistant.
- Juliet Upton, Clerk.
- Chantal Wedge, Intern.
Global Conference on Green Development of Seed Industries
4–5 November 2021

Thursday, 4 November 2021

09.30-10.00
PLENARY SESSION 1: OPENING
Moderator: Beth Bechdol, Deputy Director-General, FAO
Opening remarks
QU Dongyu, Director-General, FAO

10.00-12.30
PLENARY SESSION 2: KEYNOTE ADDRESSES
Moderator: Ismahane Elouafi, Chief Scientist, FAO

Section A: Developing solutions for farmers
- Solutions for small-scale farmers (15 minutes)
  Fatma Ben Rejeb, Chief Executive Officer, Pan-African Farmers’ Organization (PAFO)
- Advanced technologies (15 minutes)
  Mauricio Lopes, Research Scientist, Embrapa Agroenergy, Brazilian Agricultural Research Corporation (Embrapa), Brazil
- Crop improvement – from conservation of crop biodiversity to impactful use (15 minutes)
  Marco Ferroni, Chair, CGIAR System Board
- Discussion (30 minutes)

Section B: Delivering solutions to farmers
- Seed systems as enablers to seed choice (15 minutes)
  Michael Keller, Secretary General, International Seed Federation (ISF)
- Showcase of green development of seed industries (15 minutes)
  Hanzhong Wang, Vice President, Chinese Academy of Agricultural Sciences (CAAS), China
- Policies and governance (15 minutes)
  Rachel Chikwamba, Group Executive for Chemicals, Agriculture, Food and Health, Council for Scientific and Industrial Research, South Africa
- Discussion (30 minutes)

12.30-13.30
Break
Thursday, 4 November 2021

PARALLEL SESSIONS: THEME 1 AND 2

13.30-15.30

Theme 1: ADVANCED TECHNOLOGIES

Session 1.1 Modern plant breeding technologies

Co-Chairs:
- Rajeev K Varshney, Research Program Director, Accelerated Crop Improvement, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and Professor, Murdoch University, Australia
- Catherine Ziymo, Senior Scientist, BECA-ILRI Hub, International Livestock Research Institute (ILRI)

Rapporteurs:
- Ndjido Kane, Director, Centre d’Etude Régional pour l’Amélioration de l’Adaptation à la Sécheresse (CERAAS), Institut Sénégalais de Recherches Agricoles (ISRA), Senegal
- Rhodora Romero-Aldemita, Director, International Service for the Acquisition of Agri-biotech Applications Southeast Asia Center (ISAAA SEAsia Center), Philippines (the)

- Introduction (5 minutes)
- Next generation genomics and genomics assisted breeding for international agriculture (15 minutes)
  Rajeev Varshney, Research Program Director, Accelerated Crop Improvement, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and Professor, Murdoch University, Australia
- Genome design of hybrid potato (15 minutes)
  Sanwen Huang, Director General, Agricultural Genomics Institute, Chinese Academy of Agricultural Sciences (CAAS), China
- Genome editing: Opportunities & challenges (15 minutes)
  Dave Bubeck, Research Director, Seed Product Development, Corteva Agriscience
- Policy and regulatory issues of new breeding technologies in the European Union (15 minutes)
  Irene Sacristán Sánchez, Head of Unit E3, Biotechnology, Directorate-General for Health and Food Safety, European Commission
- Brief interventions:
  - Gene-editing of banana for disease resistance (5 minutes)
    Leena Tripathi, Director Eastern Africa Hub, International Institute of Tropical Agriculture (IITA)
  - GM pulses (5 minutes)
    TJ Higgins, Honorary Fellow, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia
  - Genome editing for cassava (Manihot Esculenta Crantz) improvement (5 minutes)
    Ihuoma Okwuonu, Plant Biotechnologist, National Root Crops Research Institute, Nigeria
  - Policy and governance of new breeding technologies (5 minutes)
    John McMurdy, Vice-President, Innovation and Development, CropLife International
  - Principles for the governance of gene editing (5 minutes)
    Gregory Jaffe, Biotechnology Project Director, Center for Science in the Public Interest, United States of America (the)
- Q&A session and discussion based on all presentations (25 minutes)
- Summary (5 minutes)
Thursday, 4 November 2021

16.00-18.00

Session 1.2 Emerging biotechnologies and informatics technologies

Co-Chairs:
- Vittorio Venturi, Scientific Coordinator and Group Leader, Bacteriology and Strains4Plants, International Centre for Genetic Engineering and Biotechnology (ICGEB)
- Sobhana Sivasankar, Section Head, Plant Breeding and Genetics, Joint FAO-IAEA Centre for Nuclear Techniques in Food and Agriculture

Rapporteurs:
- Anandita Singh, Professor, Department of Biotechnology, The Energy and Resources Institute (TERI) School of Advanced Studies, India
- Kassahun Tesfaye, Director General, Ethiopian Biotechnology Institute, Addis Ababa University, Ethiopia

- Introduction (5 minutes)
- Plant microbiomes (15 minutes)
  Vittorio Venturi, Scientific Coordinator and Group Leader, Bacteriology and Strains4Plants, International Centre for Genetic Engineering and Biotechnology (ICGEB)
- AI and big data – Advancements, opportunities and threats (15 minutes)
  Dionysis Bochtis, Director, Centre of Research and Technology Hellas (CERTH), Institute for Bio-economy and Agri-technology (IBO), Greece
- A scale-based framework for governance and risk of emerging biotechnologies (15 minutes)
  Jack Heinemann, Professor, School of Biological Sciences, University of Canterbury, New Zealand
- Policy and governance issues in synthetic biology (15 minutes)
  Marianela Araya, Environmental Affairs Officer, Secretariat of the Convention on Biological Diversity
- Brief interventions:
  - Germplasm meets systems biology – understanding and exploiting intraspecific crop plant adaptation to the climate crisis (5 minutes)
    Wolfram Weckwerth, Chair, Vienna Metabolomics Center, University of Vienna, Austria
  - ABS/Nagoya/DSI (5 minutes)
    Emily Marden, Research Associate, Department of Botany and Biodiversity Research Centre, University of British Columbia, Canada
  - Emerging technologies from the farmer’s perspective (5 minutes)
    Mark Watne, President of North Dakota Farmers Union, United States of America, and Representative of the World Farmers’ Organisation
- Q&A session and discussion based on all presentations (35 minutes)
- Summary (5 minutes)
Thursday, 4 November 2021

PARALLEL SESSIONS: THEME 1 AND 2

Theme 2: CONSERVATION OF PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

13.30-15.30

Session 2.1 The global conservation system

Co-Chairs:
- Charlotte Lusty, Head of Programs and Genebank Platform Coordinator, Global Crop Diversity Trust
- Lamis Chalak, Professor, Head of Plant Production Department, Faculty of Agronomy, The Lebanese University, Lebanon

Rapporteurs:
- Tilabilenji Phiri, Senior Programmes Officer: In-situ Conservation, Southern African Development Community (SADC) Plant Genetic Resources Centre (SPGRC)
- Thomas Payne, Former Wheat Germplasm Bank Curator, International Maize and Wheat Improvement Center (CIMMYT)

Introduction (1 minute)

- The Global Conservation System – how it works:
  - Plant genetic resources for food and agriculture (PGRFA) conservation – global overview of diversity in situ, ex situ and on farm, how it is conserved and used (14 minutes)
    - Nigel Maxted, Professor of Plant Genetic Conservation, School of Biosciences, University of Birmingham, United Kingdom of Great Britain and Northern Ireland (the)
  - Facilitating conservation of and access to PGRFA diversity through new technologies, approaches and data (10 minutes)
    - Fiona Hay, Senior Researcher, Department of Agroecology, Aarhus University, Denmark
  - Analysing data for finding adaptive traits in crop diversity (10 minutes)
    - Ahmed Amri, Former Head, Genetic Resources, International Center for Agricultural Research in the Dry Areas (ICARDA)
  - Cherokee Heirloom Genetics: A 20-year search for calories and culture (10 minutes)
    - Chuck Hoskin, Principal Chief and Pat Gwin, Cherokee Ethnobotanist, Cherokee Nation, United States of America

- Q&A session and discussion (15 minutes)

- The Global Conservation System – what impact has it had?
  - From PGRFA conservation to quality seed delivery and use in different regions (13 minutes)
    - Bram de Jonge, Seed Policy Advisor, Oxfam Novib and Researcher, Law & Governance Group, Wageningen University (WUR), Netherlands (the)
  - Farming systems based on PGRFA diversity – impact on livelihoods and resilience in the Pacific (13 minutes)
    - Karen Mapusua, Director, Land Resources Division, Pacific Community (SPC)
  - Economic impacts of using PGRFA diversity in crop improvement (13 minutes)
    - Nelissa Jamora, Agricultural Economist, Global Crop Diversity Trust

- Q&A session and discussion (15 minutes)

- Summary (5 minutes)
Thursday, 4 November 2021

16.00-18.00

Session 2.2 Access and benefit-sharing

Co-Chairs:
- Lamis Chalak, Professor, Head of Plant Production Department, Faculty of Agronomy, The Lebanese University, Lebanon.
- Charlotte Lusty, Head of Programs and Genebank Platform Coordinator, Global Crop Diversity Trust

Rapporteurs:
- Isabel Lopez Noriega, Scientist, Policy Specialist, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)
- Mariana Yazbek, Scientist, International Center for Agricultural Research in the Dry Areas (ICARDA)

Introduction (3 minutes)

Twenty years of the International Treaty on Plant Genetic Resources for Food and Agriculture: where are we now? (20 minutes)
Kent Nnadozie, Secretary, International Treaty on Plant Genetic Resources for Food and Agriculture

Successful case studies for implementing ABS measures in South America - What can we learn? (10 minutes)
Simone Ferreira, Lawyer, Nogueira Ferreira Advogados Associados, Brazil

Evolving ABS systems in China for sustainable development and food security (10 minutes)
Qingwen Yang, Professor and Group Leader, Institute of Crop Sciences, Chinese Academy of Agricultural Sciences (CAAS), China

Exchanges between public and private sectors (10 minutes)
Marisé Borja, Biosolutions Director, Syntech Research Group

ABS in an increasingly digitized future (10 minutes)
David Ellis, Scientist Emeritus, International Potato Center

Q&A session and discussion (10 minutes)

Panel discussion (35 minutes)
Moderator:
- Michael Halewood, Head, Policy Unit, Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT)

Panelists:
- Szonja Csörgő, Intellectual Property and Legal Affairs Director, Euroseeds
- Yasmine Lara Beau, IPM and Seed Collection Manager, Buzuruna Juzuruna Network, Lebanon
- Tilabilenji Phiri, Senior Programmes Officer: In-situ Conservation, Southern African Development Community (SADC) Plant Genetic Resources Centre (SPGRC)
- Ehsan Dulloo, Scientist, Alliance of Bioversity International and the International Center for Tropical Agriculture
- Elzbieta Martyniuk, Professor, Institute of Animal Sciences, Department of Animal Genetics and Conservation, Warsaw University of Life Sciences, Poland

Optimizing access and benefit-sharing (10 minutes)
Amber Scholz, Deputy to the Director, Leibniz Institute DSMZ–German Collection of Microorganisms and Cell Cultures, Germany

Summary (2 minutes)
Friday, 5 November 2021

PARALLEL SESSIONS: THEME 3 AND 4

Theme 3: CROP VARIETAL DEVELOPMENT AND ADOPTION

9.00-11.00

Session 3.1 Accelerating genetic gains in crops

Co-Chairs:
- Emmanuel Okogbenin, Director, Programme Development and Commercialization, African Agricultural Technology Foundation (AATF)
- Idah Sithole Niang, Professor, Department of Biotechnology and Biochemistry, University of Zimbabwe, Zimbabwe

Rapporteurs:
- Ikhide Imumorin, Executive Director, California State University Program for Education and Research in Biotechnology (CSUPERB), United States of America (the)
- Oluwole Fatunbi, Senior Technical Cluster Leader/Innovation Systems Specialist, Forum for Agricultural Research in Africa (FARA)

- Introduction (5 minutes)
- Keynote: Accelerating genetic gain for sustainable development (20 minutes)
  Barbara Wells, Global Director, Genetic Innovations, CGIAR
- Case study 1: Climate-smart maize (15 minutes)
  Sylvester Oikeh, TELA Maize Project Manager/Maize Scientist, African Agricultural Technology Foundation (AATF)
- Case study 2: Bean improvement at Embrapa (15 minutes)
  Elcio Perpetuo Guimaraes, Director General, Embrapa Rice and Beans Research Center, Brazil
- Case study 3: Harvest Plus orange sweet potato (15 minutes)
  Maria Andrade, Sweet Potato Breeder, International Potato Centre
- Case study 4: Wheat quality improvement in China (15 minutes)
  Zhonghu He, Head, Research Group, Wheat Quality Breeding, Center for Crop Genetics and Breeding, Chinese Academy of Agricultural Sciences (CAAS), China and International Maize and Wheat Improvement Center (CIMMYT)

- Panel discussion: Capacity development in developing countries and need-based breeding (30 minutes)
  Moderator:
  - Humberto Gómez Paniagua, Independent Professional, Costa Rica
  Panelists:
  - Seungho Cho, Director General, Central Area Crop Science, National Institute of Crop Science, Rural Development Administration, Republic of Korea
  - Vivienne Anthony, Senior Scientific Advisor, Syngenta Foundation for Sustainable Agriculture
  - Mark Laing, Director, African Centre for Crop Improvement, South Africa
  - Lorena Basso, President, Basso Semillas, Argentina and President, Seed Association of the Americas (SAA)
  - Gigi Manicad, Independent Consultant on biodiversity for climate resilience

- Summary (5 minutes)
Friday, 5 November 2021

11.30-13.30

Session 3.2 Facilitated adoption of improved varieties by small-scale farmers

Co-Chairs:
- Maryke Labuschagne, Professor in Plant Breeding, University of the Free State, South Africa
- Maria Andrade, Sweet Potato Breeder, International Potato Centre (CIP)

Rapporteurs:
- Daniel Kyalo Willy, Programme Officer, TAAT Policy, African Agricultural Technology Foundation (AATF)
- Julius Pyton Sserumaga, Senior Research Scientist, National Agricultural Research Organization, National Livestock Resources Research Institute, Uganda

- Introduction (5 minutes)
- Keynote: Improving the low level and rates of adoption of improved varieties in the developing world (20 minutes)
  Ian Barker, Global Potato Agri-Food Systems Program Director, International Potato Center (CIP)
- Development of nutrient efficient rice varieties on small-scale farms in Madagascar (15 minutes)
  Matthias Wissuwa, Senior Scientist, Japan International Research Center for Agricultural Sciences (JIRCAS), Japan
- Policy reforms to incentivize adoption (15 minutes)
  Peter Okoth Mbogo, Senior Maize Breeder, Seed Co
- Role of cooperatives in adoption of new crop varieties (15 minutes)
  Rinaldo Gosparini, General Manager, Santa Rosa Semillas Cooperative, Rosario, Argentina
- Role of quality seed in improving rice yields: A case study (15 minutes)
  Rakesh K. Singh, Program Leader and Principal Scientist (Plant Breeding), Crop Diversification and Genetics, International Center for Biosaline Agriculture (ICBA)
- Panel discussion: Enabling farmers to accept, adopt and grow improved crop varieties (30 minutes)
  Moderator:
  - Martin Ekvad, Former President, Community Plant Variety Office (CPVO)
  Panelists:
  - Tania López Lee, Executive Director, National Seed Office, Ministry of Agriculture, Costa Rica
  - Peter Button, Vice Secretary-General, International Union for the Protection of New Varieties of Plants (UPOV)
  - Rasheed Sulaiman V, Member, Board of the Global Forum for Rural Advisory Services (GFRAS) and Focal Point, Agricultural Extension in South Asia (AESA)
  - Dominic Glover, Research Scientist, Institute of Development Studies, United Kingdom of Great Britain and Northern Ireland (the)
  - Ousmane Ndiaye, Director, Senegalese Association for the Promotion of Small Development Projects (ASPRODEB), Senegal
  - Stella Salvo, Head of Breeding Partnerships for Smallholder Farming, Bayer Crop Science
- Summary (5 minutes)
Friday, 5 November 2021

PARALLEL SESSIONS: THEME 3 AND 4

Theme 4: SEED SYSTEMS

9.00-11.00

Session 4.1 System innovations in the seed value chain

Co-Chairs:
- Martin Ekvad, Former President, Community Plant Variety Office (CPVO)
- Alison Powell, Chair, International Seed Testing Association (ISTA) Seed Science Advisory Group to the ISTA Executive Committee and Chair, ISTA Vigour Technical Committee

Rapporteurs:
- Csaba Gaspar, Programme Manager, OECD Seed Schemes, Organisation for Economic Co-operation and Development (OECD)
- Andreas Wais, Secretary General, International Seed Testing Association (ISTA)

- Introduction (5 minutes)
- Keynote: Seed systems: their importance and policy challenges (20 minutes)
  Niels Louwaars, Managing Director, Plantum, Netherlands (the)
- Quality seed production systems: A success story of India: Telangana State as global seed hub (13 minutes)
  Keshavulu Kunusoth, Director, Telangana State Seed & Organic Certification Authority (TSSOCA), India and Vice President, International Seed Testing Association (ISTA)
- Seed testing for sustainability in Latin America (13 minutes)
  Enriqueta Molina, Associate, Santamarina and Steta Law Firm, Mexico
- Quality seed production systems: Different quality control systems in one regulatory frame (13 minutes)
  Bellah Mpofu, Policy Development Specialist, Feed the Future Southern Africa Seed Trade Project, Zambia
- Quality seed production systems (13 minutes)
  Ali Üstün, Secretary General, Economic Cooperation Organization Seed Association (ECOSA)
- Seed authenticity: Consequences of counterfeit seed in the market and innovative remedies (13 minutes)
  Duncan Ochieng' Onduu, Executive Officer, Seed Trade Association of Kenya, Kenya
- Seed treatments: How seed treatment contributes to green innovation of plant production (13 minutes)
  Tim Loeffler, Business Owner, Seed Vigor Consulting LLC, United States of America (the)
- Joint Q&A based on the chat – towards lessons learnt across countries (10 minutes)
- Summary (5 minutes)
Friday, 5 November 2021

**11.30-13.30**

**Session 4.2: Seed enterprise development and international trade**

Co-Chairs:
- **Keshavulu Kunusoth**, Director, Telangana State Seed & Organic Certification Authority, India and Vice President, International Seed Testing Association (ISTA)
- **Shaun Ferris**, Senior Technical Advisor, Agriculture/Livelihoods and Markets, Catholic Relief Services

Rapporteurs:
- **Catherine Langat**, Technical Manager, Plant Breeding and Variety Registration, Euroseeds
- **Hélène Khan Niazi**, International Agricultural Manager, International Seed Federation

**Introduction (5 minutes)**

**Government incentives for seed business development – Nigeria (13 minutes)**

**Okelola Folarin**, Senior Technical Adviser to Director General, National Agricultural Seeds Council (NASC), Nigeria

**Government incentives for seed business development – Viet Nam (13 minutes)**

**Nguyen Thanh Minh**, Director, Viet Nam Seed Service Support Centre, Viet Nam

**Government incentives for seed business development in China (13 minutes)**

**Jikun Huang**, Professor and Director, New Rural Development Research Institute, Peking University, China

**Seed sector development for resilience - Uganda (13 minutes)**

**Shaun Ferris**, Senior Technical Advisor, Agriculture/Livelihoods and Markets, Catholic Relief Services

**Embracing market-based approaches to development: The East-West Seed Story (13 minutes)**

**Lysette Lacambra**, KT Technical Specialist, East-West Seed Knowledge Transfer

**Phyto-sanitary: new approaches on phytosanitary controls to support cross border seed trade (13 minutes)**

**Rose Souza Richards**, Seed Health Manager, International Seed Federation

**Seed policy and regional harmonization (13 minutes)**

**Justin Rakotoarisaona**, Secretary General, African Seed Trade Association (AFSTA)

**Closing panel based on chat questions (20 minutes):**

Moderator:
- **Niels Louwaars**, Managing Director, Plantum, Netherlands (the)

Panelists:
- **Kristiina Digryte**, Councillor for Agriculture and Fisheries, Permanent Representation of Estonia to the European Union
- **François Burgaud**, Senior Advisor to the Presidency, French Interprofessional Organisation for Seeds and Plants (SEMAE), France
- **Kanokwan (May) Chodchoey**, Executive Director, Asia and Pacific Seed Association
- **Tsungai Bwerazuva**, Seed Expert, Champion Farmer Seeds Cooperative Company, Zimbabwe

**Summary (5 minutes)**
Friday, 5 November 2021

14.30-16.00

PLENARY SESSION 3: REPORTS ON CONFERENCE THEMES AND RECOMMENDATIONS

Moderator: Jingyuan Xia, Director, FAO Plant Production and Protection Division

Reports on conference themes

- **Theme 1: Advanced technologies (10 minutes)**
  Rajeev K Varshney, Research Program Director, Accelerated Crop Improvement, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and Professor, Murdoch University, Australia

- **Theme 2: Conservation of plant genetic resources for food and agriculture (10 minutes)**
  Charlotte Lusty, Head of Programs and Genebank Platform Coordinator, Global Crop Diversity Trust
  Lamis Chalak, Professor, Head of Plant Production Department, Faculty of Agronomy, The Lebanese University, Lebanon

- **Theme 3: Crop varietal development and adoption (10 minutes)**
  Emmanuel Okogbenin, Director, Programme Development and Commercialization, African Agricultural Technology Foundation (AATF)

- **Theme 4: Seed systems (10 minutes)**
  Keshavulu Kunusoth, Director, Telangana State Seed & Organic Certification Authority (TSSOCA), India and Vice President, International Seed Testing Association (ISTA)

- Discussion (20 minutes)

Report on conference recommendations

- **Recommendations (10 minutes)**
  Long Mao, Head, Research Group of Wheat Complex Traits Dissection, Institute of Crop Sciences, Chinese Academy of Agricultural Sciences (CAAS), China

- Discussion (20 minutes)

16.00-17.30

PLENARY SESSION 4: HIGH-LEVEL MINISTERIAL SEGMENT AND CLOSING

Moderator: Beth Bechdol, Deputy Director-General, FAO

High-level ministerial segment

- **Africa: South Africa** (10 minutes)
- **Asia and the Pacific: People’s Republic of China** (10 minutes)
- **Europe: Netherlands** (10 minutes)
- **Latin America and the Caribbean: Argentina** (10 minutes)
- **Near East and North Africa: Egypt** (10 minutes)
- **North America: United States of America** (10 minutes)

Concluding remarks

QU Dongyu, Director-General, FAO
This Virtual Conference will be held using the Zoom platform. Interpretation will be available:

- in English, French, Spanish, Arabic, Chinese and Russian for all plenary sessions
- in English, French, Spanish for all parallel sessions

Participants can access Zoom from all devices, via web browser or App. The download of the App is strongly recommended for a better user experience.

Zoom regularly provides new versions of the App. It is strongly recommended to check for updates frequently to ensure that the new features will work and to enhance the security of the App.

To do so, open the App and click on your profile picture in the top right of the Zoom window, then click Check for Updates.

If there is a newer version, Zoom will download and install it. Please pay specific attention to the following information:

1. Register for the various / relevant sessions of the conference by using the five links below:
   - Plenary Sessions (Opening, keynote addresses, reports on conference themes and recommendations, high-level ministerial segment and closing)
   - Theme 1: Advanced technologies, Parallel Sessions 1.1 and 1.2
   - Theme 2: Conservation of plant genetic resources for food and agriculture, Parallel Sessions 2.1 and 2.2
   - Theme 3: Crop varietal development and adoption, Parallel Sessions 3.1 and 3.2
   - Theme 4: Seed systems, Parallel Sessions 4.1 and 4.2

2. You will then receive a confirmation email with the link to access the virtual meeting room.
   - This personal link will connect you directly to the meeting, you will not need to register.
   - Do not share this link with others.

3. Connect your computer via an Ethernet cable to your router, rather than using Wi-Fi and disconnect other devices.

4. Please note that the biggest impediment to interpretation is poor sound quality. If you plan to take the floor, please do not use your built-in computer microphone, as it will not provide sufficient sound quality.
   - Use a USB-headset with integrated microphone.
   - If not available, cellphone earphones/mic are better than none, but only wired, not Bluetooth.
   - If no headset/mic is available, an external USB-wired microphone is the next best solution.

5. Turn off all sound notifications (Skype, WhatsApp, emails, etc.) while attending the meeting and ensure you are in a place with no background noise or echo.

6. Select the language you wish to listen to in the Interpretation menu [4].

7. If you wish to take the floor, use the Raise Hand function in the Reactions menu [3].
8. Please have your video on when you take the floor [2]. You can switch the video off and mute the microphone when you have completed your intervention. This may conserve bandwidth and facilitate a smoother conference experience.

9. Should you, at any point, lose your connection, you will be able to re-join using the same link.

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CONTACTS

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