

## Sustainability is the only way for agricultural research, development and production *Moments from an International Seminar, Szeged, Hungary*

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*Sustainable agriculture produces abundant food without depleting the earth's resources or polluting its environment. In post green revolution era global food production has increased tremendously, mainly from the increased yields resulting from new crop varieties of cereals and millets, greater inputs of fertilizer, water and pesticides, and other technologies. This has increased the global per capita food supply reducing hunger. World population is likely to grow from 6 billion in 2000 to 8 billion in 2025 and stabilize at about 10 billion by 2050 with major increases being in developing countries. The impact of green revolution technologies has already been witnessed in terms of degraded soil and water and reduced the biodiversity that are key elements to food security. In recent decades, researchers around the world have quite often advocated ecology-based approaches to sustain natural resources by recycling plant nutrients and conserving water and soil and integrate crop and livestock enterprises on the farm. In Sub-Saharan Africa, there is an urgent need to produce more quantity of grain and food to meet the demand and supply for ever growing population.*

Both from the society and the side of the agriculturists, there have been a strong need to discuss and focus on core issues of crop improvement and management, sustainable resources, plant–soil relations, management for bio-energy and environment and socio-economic impact of modern agriculture. All these aspects are in coherence with the UN-Millennium Goals and also objectives of the Cereal Research Non-Profit Ltd. in collaboration with the International Foundation for Sustainable Development in Africa and Asia IFSDAA, and the International Society for Sustainable Agriculture and Resource Management, organizers of the Third International Seminar on Crop Science for Food Security, Bioenergy and Sustainability.

The International Foundation for Sustainable Development in Africa and Asia (IFSDAA) was launched in Germany by former German and International students and outstanding scientists at the University of Goettingen whose mission was inspecting food security and sustainability on this globe. Global Scouts, the founders if IFSDAA, particularly call upon the younger generation for initiatives, active participation in an international movement committed to the above mentioned goals. The assignment of IFSDAA is to provide a common international platform for exchange of scientific information (international seminars, workshops, group discussions, etc) on sustainable agriculture, food security, renewable energy, global climate change, sustainable development etc and other topical local and global issues and to carry out research and publish periodically a news letter on sustainable agriculture for food, bio-energy and livelihood, security and sustainable development. In last year, at the IFSDAA-meeting in Goettingen, two Hungarian Cereal Scientists, Janos Pauk and Lajos Bona at the IFSDAA Executive Committee Meeting agreed to hold its upcoming International Seminar in Hungary.

A the last day of May, 110 agricultural specialists from 25 countries arrived to Szeged for the International Seminar for Crop Science for Food Security, Bioenergy and Sustainability. Participants were requested to prepare presentations in three various themes and related topics: i) Socio-economic and Rural Development, ii) Resource Management, iii) Crop Improvement Aspects. In each theme, respected researchers presented the keynote presentation and high level discussion and conversation followed each presentations.

At the Opening Session, Mr. G.S. Gupta, the Ambassador of India in Budapest, Hungary, gave emphasis to the basic role of agricultural research and development in the battle against world hunger. In her presentation entitled *Agricultural Research and Biotechnology: powerful tools for sustainable development*, Nevena Alexandrova, PhD, Agricultural Research and Biotechnology Officer, FAO Regional Office for Europe and Central Asia pointed out that current economic and food crises largely affected millions of livelihoods, thus rapidly leading them beneath the poverty line. According to the latest climatologic data, many countries even in Europe and Central Asia (ECA), with exception of Northern Russia, are furthermore expected to bear the burden of severe climate change long term effects associated with the dramatic increase of the green house gases as a consequence of human activities. Hans Meliczek, President of IFSDAA, University of Goettingen, Germany spoke about the new phenomenon of international land acquisition. Since the 2008 global food price crisis, large-scale land acquisition and leases have taken place. Governments of major food importing countries like China, Saudi Arabia, the United Arab Emirates and South Korea are acquiring farmland in poor developing countries to grow food for their own population. These countries have a scarcity of arable land and do no longer want to depend on imports of food from other countries. According to his conclusion, there is a need to assist recipient governments in building an institutional framework for dealing with foreign investments in agriculture. Also, at the local level, civil society organizations play an important role in creating awareness and opposition towards unfair land transactions. Rishi K. Behl, General Secretary of IFSDAA, Professor at Hisar, India underlined the importance of breeding against various climatic stresses in the present period when global mean temperatures rising continuously and the demand for the wheat is expected also to rise in developing countries. Integrated approach of classical and novel strategies in wheat breeding for tolerance to heat stress will help breeders to solve the problems caused by global warming.

At the same time, sustainability means not the same ways/solutions in everyday life to farmers and agriculturists in various parts of the globe and priorities vary of course according to the regions. In the Sub-Saharan Africa, there is a particular demand to raise the quantity of the production along with the increase of soil fertility via the level of mineral fertilizers per hectare. In other parts of the world it may not be the same: the high fertilizer and other input prices will diminish of inputs on sustainable level *per se*. European authors pressed the problem of overproduction and the unsound level of costs of agricultural production. Attila Szeredi a Hungarian Farmer, who is the owner of a large seed production company with significant area of land put the questions: - what markets left for the Hungarian farmers on abroad and how we are able to reduce the production expenses? Russia, Ukraine, Kazakhstan, Turkey, India, China are enlarging their crop production level and size now and during the following years. Our markets on abroad will definitely decrease. We should rescue and support our national production/products and the government may help a lot on this matter.

We learned from Johanna Pavliashvili the importance of policy issues on sustainable agriculture and rural development in Georgia. With land distribution to smallholders, the Georgian government intended to create a viable subsistence sector with the aim to guarantee the survival of the rural population. Arifur R. Siddiqui, Lead Adviser for the Embassy of Denmark, Bangladesh provided an overview on the importance of promoting Integrated Farming Systems through Farmers Field School in Bangladesh.

Participants had the opportunity to get the latest information on novel developments by two German lectures. Manfred Kern, in his lecture entitled *Sustainable Crop Protection is Concrete Climate Protection!* talked about the recent innovations created by Bayer CropScience. Improvements in the physiological fitness and photosynthetic capacity of plants together with innovative crop protection solutions for safeguarding the health of crops are key factors for combating climate change and protecting agricultural productivity now and in the future. *Hyperspectral Remote Sensing – new tools in monitoring and managing renewable green resources* was the title of the talk of Dr. C. Kätsch. He made an overview about the current research in the field of modern hyperspectral remote sensing technology as a tool for the retrieval of plant populations and physiological parameters.

Many interesting presentations were appreciated on the topic of bio-energy and sustainability. C.L. Marton (Hungary) talked about the large opportunity of using corn as a renewable energy source and Slovakian researchers concerned extra wheat stocks for fermentation and similar purposes. Theo Klenhans from South Africa reported a life cycle analysis on various wood based bioelectricity systems in the Western Cape area.

One of the goal of this Seminar was the meeting of generations. Youngsters had the opportunity to rely on the elder professionals who have acquired knowledge and wisdom in understanding global interdependencies which are not, or seldom, devoted to the benefit of the poor in many regions of the world. The vitality of young participants had also a beneficial and stimulating effect on elder scientists.

At the end of the first decade of this new Millennium, global warming along with unpredictable weather-patterns and the rapidly raised input prices in agriculture has considerably questioned the optimistic food supply scenarios of previous times. Also, at on-farm level, in many parts of the world, even in well developed areas, including Mid Europe, the agricultural production in has become a risky business. Enhancing crop adaptability at low level of nutrient input, under high temperatures and unbalanced rainfall is an incredible challenge today. To address this challenge, we believe that an extensive dialog can help in getting over on the critical problems in agricultural activities. Keeping these facts in view, this International Seminar held in Szeged has reached its aims.