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Speakers

SCIENCE AND TECHNOLOGY LEADING THE TRANSFORMATION
OF GLOBAL AGRI-FOOD SYSTEMS

Name: WU Kongming
Organization: Chinese Academy of Agricultural Sciences

Professional Title:
Academician of the Chinese Academy of Engineering (CAE), Professor

Present Affiliation & Title:
President, Chinese Academy of Agricultural Sciences (CAAS) (2021.10 - Present)

Professional Experiences:
Vice President, CAAS (2012.10-2021.10)
Director General, Institute of Plant Protection (IPP), CAAS (2006.01-2012.10)
Deputy Director General, IPP-CAAS (2003.12-2006.01)
Director, Department of Agricultural Entomology, IPP-CAAS; Deputy Director, State Key Laboratory for Biology of Plant Diseases and Insect Pests, IPP-CAAS (1999.11-2003.12)
Deputy Director, Department of Agricultural Entomology, IPP-CAAS (1995.08-1999.11)
Assistant Professor, Department of Agricultural Entomology, IPP-CAAS (1994.09-1995.08)
Assistant Professor, Institute of Plant Protection, Henan Academy of Agricultural Sciences (1987.07-1992.09)

Educational Background:
Ph.D. in Entomology, Graduate School of Chinese Academy of Agricultural Sciences (1992.09-1994.09)
Master in Entomology, Graduate Department of Henan Academy of Agriculture and Forestry, China (1984.09-1987.07)
Bachelor in Plant Protection, Henan Agricultural University, China (1980.09-1984.07)

Research Interests & Academic Achievements:
Dr. Wu's research focuses on biology and management strategies of crop insect pests, including migratory biology, Integrated Pest Management (IPM) strategy, impacts of Bt transgenic crops on evolution of pest status in agricultural ecosystem, and Insect Resistance Management (IRM) strategy to Bt crops. These IPM/IRM strategies, in applying the principle of agro-ecology and moving towards the concept of a sustainable agriculture, have been widely used for insect pest management in Chinese agricultural system, which play very important roles in reducing the utilization of insecticides and improving economic output of crops in China.

He has been the Principal Investigator of twenty major research projects sponsored by Ministry of Science and Technology, Ministry of Agriculture and Rural Affairs, and the National Natural Science Foundation of China. He received three awards at the national level for his contribution to agricultural science. He has published more than 200 academic articles in scientific journals including Science, Nature, Nature Biotechnology, PNAS and Annual Review of Entomology etc. In pursuing scientific research, Dr. Wu has mentored and nurtured more than 30 doctoral students, 40 master students and 10 postdoctoral fellows. In 1998, The State Council recognized his contribution by awarding him life-time special stipend. In 1999, The Ministry of Agriculture honored Dr. Wu as an Outstanding Young Scholar. He received the Science & Technology Award for Chinese Youth in 2006. He also won a grant for National Outstanding Youth Scientist from National Natural Science Foundation in 2006. In 2010, he was honored as the National Outstanding Science and Technology Scientist by China Society and Technology Association.

Name: QU Dongyu
Organization: Food and Agriculture Organization of the United Nations (FAO)

Biography:

Dr. Qu Dongyu took office on 1 August 2019 as the ninth Director-General of the Food and Agriculture Organization of the United Nations (FAO) and was re-elected for a second four-year term on 2 July 2023.

During his first term, Dr. Qu championed a wide range of reforms and initiatives to overhaul the Organization's business model, improving efficiency and implementing best practices that support programs and administrative effectiveness.

Dr. Qu strongly advocated for the transformation of agrifood systems to make them more efficient, more inclusive, more resilient, and more sustainable and promote the Four Betters: better production, better nutrition, a better environment and a better life, leaving no one behind with the ultimate goal of helping Members to achieve the Sustainable Development Goals (SDGs).

Before first being elected as FAO Director-General, Dr. Qu served as China's Vice Minister of Agriculture and Rural Affairs (MARA), where one of his achievements was to promote inclusive and innovative development and make sure information and communication technologies (ICT) were available in rural areas so that more than 400 million farmers could use their smartphones as a new farming tool. Another national initiative led by Dr. Qu was to improve reporting of wholesale prices for agricultural products in China and foster the establishment of more than 100 specialty production areas geared to making local comparative advantages work to the benefit of local farmers.

As Vice Governor of Ningxia Hui Autonomous Region, one of China's landlocked and poorest areas, Dr. Qu formulated action plans aimed at poverty reduction, disaster reduction and prevention, women empowerment, agritourism and mutual learning platforms designed to boost trust between ethnic groups.

Before serving the senior leadership roles in government at central and local level, Dr. Qu was the Vice President of Chinese Academy of Agricultural Sciences (CAAS) and the Human Resources Director at the China Three Gorges Project Development Corporation, a $40 billion investment project.

Name: Johan Swinnen
Organization: International Food Policy Research Institute (IFPRI)

Biography:
Johan Swinnen is Director General of the International Food Policy Research Institute (IFPRI) and managing director of Systems Transformation at CGIAR. Prior to joining IFPRI, he was professor of economics & director of the LICOS Centre for Institutions & Economic Performance at KU Leuven (Belgium) and senior research fellow at the Centre for European Policy Studies in Brussels.

Earlier he was lead economist at the World Bank and economic adviser to the European Commission. He has been a visiting professor at various universities and a frequent adviser to international institutions. Dr. Swinnen has a PhD from Cornell University and two honorary doctorates. He has published extensively on agricultural policies, food security, international development, political economy, institutional reforms, trade, & global value chains.

Presentation Topic:
Leveraging Research and Innovation to Transform Food Systems

Abstract:
Global food systems are at a crossroad, as they struggle to meet food security, nutrition, and environmental sustainability needs, while facing multiple crises and volatility. Populations within low- and middle-income countries remain especially vulnerable to these crises. Fortunately, the global community can use these developments as an opportunity to truly begin investing in food system transformation. In his keynote presentation, Dr. Johan Swinnen will illustrate how research and development can help identify the most cost-effective policies, technologies, and innovations to scale up and replicate. Research can also illuminate ways to change incentives for adoption and uptake of existing innovations, build up coalitions for change, and mobilize financing for food system transformation at the global, regional, and national levels. Together, these actions can ensure that food systems are able to feed and nourish people and the planet for generations to come.

Organization Profile:
The International Food Policy Research Institute (IFPRI) provides research-based policy solutions to sustainably reduce poverty and end hunger and malnutrition in developing countries. Since 1975, IFPRI has worked on-the-ground in over 70 countries to provide timely research and policy analysis to decisionmakers, and communicate its analysis through peer-reviewed publications, consultations with governments, and numerous policy events. The Institute maintains a strong regional and country presence to respond to demand for food policy research and deliver support for country-led development, including in East and Central Asia, Africa, South Asia, and Latin America and the Caribbean.

IFPRI is a research center of CGIAR, the world's largest agricultural innovation network. As part of the network, IFPRI is leading and implementing numerous CGIAR Research Initiatives, and carrying out multidisciplinary work on food systems transformation together with CGIAR colleagues. These ambitious initiatives cover such topics as strategies for food, land and water systems; foresight and metrics; digital innovation; food markets; low-emissions food systems; and much more.

Name: Najat Mokhtar
Organization: International Atomic Energy Agency (IAEA)

Biography:

Najat Mokhtar was appointed Deputy Director General and head of the Department of Nuclear Sciences and Applications on 1 January 2019. Prior to her appointment, she was Director of the Division for Asia and the Pacific in the Department of Technical Cooperation.

From 2012 to 2014, Ms Mokhtar was the Section Head of the Nutrition and Health related Environmental Studies, Human Health Division. From 2010 to 2012, she was the Director of Science and Technology at the Hassan II Academy of Science and Technology in Morocco, where she coordinated the national strategy on Education and Research. She worked as University Professor and Research Director at the University Ibn Tofail in Morocco for more than 20 years. Ms Mokhtar was a Technical Officer at the Agency from 2001 to 2007.

Ms Mokhtar holds a PhD in Nutrition and Endocrinology from Laval University in Canada and has a doctorate in food sciences from the University of Dijon in France. She has done her postdoctoral training as a Fulbright fellow at Johns Hopkins University in the United States of America.

Name: Felix Dapare Dakora
Organization: African Academy of Sciences

Biography

Prof Dakora obtained his BSc (Hons) degree in Agriculture from the University of Ghana in 1977, an MSc degree from the University of Sydney, Australia, in 1981, and a PhD in Botany from the University of Western Australia, Perth, 1989. He currently holds a South African Research Chair in Agrochemurgy and Plant Symbioses at the Tshwane University of Technology, South Africa; and is Fellow and President of the African Academy of Sciences. In 2012, he won the UNESCO-Equatorial Guinea International Prize for Research in the Life Sciences, and the African Union Kwame Nkrumah Science Excellence Continental Award in 2016. He is a Member of the Academy of Sciences of South Africa, Fellow of the Royal Society of South Africa, and TWAS Fellow. He currently serves as Adjunct Professor to the University of Western Australia for the period June 2012 to May 2021. Prof Dakora's research has contributed to our current understanding of the signalling and protectant roles of legume molecules such as flavonoids, alkaloids, amino acids, terpenoids and isoflavonoid phytoalexins, as well as of rhizobial metabolites such as lumichrome, riboflavin and indole acetic acid, especially in plant functioning and the expression of bacterial nodulation genes. His research has i) identified legume species and their associated microsymbionts that can serve as biofertilizers for cropping systems in Africa, ii) selected legume varieties and super-smart soil microbes that are tolerant of drought, low pH, high salinity and high temperatures for use in a climate change scenario, and iii) isolated native soil rhizobia that promote increased trace element uptake and accumulation in food legumes for overcoming micronutrient deficiency in Africa. Prof Dakora has published 427 papers (which comprise 119 peer-reviewed journal articles, 16 Book Chapters and 292 peer-reviewed Conference papers/abstracts) and a Book entitled: "Biological Nitrogen Fixation: Towards Poverty Alleviation through Sustainable Agriculture" published by Springer. He has an individual H-index of 33, and his work has been cited 4876 times by peers in the discipline. Prof Dakora is passionate about capacity building, and has trained 44 postgraduate students (27 master's and 17 doctoral) from 14 African countries.

Name: MEI Xurong
Organization: Chinese Academy of Agricultural Sciences

Biography:
Prof. Mei has been engaged in scientific research on agricultural water and soil resources utilization in arid and water-scarce areas in northern China for over three decades, focusing on crop water physiological ecology, biological water-saving theory and technology, dry farming and water-saving agriculture model and other fields. Currently, he is also the director of the National Engineering Laboratory of Crop Efficient Water Use and Disaster Resistance and Loss Reduction, and the director of the Agro-Environmental Comprehensive Laboratory of the Ministry of Agriculture and Rural Affairs of China. He has won three national scientific and technological progress awards and published 150-plus academic papers and 15 monographs. He is the first batch of national candidates for exceptional talents project, the first-class outstanding talent for water-saving agriculture of the Chinese Academy of Agricultural Sciences, a national outstanding talent for agricultural research, and an expert with special government subsidies. In 2010, he won the Topic of National Outstanding Scientific and Technological Worker, and in 2011, he won the Outstanding Contribution Award for the implementation of National Science and Technology Plan.

Presentation Topic:
Promoting High-quality Global Agricultural Development through Science and Technology Innovation

Abstract:
Since the reform and opening-up, the Chinese authorities have adopted a brand-new food security conception and promoted high-quality sustainable agricultural development. Agricultural S&T innovation indeed plays a vital role in advancing agricultural development. The contribution rate of agricultural technological advancement has reached 62.4%. CAAS, a central agricultural research institution established by the national government, attaches great importance to agricultural S&T innovation. Since 2013, CAAS has focused on the national food security development goal, fulfilled the mission and responsibility of the national team, and centered on scientific and technological innovation projects. As an important part of the national strategic scientific and technological force, CAAS has provided tremendous scientific and technological support and technical guarantee for agricultural production in China. Meanwhile, CAAS has set up extensive links with numerous organizations globally and established joint labs or researcher centers aiming at creating new international cooperation system. In the new era, CAAS highlights exploring pivotal research segments key to modern agriculture and stresses new cooperation mode so as to make due contribution to global agricultural development.

Organization Profile:
Founded in 1957, the Chinese Academy of Agricultural Sciences (CAAS) is a comprehensive agricultural research institution directly under the Ministry of Agriculture and Rural Affairs, which is responsible for major basic and applied research, and high-tech research in agriculture nationwide.

CAAS is committed to solving fundamental, directional, global and critical scientific and technological problems in China's agricultural and rural economic development, and plays an important role in promoting innovation in agricultural science and technology, supporting the local economy, fostering high-level scientific research talents, and facilitating international exchanges and cooperation in science and technology.
CAAS currently has 11,236 employees, with 6,849 on regular payroll. CAAS currently employs 16 (CAS and CAE) academicians.

CAAS has established cooperative relationships with more than 330 foreign government departments, scientific research and teaching institutions, and nearly 50 international organizations, foundations and multinational corporations, with partners from 85 countries on five continents. 10 international institutions have set up representative offices in China at CAAS. CAAS has carried out in-depth cooperation with FAO, CGIAR, CABI and other international organizations, and participated in cooperation discussions and rule-making under multilateral frameworks such as the EU-China Working Group on Food and Agricultural Biotechnology, and Meeting of G20 Agricultural Chief Scientists, playing an active role in international scientific and technological governance.

Name: SUN Tan
Organization: Chinese Academy of Agricultural Sciences

Study and work experience:

1987.09--1991.07 Student, Department of Library and Intelligence, Heilongjiang University, majoring in Library and Information Science;
1991.07--1994.09 Worked at the Intelligence Institute of Heilongjiang Academy of Agricultural Sciences;
1994.09--1997.02 Obtained Master's Degree in Library Science, National Science Library, Chinese Academy of Sciences(CAS);
1997.09--2000.07 Ph.D. Candidate, Department of Library Science, National Science Library, CAS;
2000.07--2004.02 Worked at National Science Library, CAS;, Assistant to the Director of National Science Library, CAS, and Director of the Resource Development Department (during which time he was appointed as a research librarian in 2002.01);
2004.02--2006.03 Deputy Director General of the Library and Information Center, CAS;
2006.03--2014.04 Deputy Director General of the National Science Library, CAS (Preparatory);
2014.04--2015.06 Deputy Director General of the Library and Information Center, CAS;
2015.08--2019.09 Director General and Deputy Secretary of the Party Committee, Agricultural Information Institute, Chinese Academy of Agricultural Sciences;
2019.09- Vice President and member of the Leading Party Group of the Chinese Academy of Agricultural Sciences.

Main Research Areas and Achievements:

Prof. SUN Tan has been engaged in research in fields such as digital information description and organization, smart agriculture, and big data governance for an extended period. In recent years, he has led nearly 10 national and provincial-level research projects, including key projects of the National Key Research and Development Program. He has published over 130 academic papers, authored or co-authored 8 books, and obtained more than 10 authorized patents. In 2005, he was honored with a special allowance from the State Council of China. In 2014, he was recognized as a "National Outstanding Scientific and Technological Worker." In 2016, he was selected for the Young Talent Program of the Chinese Academy of Agricultural Sciences, and in 2018, he was selected as a Class C leader in agricultural science and technology talent of the Chinese Academy of Agricultural Sciences.

Name: Arthur Mol
Organization: Wageningen University & Research (WUR)

Biography:
Prof. dr ir Arthur P.J. Mol is currently rector magnificus and vice-president of Wageningen University & Research, the Netherlands. He has been professor in Environmental Policy at Wageningen University since 2000, and was also professor at Renmin University (China), Tsinghua University (China), the National University of Malaysia and Chiba University (Japan).

He has internationally worked, published and lectured extensively on environmental and agrofood governance, global sustainability governance, sustainable production and consumption, circular (bio)economy, sustainable cities, and marine governance.

He is currently the president of the Association of European Life Science Universities ICA, president of the Euroleague of Life Sciences Universities ELLS, chairman of the Netherlands Federation of Applied Research Organisations TO2, and board member of, among others, the European Bioeconomy University, the international Water Technology Institute Wetsus, the National Environmental Assessment Agency PBL, OnePlanet Research Centre, IHE Delft Institute for Water Education, and the Alliance of TUe/WUR/UU/UMCU.

Presentation Topic:
Transforming Agrofood Systems – the Role of Science

Abstract:
Globally, planetary boundaries are jeopardized and many regions still face significant food and nutrition insecurity. The current agrifood systems are often both contributing to and suffering from these – and many related - threats. Hence, there is a widespread understanding that we have to transform and innovate our food systems, moving them to what has been labelled 'a safe and just operating space': a space within the limits of planetary sustainability while including a fair distribution of benefits. Science has a role to play in developing innovations for the agrifood systems, from sustainable primary production to personalized and healthy nutrition. With a number of examples it will be illustrated how Wageningen University & Research works at the frontier of science to make new innovations available for future sustainable food systems.

Organization Profile:
Focusing on the mission 'To explore the potential of nature to improve the quality of life', Wageningen University & Research (WUR) combines fundamental and applied knowledge in order to contribute to resolving important questions in the domain of healthy food and living environment. Over 6,500 employees (over 5,500 fte) and more than 12,000 students are inspired by nature, society, and technology and tackle the issues with an open and curious perspective. This inspiration has enabled WUR to be amazed, develop knowledge, and apply this knowledge internationally for over a century. We collaborate with governments, companies, non-governmental organizations and other research institutes to realize our ambition to Find Answers Together.

Name: Ismahane Elouafi
Organization: Food and Agriculture Organization(FAO)
of the United Nations

Biography:
Dr. Ismahane Elouafi is the Chief Scientist of the Food and Agriculture Organization (FAO) of the United Nations, and part of FAO's core leadership structure.

With nearly two decades of experience in agricultural research and development in Asia, Africa and the Middle East, Dr. Elouafi is a strong advocate for diversifying into neglected and underutilized crops. She is also internationally known for her work on promoting use of non-fresh water in agriculture and empowerment of women in science.

Dr. Elouafi has been a member of various strategy expert panels and advisory groups. Her contribution to science and policy have been recognized with a number of prestigious awards and accolades, in particular the Excellence in Science Award from the Global Thinkers Forum.

Dr. Elouafi holds a Ph.D. in Genetics.

Presentation Topic: TBD

Abstract: TBD

Organization Profile:
The Food and Agriculture Organization of the United Nations (FAO) is a specialized agency committed to achieving global food security and ensuring that people have consistent access to nutritious sustenance for healthy living. Operating in over 130 countries, FAO provides invaluable technical expertise and support to enhance agricultural, fisheries, and forestry practices. With a primary mission to eradicate hunger, FAO also focuses on promoting sustainable agriculture, managing fisheries and aquaculture, and advocating for responsible forestry practices. Additionally, FAO addresses the impact of climate change on agriculture, supports rural development, and emphasizes the responsible management of natural resources. Through collaboration with governments, UN agencies, NGOs, and the private sector, FAO plays a crucial role in shaping policies and governance within the food and agriculture sector.

Name: Robert H. Hanson
Organization: U.S. Embassy Beijing, China

Biography:
Robert Hanson joined the Foreign Agricultural Service (FAS) of the U.S. Department of Agriculture (USDA) in 1995 and is currently the Agricultural Minister Counselor in the Office of Agricultural Affairs at the U.S. Embassy in Beijing, China. Prior to his assignment in Beijing, Robert was Agricultural Counselor in Hanoi, Vietnam. Previously he served as Area Director for Europe, Turkey, Ukraine, and Russia. Robert also previously served as Agriculture Attaché in Madrid, Spain; Dakar, Senegal; and Ankara, Turkey. Robert began his career as an oilseed commodity analyst for China and East Asia and has also worked on the USDA China trade policy desk covering bilateral agricultural trade issues. Robert received both his BA in Economic Phases of International Relations and his MS in Agriculture and Applied Economics from the University of Wisconsin at Madison.

Presentation Topic: USDA Perspective on Advancing Innovation in Agriculture

Abstract:
For more than 160 years, the Unted States Department of Agriculture (USDA) has been a leader in agricultural science and technology. Today, global farmers, ranchers, and face unprecedented challenges in delivering the safe, high quality and nutritious foods needed to feed a growing plant. In this presentation, Robert Hanson, Agricultural Minister Counselor at the U.S. Embassy in Beijing, shares the USDA perspective on how science and technology can help meet these challenges, the important work USDA is undertaking to address issues such as climate change and food security, and how, now more than ever, we need trade to create the enabling environment for technological development and adoption.

Organization Profile:
The Foreign Agricultural Service (FAS) links U.S. agriculture to the world to enhance export opportunities and global food security. In addition to its Washington, D.C. staff, FAS has global network of nearly 100 offices covering approximately 180 countries. FAS staff work on a wide range of issues affecting global agriculture, including trade policy, market development, data and analysis, food security and export assistance.

Name: Ruben G. Echeverria
Organization: Bill & Melinda Gates Foundation

Biography:
Interested in agricultural technical and institutional change, strengthening agricultural research capacities in the global south and management of agricultural research for development. Currently, Senior Advisor, Agricultural Development, Bill & Melinda Gates Foundation.

Previously: Director General (Emeritus) International Center for Tropical Agriculture (CIAT), Sr. Research Fellow at the International Food Policy Research Institute (IFPRI), Sr. Advisor, FAO-LATAM, Executive Secretary of the Science Council of the CGIAR, Head of Agriculture and Rural Development at the Inter-American Development Bank, and Chair of the Latin-American Center for Rural Development. Ruben chaired the Global Commission on Sustainable Agriculture Intensification (COSAI, 2020-2021) and the scientific board of the Catalan Institute of Agrifood Research and Technology (IRTA, 2017-2023). He is a member of the High-Level Panel of Experts (HLPE) on Food Security and Nutrition of the Committee on World Food Security and of the Scientific Advisory Committee of the UN Food Systems Hub.

Presentation Topic: Strengthening National, Regional and International Research and Innovation Investments for Inclusive Agricultural Transformation

Abstract:
Improving agricultural productivity for food system transformation continues to be one of the most important global challenges. Sustainable productivity growth is the most effective solution for such transformation, including meeting environmental goals and reducing land expansion. Agricultural productivity continues to grow in China and South Asia but not in the rest of the world, particularly in Sub-Saharan Africa. Public agricultural research continues to be in general underfunded in the global south and there are huge partnership opportunities for joint international research and building capacity development in national agricultural research systems.

Organization Profile:
Guided by the belief that every life has equal value, the Bill & Melinda Gates Foundation works to help all people lead healthy, productive lives. In developing countries, it focuses on improving people's health and giving them the chance to lift themselves out of hunger and extreme poverty. In the United States, it seeks to ensure that all people—especially those with the fewest resources—have access to the opportunities they need to succeed in school and life. Our goal in agricultural development is to support farmers and governments in sub-Saharan Africa and South Asia that are seeking a sustainable, inclusive agricultural transformation—one that creates economic opportunity, respects limits on natural resources, and gives everyone equal access to affordable, nutritious food.

Full name: Antonio Moretti
Organization: Institute of Sciences of Food Production, CNR-National Research Council of Italy

Biography:
Research Leader and Director ad interim at Institute of Sciences of Food Production (ISPA) of the Research National Council of Italy (CNR), where he works since 1989. The areas of work are Food Mycology, Plant Pathology, Mycotoxicology and Fungal genetics, with main field of interest mycotoxin profile, genetic diversity, and pathogenicity of main Fusarium, Alternaria, Aspergillus, and Penicillium species, pathogens of agriculturally important crops.

Member of the General Scientific Committee of CNR, Secretary of International Society of Mycotoxicology, and President of General Assembly of Joint Research Consortium of the Italian Microbial Resources Research Infrastructure. He has been responsible/involved as WP Leader for ISPA in several National and European projects on the toxigenic fungi, such as MycoRed and MycoKey.

Spent several periods abroad (mainly, USA, Argentina, Japan, Spain, China) and often invited for key lectures at conferences or seminars in universities and research Institutions worldwide.

Member of the Editorial Board of Plant Pathology, Phytopathologia Mediterranea, Plant Pathology, International Journal of Food Microbiology, and Toxins.

Research activity of Dr. Moretti: around 185 papers on International Journals and book chapters ISI. H-index of Antonio Moretti: 45 (ISI Web of Science), 49 (Scopus), 59 (Google Scholar).

Presentation Topic:
Advanced Strategies to Mitigate Mycotoxin Contamination along the Food Chain

Abstract:
Mycotoxin contamination of food and feed is a serious threat worldwide, because of their impact on animal, human and plant health. According with a recent report, around 25% of food is contaminated by at least one mycotoxin, with important implications for the health of humans and animals and the global trade and economy. Cereals are among the most important commodities worldwide for consumption, economic relevance, as well as susceptibility to mycotoxin contamination. Hot and dry weather conditions, prolonged periods of rainfall deficits, and tighter supplies and market uncertainty have contributed in the last years to reduce cereal production and increase the risk of mycotoxin

contamination worldwide. Therefore, mycotoxin management in these crops requests advanced strategies along the whole supply chain, from pre- to post-harvest stages.

Adopting an integrated pre- and post-harvest approach, possibly using different reduction techniques, still remains the key action to manage mycotoxin contamination risk at a global level.

In this presentation, an overview of advantages and disadvantages of the different approaches to reduce mycotoxin contamination in cereals through pre-and post-harvest practices will be given, ranked for importance and urgency of action.

Organization Profile:
The Institute of Sciences of Food Production belongs to Research National Council of Italy (CNR-ISPA). The Institute is a centre of excellence, worldwide renowned, acting in the fields of scientific research, innovation and technology transfer aimed to improve safety and quality of agro-food products.

In particular, in the field of food and feed safety, innovative methodologies for detection of mycotoxins, toxigenic fungi, microbial pathogens and allergens in cereals, wine, pasta, milk, baby foods, dried fruits, are being developed in national and international projects.

In the area of food production, researches aim at improving food nutritional and organoleptic quality, adding value to typical local products (dairy, bakery and meat products, fruit and vegetables). Innovative lines of probiotic and functional foods using traditional products are being developed in cooperation with enterprises and regionally-based medical research groups to demonstrate health benefits.

The Institute is also involved in assessment of microbial diversity using bioinformatics and advanced molecular and proteomic methodologies; application of biotechnological tools for the production of biomolecules (antioxidants, proteins, enzymes, etc.); quality and shelf life assurance of fruits and vegetables by innovative techniques to support infrastructures and logistic facilities; use of eco-sustainable techniques for greenhouse and open field horticultural crops.

Name: Simon Heck
Organization: International Potato Center (CIP)

Biography:
Simon Heck is Senior Director, CGIAR, and was appointed Director General of the International Potato Center (CIP) in March 2023.

Prior to this appointment, he led CIP's research and development projects portfolio designed to intensify, diversify and strengthen the resilience of agri-food systems with sweetpotato-related technologies. He is responsible for setting priorities responding to changing country, regional and global demands that contribute to CIP and CGIAR long-term objectives.

As Deputy Program Manager for Sweetpotato in Africa he led the regional Scaling-Up Sweetpotato through Agriculture and Nutrition (SUSTAIN) project in and the Sweetpotato Program. He has worked at WorldFish Center, the International Union for Conservation of Nature (IUCN) and the UK's Department for International Development (DFID).

An anthropologist, Simon has extensive experience leading research and development projects in agriculture, aquatic resources, and nvironmental management. He has been chair of the Agro-Enterprise Learning Alliance for Eastern and Southern Africa. He has contributed to policy and strategy development in several African regional and national institutions and contributed to CGIAR research on resilience of social and ecological systems, food security, social development indicators, land tenure, and innovation systems. He has a PhD in Social Anthropology from Boston University.

Presentation Topic:
Improving Productivity of Root and Tuber Crops for Food System Transformation

Abstract:
Continued improvement of agricultural productivity is a key to global food security. Climate change, competition over land and water resources, and other crises pose new challenges for the productivity of major food crops in most regions of the world. In this context, root and tuber crops play an increasingly important role in countries in the Global South. Their contribution to overall calorie production, nutrition security, and agricultural economic growth is projected to grow especially in Africa but also in Asia and Latin America. Major increases in productivity, similar to the Green Revolution in cereal production, are at hand through advances in breeding of new root and tuber crop varieties. These are being reinforced by broader use of agrobiodiversity and innovations in production systems that further increase resource efficiency of root and tuber crop production. The CIP-China-Center for Asia and the Pacific is one example of international cooperation to share progress in root and tuber crop improvement and support research and innovation exchange.

Organization Profile:
The International Potato Center (CIP) was founded in 1971 as a research-for-development organization with a focus on potato, sweetpotato and Andean roots and tubers. It delivers innovative science-based solutions to enhance access to affordable nutritious food, foster inclusive sustainable business and employment growth, and drive the climate resilience of root and tuber agri-food systems. Headquartered in Lima, Peru, CIP has a research presence in more than 20 countries in Africa, Asia and Latin America.

CIP is a CGIAR research center, a global research partnership for a food-secure future. CGIAR science is dedicated to transforming food, land and water systems in a climate crisis. Its research is carried out by 13 CGIAR Centers/Alliances in close collaboration with hundreds of partners, including national and regional research institutes, civil society organizations, academia, development organizations and the private sector. www.cgiar.org

Name: Sinead Leahy
Organization: New Zealand Agricultural Greenhouse Gas Research Centre (NZAGRC)

Biography:
Sinead Leahy is the Principal Scientist at the New Zealand Agricultural Greenhouse Gas Research Centre (NZAGRC). With over 15 years of experience in the field of agricultural science and climate change, she is an expert in greenhouse gas mitigation strategies for the agricultural sector.

Sinead holds a Ph.D. in microbiology and biochemistry and has worked in a variety of research and advisory roles in New Zealand, including as a Senior Research Scientist in the Rumen Microbiology team at AgResearch. At the NZAGRC, Sinead oversees the development of research programmes and initiatives aimed at reducing greenhouse gas emissions from agricultural activities. Her work includes collaborating with farmers and growers, rural professionals, industry leaders, science, and government agencies to identify and implement innovative solutions to this complex challenge.

Sinead is widely recognised for her expertise and contributions to the field of agricultural science. She is the New Zealand Co-Chair of the Livestock Research Group of the Global Research Alliance on Agricultural Emissions; and she is a member of the international Scientific Oversight Committee for the Global Methane Hub Enteric Fermentation R&D Accelerator Program.

Presentation Topic:
Mitigation of Agricultural Greenhouse Gas Emissions from Livestock Sector

Abstract:
Agriculture is a significant source of global anthropogenic greenhouse gas emissions, with emissions from livestock a dominant contributor. Reductions in emissions from the agricultural sector are required to meet global climate targets. However, livestock greenhouse gas emissions are projected to grow under current policies. Increases are due to a growing human population and increasing demand for animal protein as incomes and urbanization rise, but with significant variations in demands and trends between regions and countries. Currently, few countries are implementing policies to reduce emissions in absolute terms from agriculture. With the current technical and policy options it will be difficult to continue to produce food without growing greenhouse gas emissions globally. This is a challenge faced by the agricultural sector. However, there are promising mitigation technologies starting to emerge and include for example the breeding of low-emissions livestock and methane inhibitors. These technologies can play an important role in helping the agricultural sector contribute to global climate goals.

Organization Profile:
The New Zealand Agricultural Greenhouse Gas Research Centre (NZAGRC) is a core component of the New Zealand Government's approach to understanding, managing, and reducing greenhouse gases in agriculture. The goal of the NZAGRC is to discover, develop, and make available to New Zealand farmers and growers, products, tools, and knowledge that enable the practical and cost-effective reduction of agricultural greenhouse gas emissions. The NZAGRC maintains an ongoing open, transparent, and inclusive process for identifying, prioritizing and funding research investments.

Name: Nicolás Gutiérrez
Organization:
National Institute of Agricultural Research of Uruguay (INIA)

Biography:
Dr. Nicolás Gutiérrez is presently de Leader of the Strategic Intelligence Group within the R&D Planning and Evaluation Department of the National Agricultural Research Institute (INIA) form Uruguay. He graduated as an Agronomist in 2003 in the Agronomy School of Universidad de la República (Uruguay). He earned a MSc degree on Technology and Innovation Management in 2009 and was awarded the Roy Rothwell Prize to the most outstanding MSc dissertation by the Department of Science Policy Research (SPRU) of the University of Sussex (UK). He got his PhD on Science and Technology Policy Studies also from SPRU at the University of Sussex. Nicolás joined INIA in 2003 holding a Principal Officer position in the International Cooperation Unit where he has led INIA-CAAS collaboration programs since 2013.

As Leader of INIA's Strategic Intelligence Group, Dr. Gutierrez has led the Institute´s Strategic Planning processes as well as major organizational change initiatives such as R&D programs and organizational management restructuring. He has recently led the design and implementation of new organizational instruments to promote new product development initiatives intended to increase the overall impact of INIA on agricultural innovation.

Presentation Topic:
New Approaches for Technological Development in Small Countries: From Agricultural R&D to Market Oriented New Product Development Processes

Abstract:
Agricultural and food innovation systems have been persistently facing rapid transformations in the last 30 to 40 years. The steady rise of the private sector to become the main supplier of technological solutions for the primary agricultural industry together with effects of the digital revolution on agriculture have transformed the institutional environment as well as the ways technologies are developed and delivered to the final users. These trends, alongside changes in food demand and consumption patterns and increasing environmental challenges are moving and transforming the public goods that should be targeted by public R&D organizations (PROs), the approaches to address them and the ways to interact with final users. Under these conditions, the solutions and value contributions coming out form public R&D organizations are being blurred by a highly competitive agricultural technology business environment. Therefore, mission-oriented PROs are defied to go through significant transformations on their R&D culture, product development and technological business capabilities as well as on their overall approach to deliver knowledge and technological solutions. Organizational flexibility and the ability of quickly adapt to changing circumstances are key determinants to sustain PROs value contributions to agrifood systems innovation and sustainability.

Organization Profile:
INIA is the National Agricultural Research Institute of Uruguay, created in 1989 by a National Act, following 75 years as the research department of the Ministry of Agriculture. It is the main organization in Uruguay related to agricultural research and technology development. It is a public non-governmental legal entity managed and financed by public and private sectors jointly, which allows great flexibility for the administration of its human and financial resources. Its Mission is to contribute to the overall development of producers and the national agricultural sector. The strategic institutional goals are to promote scientific and technological innovation for the agricultural sector in order to improve its national and international competitiveness, and to contribute to environmental sustainability of agricultural production. INIA's Board of Directors is composed of representatives of the Government (Ministry of Agriculture) and the main farmers organizations in Uruguay. The Institute has approximately 180 are scientists. More than eighty percent of these have obtained their post graduate degrees abroad.

Name: Puji Lestari
Organization:
Research Organization for Agriculture and Food,
National Research and Innovation Agency, Indonesia

Biography:
Puji Lestari, is a molecular biologist who was born in Rembang, a small city in Central Java Province, Indonesia in 1971. She got her Doctoral degree in Department of Plant Science, majoring in Agronomy of Seoul National University, South Korea in 2005. Her bachelor and Master degree were obtained from IPB University majoring in Soil Science and Biotechnology, respectively. Since 1994 she joined Indonesian Center for Agricultural Biotechnology and Genetic Resources Research and Development (ICABIOGRAD) and mutated to the Indonesian Rice Research Center under Indonesian Agency for Agricultural Research and Development, Ministry of Agriculture. She is a principal researcher who has moved to National Research and Innovation Agency, Republic of Indonesia (BRIN) since March 2022 as a consequence of Presidential Decree no 78, 2021.

Her research interests are genomic analysis, development of molecular markers and their application for desired traits in breeding and other genetic studies on several plan species. She released a number of new varieties of crops (chili, soybean, sugar palm) and has patents. She consistently dedicates in research and publishes papers to contribute in scientific literature. She is assigned as the Chairman of Research Organization for Agriculture and Food, BRIN since 2022 to present.

Presentation Topic:
Overview of Research and Innovation to Improve Agricultural Productivity for Food Security in Indonesia

Abstract:
Agriculture plays an important role in ensuring food security in Indonesia and currently this country is grappling with the challenge of feeding an increasing population. The agricultural sector in Indonesia faces numerous hurdles, including climate change, land degradation, and limited resources. To tackle these challenges, innovative technologies and research initiatives are imperative. Thus, the critical need for research and innovation in agriculture should boost productivity and secure the nation's food supply. A number of progresses in research and innovation have been achieved in the country on food crops, horticultural and estate crops and livestock especially on the national strategic commodities. The significance of integrated approaches is revealed, such as precision farming, sustainable practices, and breeding with supporting biotechnologies to optimize crop yields and resource utilization. Moreover, collaborative efforts between researchers, policymakers, and relevant stakeholders are vital to foster a conducive environment for innovation and knowledge sharing not only in national but also global level. Taken together, research and innovation are the linchpins for driving agricultural productivity, ensuring food security, and uplifting the Indonesian agricultural landscape while to secure a sustainable and prosperous future in this sector.

Organization Profile:
The National Research and Innovation Agency (BRIN) has 12 Research Organizations, one of which is the Agricultural and Food Research Organization (ROAF), which was founded in March 2022. ROAF focuses on research and innovation in the fields of agriculture and food, especially food crops, horticultural crops and plantations and livestock, agroindustry, food technology and processes, and appropriate technology. Commodity-based research and innovation emphasizes bioprospecting, pre-breeding and breeding, integrated management of agricultural cultivation, and location-specific technology. Food technology research is directed towards advanced food and the agroindustry focuses more on fresh food ingredients. Appropriate technologies are to support pre-harvest, harvest and post-harvest activities. ROAF consists of six Research Centers which are divided based on commodities or research areas related to agriculture and food. The six research centers are the Food Technology and Process Research Center, the Agroindustry Research Center, the Food Crop Research Center, the Horticulture and Plantation Research Center, the Animal Husbandry Research Center, and the Appropriate Technology Research Center. ROAF has around 1247 researchers, of whom 394 have doctoral degrees and 479 have master's degrees. Research activities at ORPP are collaborative through alliances with various Ministries/Institutions, universities, local governments, industry and other stakeholders, both national and global levels.

Name: Bill Hansson
Organization: Max Planck Society

Biography:
Bill Hansson was born in Sweden 1959. He did his BSc in biology/ecology in 1983 and defended is PhD at Lund University, Sweden in 1988. After a two year postdoc at the Arizona Research Laboratories Division of Neuroscience he returned to Lund as assistant, associate and in 2001 professor. In 2001 he was recruited as Professor and Head of Department to the Swedish University of Agricultural Sciences (SLU) in Alnarp. He served in Alnarp until 2006 both as Head of Department and as Vice Dean for Research. In 2006 he was recruited to the Max Planck Society as Director at the Max Planck Institute for Chemical Ecology in Jena, Germany. Between 2014-2020, he also served as Vice President of the Max Planck Society with special responsibility for biological and medical science, for internationality and for communication. Meanwhile, he continued his position as Director in Jena. From 2020 Hansson has also held a position as Guest Professor at SLU.

Hansson is member and fellow of a number of academies, among them the Royal Swedish Academy of Sciences, The German National Academy Leopoldina, The Chinese Academy of Sciences, Academia Europaea, the Finnish Society for Sciences and Letters, The Royal Physiographic Society in Lund and several others.

Presentation Topic:
Advanced Techniques to Dissect Insect Smell-driven Behavior

Abstract:
Insects play an important role for world agriculture in both positive and negative aspects. Understanding their ecology and behaviour is thus of high interest. We specialize in characterizing the olfactory, smell, ecology of insects. In my talk I will describe three technologies that have augmented our capacity during recent years: 1. High throughput recordings from olfactory sensory neurons in combination with gas chromatography-mass spectrometry (GC-MS); 2. Thermal desorption mass spectrometry; and 3. CRISPR-cas9-based manipulations of genes involved in smell-dependent behaviour. All of these techniques allow us to dissect insect odor-dependent behaviour and its underlying neural substrate at hitherto unreached levels. I will also mention examples of studies where these technologies have been applied.

Organization Profile:
The Max Planck Society (MPS) is one of the publicly funded German research organizations. The Society receives more than 2 billion euros per year from the German state and from individual German states. The MPS has an outspoken fundamental science profile and each director has the freedom to define her/his scientific profile. A director is elected for the duration of her/his career and is provided with ample funding until retirement. The MPS has three sections active in the Biology/-Medicin, Chemistry/Physics and Social/Humanities/Law areas, respectively. The Society comprises 86 institutes, out of which about 80 are located within Germany and the rest found in Italy, The Netherlands, Luxemburg and USA. More than 300 directors work at the institutes and in total more than 25000 employees work at MPS. Since the Second World War, the MPS has received more than 20 Nobel Prizes as this year's Ferenc Krausz in Physics and last year's Svante Pääbo in Medicine/Physiology.

Name: Stanford Blade
Organization: Faculty of Agricultural, Life and Environmental Sciences, University of Alberta

Biography:
Dr. Stanford Blade is Dean of the Faculty of Agricultural, Life and Environmental Sciences (University of Alberta). The top-ranked Faculty is made up of 500+ faculty and staff, 1850 undergraduates and 550 graduate students. The Faculty has an annual budget of $95m, with approximately $50m in external research support from industry and funding agencies. ALES is focused on teaching, research and community service in its departments: Agriculture, Food and Nutritional Sciences (where Dr. Blade is a Professor); Renewable Resources; Human Ecology and Resource Economics & Environmental Sociology. In 2018 Dr. Blade was named an International Fellow of the Royal Swedish Academy of Agriculture and Forestry. In 2022 Dr. Blade was awarded the Queen Elizabeth II Platinum Jubilee Medal.

Dr. Blade's PhD was awarded by McGill University for plant breeding/cropping systems research (conducted at IITA) supported by a Government of Canada Doctoral Scholarship. He is a 2012 graduate of the Wharton Business School's Executive Development Program (University of Pennsylvania). He is currently a Trustee on the Board of the International Institute of Tropical Agriculture and he previously served two terms as Vice-Chair for the Board of Trustees of the African Agricultural Technology Foundation a Nairobi-based agency supported by the Bill and Melinda Gates Foundation. Dr. Blade is a board member of Edmonton Global (regional economic development agency), the Alberta Cancer Foundation and the Alberta Biodiversity Monitoring Institute. Dr. Blade has been an invited discussion leader at Harvard Agribusiness Seminars and participated in the Oxford Scenarios Programme.

Dr. Blade was founding Chief Executive Officer (2008-2014) of Alberta Innovates Bio Solutions. Dr. Blade previously served as the Deputy Director General (Research) for the International Institute of Tropical Agriculture (IITA).

Presentation Topic:
Seeding Innovation: the Future of Food

Abstract:
The province of Alberta is an agri-food powerhouse with a history of innovation. The province's agrifood industry economic activity exceeds $56B and employs 275,000 people (Statistics Canada, 2022) in primary production, food processing, grocery retail, and food and beverage services. Alberta's success is mirrored across Canada. The Canadian Advisory Committee on Economic Growth

stated Canada can become "the trusted global leader in safe, nutritious, and sustainable food for the 21st century." Last year Canada exported $83B of agrifood products (Standing Committee on Agriculture and Agrifood, 2022). With concerted effort, collaboration and investment, Canada can reach $100B in agrifood exports by 2030 (while ensuring long-term sustainability), with Alberta having the capacity to double its agri-food exports to $25 billion. But achieving such a target will require investing in research and innovation. Canada has all the elements — remarkable people, extensive natural resources, strong R&D capacity, crucial infrastructure, access to capital and inputs — to lead the world in implementing the next generation of innovation to create food-secure, economically vibrant and environmentally sustainable global communities. The University of Alberta is leading the way in innovative research to contribute to this aspirational outcome.

Organization Profile:
The University of Alberta is one of Canada's leading universities, known for world-class research and innovative discoveries. The university offers top quality undergraduate and graduate programs, including agricultural science, environmental science and food science. There are 44,000 students attending the University of Alberta, including more than 8,000 international students from 164 countries. Bachelor's, Master's and Doctoral (PhD) programs are offered in 18 faculties, with 200 undergraduate specializations and more than 500 graduate programs.

Located in Edmonton, Alberta, the university offers the best of city lifestyle and a beautiful outdoor environment, with parks and a river valley. Edmonton is a major hub for Alberta's thriving energy, agriculture and food industries and offers excellent job opportunities for students and graduates. The University of Alberta ranks in the top 5 among Canadian universities in annual sponsored research funding, and is home to major world-class research facilities.

Name: Daniel Elger
Organization: CAB International

Biography:
Dr Elger joined CABI as Chief Executive Officer in 2020, following 25 years of experience in life sciences, including 15 years at senior management and board level in medical biotechnology, mainly in public companies.

After completing his PhD degree in cancer cell biology at the University of Oxford, Dr Elger worked in editorial roles for publishing and information companies before moving to marketing and communications roles in the biotech industry and later two roles as Chief Financial Officer for biotech companies. In the five years before he joined CABI, he served as Senior Vice President for Research and Development and Chief Commercial Officer at Summit Therapeutics plc, a NASDAQ-listed biotech company developing new treatments for various human diseases.

Since joining CABI, Dr Elger has led CABI's strategic interactions with its 49 Member Countries, working with them to create the organization's new three-year Medium-Term Strategy, which focuses on addressing the biggest challenges facing humanity, including poverty, hunger, climate change, gender inequality and biodiversity loss. Dr Elger is now driving forward its implementation.

Presentation Topic:
Increase the Reach, Application and Impact of Sustainable Practices and Technologies in Crop Production

Abstract:
Major crops and commodities important for food security, income generation and world trade suffer from frequent and severe production constraints due to poor management of agroecosystems, which often results from limited knowledge on best practice. Studies show that empowering agro-input dealers and other agricultural service providers to give better advice to smallholder farmers, particularly women farmers, generates increased productivity. However, public and private-sector agricultural extension services, including agro-input dealers, often lack the capacity to provide accurate diagnoses and sound crop health advice. They suffer from chronic understaffing, lack of institutional capacity, limited operational funds and weak linkages to other actors such as researchers. This limits their ability to respond quickly to new agricultural threats. Technology can bring agricultural knowledge to smallholder farmers, so digital development is a promising solution. This includes virtual communication between farmers and advisors through digital platforms or giving farmers access to

information and decision-making tools through digital apps and websites. This presentation investigates whether the limitations of face-to-face advisory services can be overcome through digital approaches and the degree to which such approaches can increase the reach, application and impact of sustainable practices and technologies in crop production in low-and lower-middle income countries.

Organization Profile:
CABI is a not-for-profit international organisation governed by 49 Member Countries through a UN-registered international treaty agreement. CABI's mission is to improve people's lives worldwide by providing information and applying scientific expertise to solve problems in agriculture and the environment.

CABI works on the biggest challenges facing humanity – hunger, poverty, gender inequality, climate change and the loss of biodiversity. CABI's Medium-Term Strategy 2023-2025 sets out five major goals:
1.Improve the food security and livelihoods of smallholder communities
2.Help communities adapt to the impacts of climate change
3.Reduce inequality through better opportunities for rural women and youth
4.Safeguard biodiversity and support the sustainable use of natural resources
5.Increase the reach, application and impact of science in agriculture and the environment

With over 100 years' experience working in agriculture and the environment, and a physical presence in more than 20 locations around the world, CABI works in partnership with its Member Countries and partners to make a difference in the world, utilising its scientific and knowledge management expertise, publishing products, tools, biological resources and services.

CABI and China have had a long history of successful partnerships, particularly through the China MARA-CABI Joint Laboratory hosted by CAAS.

Name: HAN Bin
Organization: Center for Excellence in Molecular Plant Sciences (CEMPS)/Institute of Plant Physiology and Ecology, Chinese Academy of Sciences

Biography:

Bin Han, Ph.D., Professor, is director of the Centre of Excellence in Molecular Plant Sciences (CEMPS), Chinese Academy of Sciences. He was elected as a Member of the Chinese Academy of Sciences in 2013 and a member of the World Academy of Sciences (TWAS) in developing countries in 2014. He is also the Co-Editor-in- Chief of Molecular Plant and the Editor-in- Chief of the Plant Communications.

Prof. Han has been working on 1) genome sequencing and transcriptome studies, 2) sequencing-based genotyping and GWAS, 3) domestication studies, and 4) heterosis studies, using rice as crop of interest. He has achieved big success in all these fields. His lab has finished rice chromosome 4 sequence. By using next-generation sequencing technology, he performed high-resolution genotyping, data imputation and whole genome sequencing-based GWAS study, and succeeded to identify a substantial number of quantitative trait loci potentially important for rice production and improvement. Furthermore, by extending this technology into the construction of the rice genome-variation map, he unlocked the origin and domesticated process of Asian cultivated rice. The genetic mechanism of heterosis in crops has long been a puzzle despite the fact that heterosis had been discovered more than a century ago and that various genetic models have already been proposed to explain it. By using the same forward genetic and genomic approaches, Han's group performed large-scale genomic mapping for yield-related traits and heterotic effects in thousands of hybrid rice varieties, and characterized the genomic architecture of heterosis for yield traits in rice, which succeeded to reveal the mechanism behind this biologically and agronomically important phenomenon. These works are among the most notable epoch-making achievements in rice genome research since the elucidation of the whole genome sequence of rice, and he has actually published many papers dealing with these topics in top journals, including Nature, Nature Genetics, Nature Communications, Genome Research, Molecular Plant and Plant Cell.

Presentation Topic:

Quantification and Genomic Prediction of Heterosis from Hybrid Rice Genomes

Abstract:

Heterosis or hybrid vigor refers to better performance of the progeny than its parental lines. Exploitation of heterosis in crop hybrid breeding is one of the most important innovations in agriculture, and is still a crucial way to increase agricultural production for global food security. However, modern hybrid rice breeding, which is mainly relying on random crosses between diverse varieties and comprehensive phenotypic selection, is still labor-intensive and time-consuming. We have developed an integrated genomic and forward genetic approach to construct a genome map for elite hybrid rice varieties and their inbred parental lines. We identified that the accumulation of numerous rare superior alleles with positive dominance is an important contributor to the heterotic phenomena. Furthermore, we quantitatively characterized genetic effects of heterotic loci regarding grain yield. We found that hybrid rice breeding has constantly pyramided superior alleles by searching for optimal heterotic combinations and purging inferior alleles in both parental lines simultaneously, and applied flowering time genes to balance productivity and environmental adaptation. Additionally, we demonstrated that widespread genetic complementary in indica-japonica hybrids mainly contributed to interspecific heterosis. Accordingly, a genomic model featured with the customized selection index for diverse rice varieties is developed and optimized to predict the performance of hybrid combinations by using the genomic and phenotypic data from rice hybrids and segregation individuals derived from hybrids. Our data offer a valuable resource for advancing the understanding of rice heterosis. This study reveals novel insights regarding rice heterosis and optimal hybrid combinations.of sustainable practices and technologies in crop production in low-and lower-middle income countries.

Organization Profile:

The CAS Center for Excellence in Molecular Plant Sciences (CEMPS) is a multidisciplinary research center of excellence in plant science, synthetic biology and insect biology. CEMPS was the cradle of plant physiology and biochemistry in China, and one of the pioneer institutions that carried out molecular genetic researches in plants and microbes. CEMPS currently has a total of ~70 research groups, more than 600 graduate students, and 7 Academicians of the Chinese Academy of Sciences.

Name: Shenggen FAN
Organization: The Academy of Global Food Economics
and Policy (AGFEP), China Agricultural University (CAU)

Biography:
Dr. Shenggen Fan is Chair Professor and Dean of the Academy of Global Food Economics and Policy (AGFEP) at China Agricultural University (CAU). Prior to joining CAU, He served as director general of the International Food Policy Research Institute (IFPRI) from 2009 to 2019.

His research interests include food and nutrition security, agricultural and rural development, poverty reduction, and the transformation of food systems. He is currently the CGIAR System Board member, acting board chair of the International Food Policy Research Institute (IFPRI), and vice board chair of the International Rice Research Institute (IRRI). He is also a member of the advisory council at the World Food Prize Foundation and a member of the EAT-Lancet commission.

He is awarded as a Fellow of the Agricultural and Applied Economics Association (AAEA) and an Honorary Life Member of the International Association of Agricultural Economists (IAAE).

Presentation Topic:
Food Systems Transformation, Rural Revitalization and Common Prosperity: the Role of Innovations

Abstract:
Rural areas and smallholder farmers face multiple challenges, including limited access to markets and resources, low agricultural productivity, and lack of resilience to unexpected shocks. Food systems transformation can be shaped to tackle these challenges. Innovations will be critical in transforming food systems for achieving rural revitalization, common prosperity and resilience for smallholders. Such innovations must involve the entire food value chain including how food is produced, distributed, and consumed. New farming techniques such as precision, digital and facility agriculture, novel food processing, and innovative rural and agricultural services have shown promising prospects in increasing food production efficiency, reducing environmental impact, and increasing farming profitability. Equally importantly, innovations in policy and institutions can also contribute to rural revitalization and common prosperity directly as well as indirectly by providing enabling policy environment and institutions for technologies to be developed, distributed and adopted. This keynote speech will shed light on the role of innovations in rural revitalization and smallholder farmers' development and present pathways of food systems transformation that can lead to a more sustainable and prosperous future.

Organization Profile:
The Academy of Global Food Economics and Policy (AGFEP) is a directly under the China Agricultural University. The institute is headed by Dr. Shenggen Fan, chair professor at China Agricultural University and former Director General of the International Food Policy Research Institute (IFPRI). The members of AGFEP include faculty members and researchers from China Agricultural University, Zhejiang University, and other academic institutions. The institute has an academic committee of 14 experts from domestic and international food policy, nutrition, and agricultural economics fields.

With the key strategy of "Based in China, with a global perspective.", AGFEP features a close integration of international perspectives and Chinese practices, a multidisciplinary research system spanning different departments, academic and international cooperation capabilities for talent development, and a management mechanism emphasizing collaboration and growth. AGFEP focuses on food systems transformation and aims to share China's experiences and lessons with the world. The key research areas include reshaping global and Chinese food systems, management research on unexpected public emergencies, and studies on the food-economy-environment-health nexus. The academy provides forward-looking policy recommendations for Chinese and global stakeholders in their efforts to transform food systems for both human and planetary health.

Name: LI Daoliang
Organization: International College of China Agricultural University

Biography:
Prof. Li Daoliang, Dean of International College of China Agricultural University, Changjiang Distinguished Professor of the Ministry of Education, Director of National Innovation Center for Digital Fishery, Deputy Chairman of the Agricultural and Rural Informatization Expert Advisory Committee of the Ministry of Agriculture and Rural Affairs (MARA). He has been engaged in digital agricultural technology and strategy research for a long time. He has been selected as one of the winners of the National Ten Thousand Talents Plan, the Young and Middle-aged Leading Talents of the Ministry of Science and Technology, the Shennong Leading Talents of MARA, the Outstanding Scientific Research Talents, and the New Century Talents of the Ministry of Education. He is also the winner of the National Innovation Prize, the China Youth Science and Technology Award, the Outstanding Engineer Award of the China Foundation for International Science Exchange, the National Excellent Scientific and Technological Worker, and the Outstanding Communist Party Member of Beijing Universities. He is currently the chairman of the Agricultural Information Processing Branch of the International Federation of Information Processing and the chief editor of Information Processing in Agriculture. He has won one second prize of National Science and Technology Progress Award, 3 first prizes of provincial and ministerial science and technology Progress Award, 47 authorized national invention patents, and published 12 monographs. He has published 157 SCI papers as the first author or corresponding author, formulated 4 national standards and 7 industrial and local standards.

Presentation Topic:
Digital Agriculture Development and Talent Cultivation

Abstract:
Professor Li Daoliang will take new agricultural talents as an example to share the practical experience and thinking of digital higher education. And from strengthening the supporting position of basic disciplines, layout of emerging disciplines of digital agriculture, construction of interdisciplinary curriculum system, innovation of digital agricultural talent training model on how to deepen professional field talent training under the background of digital development.

First, strengthen the supporting position of basic disciplines. Digital agriculture is an interdisciplinary subject supported by basic disciplines such as mathematics, physics and chemistry and information disciplines such as computer, electronics and communication. It is an important embodiment of the construction of "new agricultural science". Consolidating the foundation of basic disciplines and deepening the deep cross-integration of basic disciplines, information disciplines and traditional agricultural disciplines is the key to training high-level digital agricultural talents.

Second, lay out the emerging disciplines of digital agriculture. To promote the construction of new agricultural sciences and new engineering, it is necessary to emphasize the layout of digital agriculture disciplines. Plan and promote the high-quality development of agricultural big data, agricultural artificial intelligence, digital agriculture, smart agriculture and other disciplines, open up new tracks and create new momentum, and provide scientific and technological support and platform guarantee for the cultivation of talents in digital agriculture.

Third, establish interdisciplinary curriculum system. Break the professional-oriented training concept and curriculum setting, and expand students' interdisciplinary knowledge, interdisciplinary thinking and application ability. The results of major frontier scientific research and modern industrial development will be integrated into the classroom, the curriculum system will continue to be more cutting-edge, cross-cutting and challenging, and the foundation of information science, science, economics and other disciplines will be strengthened to support agriculture-related majors, so as to cultivate innovative, composite, applied and diversified digital agricultural talents.

Fourth, innovate the training mode of digital agriculture talents. We will deepen university-enterprise cooperation and promote coordinated innovation in higher education and continuing education. To serve the national digital agricultural science and technology self-reliance, establish long-term and stable cooperation between universities, research institutes and industries, strengthen the effective docking of the digital agricultural industry chain, innovation chain, talent chain and education chain, explore a new mode of talent training that integrates science and education and the integration of production and education, and implement the training of top-notch innovative talents that connect the research institutes.

Organization Profile:
China Agricultural University is one of the top key state universities in China and directly subordinated to the Ministry of Education. Its history dates from 1905 when it was established as the Agricultural Section of the Imperial University of Peking. CAU has two campuses, with a total area of 133 hectares. Over the past 100 years, CAU has developed into a research university with agriculture, life sciences and agricultural engineering as its feature and strength. The mission of the university is centered on health and nutrition of mankind by talent cultivation, technical innovation and social service.

The total number of students is about 20,000, including 4313 master students, 3013 doctoral students. CAU has 1640 highly qualified faculty members including: 5 Academicians of the Chinese Academy of Science; 7 Academicians of the Chinese Academy of Engineering; 598 Professors; 842 Associate Professors; 16 Colleges.

Name: Thomas Glauben
Organization: Leibniz Institute of Agricultural Development
in Transition Economies (IAMO)

Biography:
Prof. Dr. h. c. mult. Thomas Glauben is Director of the Leibniz-Institute of Agricultural Development (IAMO) as well as the Head of the Department Agricultural Markets. He is also a professor at the Faculty of Natural Science III and a co-opted professor at the Law and Economics Faculty of the Halle University, Germany. From 2011 to 2015 he has been a deputy member and a member of the Presidium of the Leibniz Association. He is a member of the advisory boards of various journals and trade publishers. His work has been published in numerous peer-reviewed journals. His areas of interest include agricultural and food economics, development economics, geopolitics and econometric methods. Prof. Glauben studied agricultural and food economics at the Kiel University, where he obtained his doctorate and the habilitation.

Presentation Topic:
Digitalization of Small Scale Agriculture: First Insights from Recent Field Surveys and Experiments in China and Central Asia

Abstract:
Digitalization is promising higher productivity, input efficiency, sustainability of farming, higher resilience to external shocks, or food safety and transparency for consumers. While large scale farming is dominating the digitalization debate, for many regions family farming remains major income source and a way to manage the risk of unstable labor markets. Overall, our research indicates that the introduction of capital-intensive precision farming automatization is likely to advance structural change and scale-effects. Meanwhile, machine services and online information platforms are more accessible also to smallholders. One essential component here will be digital education of farmers and introducing digital solutions of low technical threshold, but also supporting machinery services instead of machinery purchases, as well as providing more localized, tailor made extension services to smallholders.

Organization Profile:
The Leibniz Institute of Agricultural Development in Transition Economies (IAMO) is a German agro-economic research institute with an international focus and is engaged in fundamental and application-oriented research. It analyses economic, social and political processes in the agricultural and food sector, and in rural areas. The geographic focus covers Central, Eastern and South Eastern Europe, as well as Central Asia and China.

Name: Eliud Kiplimo Kireger
Organization: Kenya Agricultural & Livestock Research Organization

Biography:
Dr. Eliud Kiplimo Kireger (OGW) has over thirty-four (34) years' experience in the field of Agriculture. Currently, he is the Director General/CEO of Kenya Agricultural & Livestock Research Organization (KALRO). Prior to this appointment, he served as the Managing Director/CEO of the Tea Research Foundation of Kenya; Dean School of Natural Resource and environmental Management, University of Kabianga, Kericho, Dean; School of Natural Resource Management and School of Agriculture and Biotechnology, Kabianga University College (A constituent College of Moi University); Senior Lecturer and Director of Privately Sponsored Students Programme, Chepkoilel Campus, Moi University; Lecturer and Post Graduate Programme Coordinator, Moi University; Part-time Lecturer, Department of Botany & Horticulture, Maseno University; Tutorial Fellow, Moi University, Graduate Research Assistant, Moi University; Deputy Project Manager, Kenya Forestry Research Institute Social Forestry Project, Kitui; and Assistant Research Officer, Kenya Forestry Research Institute.

Dr. Kireger is currently the Consultative Group for International Agricultural Research (CGIAR) System Council alternate member, Sub-Saharan Africa constituency, System Council Active Observer on the Consultative Group for International Agricultural Research (CGIAR) System Board. Member of ASARECA board and Chair of Resource Mobilization Committee. Centre for Agriculture and Bioscience International (CABI) Active Observer to the Board, Centre for Agriculture and Bioscience International (CABI) Liaison Officer for Kenya, Member of the Board of Management of Kenya Veterinary Vaccines Production Institute, Member of the Board of Management of Kenya Animal Genetic Resources Centre (KAGRC), Member of the Board of Management of Pest Control Products Board, Member of Grassland and Rangeland Society of Kenya. He also served as a Member of the Board of Management of Kenya Agricultural Research Institute (KARI) where he chaired the Audit Committee. He has mentored many young scientists and supervised many graduate research projects at BSc, MSc and PhD levels at both Moi and Kabianga Universities.

Dr.Kireger holds a PhD in Plant Ecophysiologyfrom University of Wales, United Kingdom (1999–2003), Masters of Science in Plant genetics and Ecophysiology from University of Toronto, Canada, (1990 –1993) and Bachelor's Degree in Forestry from Moi University Kenya, (1984 –1987). He acquired his A'Level and O'Level from Alliance High School (1977 – 1982).

Presentation Topic:
The Role of Tea & Tea Science in Fostering Rural Development, Poverty Reduction, and Gender Equality in Kenya

Abstract:
Tea is the leading cash crop in Kenya that makes significant contribution to the economy. Tea was introduced in Kenya by the Caine brothers (British colonial farmers) who imported dark-leafed "Manipuri" hybrid seed from Assam in 1904 and 1905 to establish a plantation in Limuru, Central Kenya. By 1963, the acreage increased to 21,448 ha and in 2022, the acreage stood at 225,254 ha. Globally, Kenya is the third largest tea producer after China and India, and number one exporter of black tea in the world market. In the year 2022, the country produced 535 million Kg of black tea. Over 92% of the tea was exported mainly in bulk earning over Ksh. 138.1 billion in foreign exchange, representing about 26% of the total export earnings, and approximately 4% of Kenya's GDP. Tea is a rural based enterprise, and contributes directly to the objectives of the Government's Bottom-Up Economic Transformation Agenda (BETA) 2022-2027 including agricultural transformation. An estimated 5 million Kenyans (equivalent to 10% of the total population) derive their livelihoods from the rural-based tea industry. Over 50% of the workforce in the enterprise comprises women and youth, and thus tea significantly contributes to gender and youth empowerment. The crop also contributes significantly to the development of rural infrastructure thereby stemming rural-urban migration and consequently more stable family units.

Organization Profile:
The Kenya Agricultural and Livestock Research Organization (KALRO) was formed by merging the Kenya Agricultural Research Institute (KARI), Coffee Research Foundation (CRF), Tea Research Foundation of Kenya (TRFK) and Kenya Sugar Research Foundation (KESREF) following the enactment of the KALR Act, No. 17 of 2013. The mandate of KALRO as stated in the Act is to: a) Promote, streamline, coordinate and regulate research in crops, livestock, genetic resources and biotechnology in Kenya; b) Promote, streamline, coordinate and regulate research in crops and animal diseases; and b) Expedite equitable access to research information, resources and technology and promote the application of the research findings and technology in the field of agriculture. The Organization consists of the Board, the Secretariat based at the Headquarters, and 17 semi-autonomous Research Institutes, 47 Centres, several sub-Centres and field stations/testing sites spread throughout the country. The functions of KALRO include a) Formulation of policy and policy recommendations to the Cabinet Secretary on agricultural research; b) Prioritization of areas for, and co-ordinate, agricultural research in Kenya in line with the national policy on agriculture; c) Determination and advising the Government on the resource requirements for agricultural research in Kenya both at the National and County level; d) Regulation, monitoring and ensuring that all agricultural research undertaken by research institutes and other institutions or persons undertaking agricultural research is consistent with the national priorities specified in the relevant policy documents.

Name: Osamu Koyama
Organization: Japan International Research Center for Agricultural Sciences (JIRCAS)

Biography:
After graduated from the Faculty of Liberal Arts (human geography, economics), the University of Tokyo in 1979, he joined the Ministry of Agriculture Forestry and Fisheries of Japan. From 1986 to 1993, he worked for the Food and Agriculture Organization of the United Nations (FAO) in Rome as an Econometrician. Since then, he has been engaged in econometric analyses of global food and agricultural situation. He moved to newly-established the Japan International Research Center for Agricultural Sciences (JIRCAS) in 1993. He served as Directors in charge of strategy setting and socio-economic studies from 2002 until 2015 when he started to serve as Vice President. He was appointed by the Minister to the current position, President in 2021. He has worked for various governmental committees and taught at many Japanese universities including the University of Tokyo.

Presentation Topic:
What Makes STI Relevant to Rural Revitalization and Smallholder Development?

Abstract:
As rapid urbanization and economic globalization permeate the world, both rural revitalization and smallholder development are becoming critical socio-economic issues in many countries. In some countries, these problems are exacerbated by the aging of agricultural workforce. Although two issues are different questions that can be pursued separately, they are closely interlinked. Until now, various economic, social and agricultural policy measures have been introduced to address these issues. In Japan, policies such as "One Village, One Product," "Sixth Industry" and "Digital Garden City-nation" have been actively implemented. Science, technology and innovation (STI), if well designed and purposefully managed, can contribute effectively to these problems. This talk will try to clarify key requisites and some potential processes which are needed to make STI relevant to these socio-economic goals, by presenting conceptual research guidelines and some practical efforts undertaken by Japanese institutions including JIRCAS.

Organization Profile:
The Japan International Research Center for Agricultural Sciences (JIRCAS) is one of the 27 National Research and Development Agencies (NRDA) in Japan. Under the umbrella of the Ministry of Agriculture, Forestry and Fisheries (MAFF), it aims for the improvement of agriculture, forestry and fisheries technologies in the tropics and subtropics as well as in developing regions by undertaking collaborative researches in these regions. It was established in 1993 through the reorganization of its predecessor, the Tropical Agriculture Research Center (established in 1970). Under the current Fifth Medium to Long-Term Plan (2021-2026), it conducts research projects in more than 30 countries with the following three programs: a) Environment; development of agricultural technologies for climate change, resource recycling and environmental conservation, b) Food; technology development towards building a new food system with improved productivity, sustainability and resilience, and c) Information; strengthening function as an international hub for providing strategic information on agriculture, forestry and fisheries, and mobilizing new research partnerships.

Name: Laila Barnaba Lokosang
Organization: African Union Commission

Biography:
Lailà Lokosang is a statistician and information systems expert specializing in food and nutrition security and food systems. His work experience spans over 35 years, with 28 years working for international organizations (UN and African Union Commission). He currently serves as Senior Technical Advisor (Food Systems) to the African Union (AU) Commissioner for Agriculture, Rural Development, Blue Economy and Sustainable Environment. He is also a Member of Africa Risk Capacity Group Board. He previously served at the AU Commission for over nine years as Senior Advisor for Food and Nutrition Security. His earlier jobs include serving as Director for Monitoring and Evaluation in the National Bureau of Statistics, South Sudan (2006-2010), Management Information Systems Specialist, Data Analysis and Monitoring and Evaluation Expert/Consultant. He has extensively planned, coordinated, facilitated and presented in several international technical convenings. He holds a doctoral degree (Ph.D) in Statistics, a Master of Science degree in Food Security and a Bachelor of Science in Statistics and Demography. He has published at least ten peer reviewed articles and book chapters in food security, nutrition and livelihoods resilience.

Presentation Topic:
Taking Agricultural Science, Technology and Innovation to Rural Areas: How is it Entrenched in the AU Agrifood Systems Transformation Agenda?

Abstract:
Despite the huge opportunities for agriculture and agrifood systems in Africa, the continent still suffers from structural and transitory forms of food insecurity. This is partly due to fragile food systems that cannot withstand food the raging global shocks and crises. Since the conclusion of the UN Food Systems Summit in September 2021, the African Union has embarked on a journey to transform food systems in all its 55 member states through supporting interventions that assure sovereignty, adequacy, access and sustainability of quality and equitable food at all times. The overarching ambition is to develop and implement a holistic food systems resilience strategy for implementing game-changing solution as ingrained it the Africa Common Position on Food Systems. As the continent's population is largely rural, the AU Food Systems Transformation Agenda unpacks three key intervention areas focused on resilience building aimed at buffering Africa's populations against the different shocks, namely: harnessing Africa's demographic dividends in the form of a younger population and rural women farmers; access of rural farming population to internal and cross-border trade corridors; and deliberate investment in traditional food value chains, especially as most rural populations farm traditional or local food crops and animal and aquatic breeds.

Organization Profile:
The African Union (AU) is a continental body consisting of 55 member states that make up the countries of the African Continent. It was officially launched in 2002 as a successor to the Organization of African Unity (OAU, 1963-1999). The African Union Commission (AUC) is the AU's secretariat and undertakes the day-to-day activities of the Union. It is based in Addis Ababa, Ethiopia. The Commission's Department of Agriculture, Rural Development, Blue Economy and Sustainable Environment (DARBE) is mandated to boost sustained economic development and inclusive growth of AU Member States through increasing agricultural productivity, improving food security and nutrition, exploring and developing the potential of the Blue Economy, promoting technology transfer, bringing down rural poverty and strengthening resilience and adaptation to climate change. DARBE composed of four divisions, namely; Agriculture and Food Security Division; Rural Development Division; Blue Economy Division; and Sustainable Environment Division. The Department also comprises six specialized technical offices most of which are located outside Addis Ababa.

Name: HUANG Zheng'en
Organization: Hainan Academy of Agricultural Sciences

Biography:
Huang Zheng'en, researcher, the President of Hainan Academy of Agricultural Sciences. He continued to engaged in the introduction, breeding, experimentation, demonstration, breeding, and promotion of famous, special, excellent, rare, and new horticultural crops for a long time. Huang Zheng'en mainly engaged in research on medicinal plants, fruit trees, flowers, tea, etc. He have led and participated in 21 scientific research projects, and have won two second prizes of the National Agriculture, Animal Husbandry and Fisheries Harvest Award, one national invention patent, one second prize and four third prizes of the Guangxi Science and Technology Progress Award. He has also won one first prize, one second prize, and one third prize of the Guangxi Agriculture, Animal Husbandry and Fisheries Harvest Award. He has led and mainly participated in the formulation of 9 agricultural industry standards and local standards in Guangxi; Published 39 papers (including 15 core journals of Chinese science and technology), and published 5 works as the editor in chief and deputy editor in chief; Selected as the second level candidate for the "New Century Hundred Thousand Talents Project" in Guangxi in 2007.

Presentation Topic:
Innovation in southern breeding seed industry enabled high-quality development of the grain industry to contribute to rural revitalization

Abstract:
Hainan Academy of Agricultural Sciences has effectively utilized the "National Seed Breeding Base in Hainan" and the advantage of local characteristics of rice resources such as wild rice and Shanlan upland rice and so on, to vigorously carry out scientific and technological innovation in the seed industry, and developed a series of new varieties of Shanlan upland rice, upland rice, tropical japonica rice with supporting simple , convenient, water-saving and efficient cultivation technology. These achievements were popularized and applied in mountainous areas, water-scarce arid areas, and Southeast Asia countries such as Cambodia, and got a good result. These filled the gap of japonica rice in Cambodia, promoted the rehabilitation of abandoned land, created a series of industrial brands such as ' Baisha shanlan upland rice ' and ' Cambodian tropical japonica rice ', effectively increased farmers' income, enhanced the quality and efficiency of the grain industry, strengthened stable food production, contributed to rural revitalization, and also entered the "Belt and Road" Southeast Asia.

Organization Profile:
Hainan Academy of Agricultural Sciences is a scientific research institution directly under the Hainan-provincial government. It has 10 professional research institutes (centers), 4 scientific and technological enterprises and 1 branch in Sanya. It has orver 40 national, ministerial, provincial platforms, such as the national rice improvement center (Haikou branch center), the national agricultural product processing technology research and development center (tropical fruit processing professional branch center).

Since the establishment of the Institute, it has undertaken more than 1,500 national, provincial and ministerial-level projects, more than 500 projects have passed the appraisal, acceptance or review of the ministerial and provincial achievements, and 180 projects have received provincial and ministerial-level scientific and technological achievement awards. We have compiled and published more than 40 training materials, which is related to tropical vegetables, tropical fruits, animal husbandry, rice, tropical flowers and other Hainan tropical high-efficiency agricultural cultivation technology, together with tropical vegetable diseases and insect pests comprehensive control technology and so on. We have promoted more than 1,000 excellent new varieties and new technologies, which were applied in more than 33 thousand square kilometer of area. The new varieties of melons and vegetables demonstrated and applied accounted for about 60% of the province's vegetable sown area, and the new rice varieties accounted for about 70% of the province's rice sown area.