

# **Minutes of the Webinar of Biodiversity and Green Food Production**

September 22, 2020, Kunming, Yunnan, China

On 22<sup>nd</sup> September 2020, “The 4<sup>th</sup> Symposium on Exchange and Cooperation to Enhance Innovation for Agricultural Science and Technology in South & Southeast Asia” was held successfully in Kunming City, Yunnan Province, P. R. China. Meanwhile, in response to the objectives “Green control of major cross-border pests for agriculture and green food production”, the workshop on Biodiversity and Green Food Production was also organized by Yunnan Academy of Agricultural Sciences (YAAS), and co-organized by Alliance of Bioversity International and CIAT, Agricultural Environment and Resources Institute of YAAS, and International Agriculture Research Institute of YAAS.

The workshop on Biodiversity and Green Food Production was held by online ZOOM HD video cloud conference. 174 representatives of plant protection experts and researchers among countries in Europe, Africa and Middle East and in East, Southeast and South Asia attended the web conference. The meeting was chaired by Dr. Si-Jun Zheng, Agricultural Environment and Resources Research Institute of YAAS/Alliance of Bioversity International and CIAT. Firstly, he warmly welcomed and thanked all participants to attend this important webinar from different countries. Then, he invited ten distinguished experts to present their

updated research progress about agrobiodiversity and green food production.

The reports are as follows.

1) Harnessing agricultural biodiversity for food system transformation, presented by Dr. Stephan Weise, Managing Director for Asia, Alliance of Bioversity International and CIAT. Dr. Stephan Weise presented biodiversity crisis environmental degradation crisis. Reduced diversity makes food systems vulnerable. Land degradation and the associated loss of biodiversity negatively impact the well-being of two-fifths of the world's population. The use of agrobiodiversity will benefit to solve this crisis, for example, reshaping the food environment and consumer behaviour to enhance diet diversity.

2) Conservation and use of crop genetic diversity to control pest and disease in support of sustainable agriculture, presented by Prof. Yunyue Wang, Yunnan Agricultural University, China. Prof. Yunyue Wang presented that as the population increases, the demand for food increases. Now about 1 billion people are facing starvation in the world. Climate change has contributed to pest attack, new pathogen appearance, water scarcity and desertification and so on. How to keep the plant health is a big challenge. Agrobiodiversity is the key to secure global food supply.

3) Seeds for needs approach: enhancing use of local diversity, presented by Dr. Carlo Fadda, Alliance of Bioversity International

and CIAT. Seeds for Needs are a rapid approach to identify crop varieties adapted to changing climates and markets.

4) Myanmar seed bank and future neglected and underutilized species in agro-forestry, presented by Dr. Min San Thein, Department of Agricultural Research of Agriculture and Irrigation of Myanmar Department of Agricultural Research, Myanmar. Crop diversity and neglected and underutilized species (NUS) are environmentally friendly which are important for green food production. Myanmar seed bank is established in 1990 in collaboration with Japanese Government. There are three conservation methods in Myanmar: cold storage, field genebank and On-farm. Special project to improve local rice varieties: Rice Genomic Breeding Project is going-on.

5) Biodiversity for food and nutrition: the contribution of local, neglected and wild edible species, presented by Dr. Teresa Borelli, Alliance of Bioversity International and CIAT. Locally-adapted crops have many advantages, such as resist pests, drought, and climate change. Sustainably using more biodiversity in food systems will safeguard our nutrition, biodiversity and dietary health, especially in developing countries.

6) Climate resilient healthy rice in Pakistan: A forum of collaborative research work, presented by Dr. Kazim Ali, Karachi Institute of Biotechnology and Genetic Engineering (KIBGE), University of Karachi, Karachi Pakistan. People living in rural areas are the most exposed to food insecurity, owing to limited access to

food and financial resources in Pakistan. Food security is usually framed in four dimensions: food availability, food access, food utilization and food stability. Designing and strengthening an agricultural innovation system to get climate resilient healthy rice is necessary to solve food insecurity.

7) Challenges facing food and biodiversity, presented Dr. by Eid Mehareb, Sugar Crops Research Institute (SCRI), Agricultural Research Center (ARC), Egypt. Agricultural Biodiversity is complex. Using agrobiodiversity approach (1) improves human nutrition and provide sources of medicines and vitamins; (2) increases productivity, food, security and economic returns; (3) reduces the pressure of agriculture on fragile areas, forests and endangered species; (4) reduces dependency on external inputs; (5) contributes to pest and disease management; (6) helps maximize the effective use of natural resources; (7) conserve ecosystems structure and stability of species' diversity; (8) reduces or spreads risks to individuals and countries; (9) conserves soil and increases natural soil fertility and health; (10) contributes to sustainable intensification; (11) diversifies products and income opportunities.

8) Potato biodiversity and food for future: sustainable production, presented by Dr. Muhammad Abdul Rehman Rashid, Yunnan Academy of Agricultural Sciences. Technical factors, socio-economic factors and policies and institutional factors are three major factors constraining potato. Key indicator of sustainability is biodiversity.

9) Genetic diversity and infection biology of the pathogen for fusarium wilt of banana, presented by Dr. Chunyu Li, Institute of Fruit Tree Research, Guangdong Academy of Agricultural Sciences, China. This presentation explores the pathogen diversity in belowground which cause Fusarium wilt of banana. Fusarium wilt caused by Foc1 destroyed the Gros Michel banana and was responsible for significant yield losses earlier in the last century. Foc TR4 can attack Cavendish cultivars. Toxins contribute to the ability of Foc TR4 to infect banana and trigger plant diseases. The toxin FA causes ROS accumulation and accelerates the invasion of TR4.

10) Importance of soil biodiversity for a healthy and a sustainable agriculture, presented by Dr. Didier Lesueur, Alliance of Bioversity International and CIAT. Soils are rich ecosystems, composed of both living and non-living matter with a multitude of interaction between them. Soils are reservoir for water and nutrients, and forms part of biogeochemical cycles and nutrient exchange. Soil and above ground biodiversity are increasingly recognised as providing benefits to human health because they can suppress disease-causing soil organisms and provide clean air, water and food.

Above ten invited speakers are from 7 institutions covering different continents. They are from Alliance of Bioversity International and CIAT; Yunnan Agricultural University; Yunnan Academy of Agricultural Sciences; Guangdong Academy of Agricultural Sciences; Department of Agricultural Research of Agriculture and Irrigation of Myanmar; University of Karachi in Pakistan; Agricultural Research Center (ARC) in Egypt.

Those insightful presentations are linking to different subject of biodiversity and green food production from aboveground in genetic resource and utilization and belowground soil pathogen and beneficial microorganisms. In the conclusion remarks, Dr. Zheng thanked all participants and those invited speakers who shared their experiences and make this webinar success! Dr. Zheng also stated that Yunnan is not only known for her abundance in ecological characteristics such as temperature differences in day and night, extremely arid and humid, and light intensity but also for her rich resources in agrobiodiversity. Biological diversity of Yunnan includes geographical landscape diversity, meteorological climate diversity, ecological diversity and ethnic cultural diversity. In cultural diversity aspects, there are a total of 25 ethnic groups in Yunnan province and of which 15 are exclusive. Most areas of Yunnan are of rich ecological advantage with poverty accompanying. The development of the utilization of biological diversity within ecological agriculture will reduce poverty and increase livelihood for local people. YAAS together with all partners has made significant contributions to the sustainable development of agriculture and rural economy in Yunnan province. With “One Belt and One Road” initiative in China, it makes Yunnan to be more an important and better player linking to the Great Mekong Subregion (GMS), Southern Asia and other regions. Especially the UN CBD CoP15 will be held in Kunming next year. Therefore, it is so important for all parties work together in this topic. We can conclude this is a very successful webinar with very high quality. It is only done within one month from idea to true event.



Fig. 1 The chairman Dr. Si-Jun Zheng was hosting the workshop.



Fig. 2 The overview of workshop at YAAS meeting room.



Fig. 3 Dr. StephanWeise, Alliance of Bioversity International and CIAT, was greeting to the audiences before his presentation.



Fig. 4 Dr. Carlo Fadda, Alliance of Bioversity International and CIAT, was giving his presentation.



### **Name list of participants**

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- 2) Walid Hassan Ali Soliman Elgamal, Agricultural Research Center (ARC), Egypt
- 3) Sedhom Abdelkhalik Mohamed Abdelkhalik, Wheat Research Department, Field Crops Research Institute, Agricultural Research Center, Egypt
- 4) Ibrahim Soliman Helal Elgamal Agricultural, Center Research (ACR), Sugar Crops Research Institute (SCRI), Egypt
- 5) Mahmoud Hamdy Mohamed Ebid, Agriculture Research Center – Sugar Crops Institute, Egypt
- 6) Yasser Zainelabden Abdelati Elrefae, Rice Research & Training Center (RRTC), Field Crops Research Institute (FCRI), Agricultural Research Center (ARC), Egypt
- 7) Alaa Ahmed Mahmoud Soliman, Field Crops Research Institute, Agricultural Research Center, Egypt
- 8) Shaimaa Magdy Ibrahim Sakr, Rice Research & Training Center (RRTC), Field Crops Research Institute, Agricultural Research Center, Egypt

- 9) Ahmed Mohammad Solyman Elfanah, Wheat Research Department, Field Crops Research Institute, Agricultural Research Center, Egypt
- 10) Dr. Mulugeta Atnaf Tiruneh, Ethiopian Institute of Agricultural Research, Fogera National Rice Research Center, Ethiopia
- 11) Dr. Min San Thein DAR, MOALI, India
- 12) Ms. Khaing Khaing Oo, Department of Agricultural Research, DAR, Myanmar
- 13) Dr. Muhammad Asim, Pakistan Agri. Research Council
- 14) Dr. Armaghan Shahzad, Pakistan Agri. Research Council
- 15) Dr. Muhammad Kazim Ali, KIBGE University of Karachi
- 16) Dr. Hafiz Ghulam Muhu-Din Ahmed University of Central Punjab, Department of Botany, Punjab Group of Colleges- Bahawalpur, Pakistan
- 17) Muhammad Abdul Rehman Rashid, YAAS, China
- 18) Ms. Orathai Wongmetha, Chiang Mai Royal Agricultural Research Center, Horticultural Research Institute
- 19) Stephan Weise, Alliance of Bioversity International and CIAT
- 20) Carlo Fadda, Alliance of Bioversity International and CIAT
- 21) Teresa Borelli, Alliance of Bioversity International and CIAT
- 22) Didier Lesueur, Alliance of Bioversity International and CIAT

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- 36) Yuan Zeng, Guangxi Academy of Agricultural Sciences, China

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