



# FEEDING THE FUTURE

*At the General Meeting symposium on food security, leading thinkers examined current knowledge on food practices and strategies to feed the world's growing population.*

 by Cristina Serra

**E**xtrême weather events, energy demand, water scarcity and carbon emissions place stress on food production, making food security one of the most daunting issues to solve in the future.

According to the Food and Agriculture Organization (FAO), crop production must rise by 70% to feed some 10 billion people who will live on Earth by 2050. That makes food security a linchpin among the 17 United Nations Sustainable Development Goals.

“Food insecurity is not only about calories,” warned TWAS Fellow Moutar Toure, the chair of a symposium on Science for Food Security organised at TWAS’s General Meeting in Vienna. “Malnutrition means lack of vitamins and minerals essential to preserve health. And chronic conditions such as anemia or iodine deficiency caused by poor diets have become major cause of illness, and even death, worldwide.”

Toure, vice chair of the Senegalese National Academy of Science and Technology, is an expert in soil chemistry and environment. He previously served as director of the department of agricultural and agro-industrial research at Senegal’s Ministry of Sciences and Technology.

At the Vienna meeting, he called for new perspectives on sustainable intensification. “Science can harness existing technologies and boost research and technology development

▼ From top: Moutar Toure, Hans Herren



into long-term solutions able to increase agricultural resilience,” he said.

## **INTENSIFY AGRICULTURE, INTENSIFY PROBLEMS?**

For decades, agricultural practices have focused on boosting yields. Today rich harvests are not the only goal, especially given that 795 million people worldwide suffer from malnutrition and 1.5 billion are overweight – 300 million of them obese – and at high risk of cardiovascular diseases.

Hans Herren, the president of the Millennium Institute, founder and chairman of Biovision Foundation, cited “the scandalous level of surpluses and waste” that affect about half the world’s population. But what, he asked, could science do to re-establish equilibrium in the food system?

A series of reports called “Agriculture at a Crossroads”, commissioned by six UN agencies and the World Bank in 2002 and published in 2009, calls for urgent transformation of the world’s food system. Herren was among the reports’ editors, and at the General Meeting he summarised core concepts that should drive a “paradigm change” in agriculture.

“Business as usual is not a feasible option,” he maintained. “Governments should move from short-term thinking to long-term planning and devise better consumer-driven policies. The huge pre- and post-retail food wastage, added to pre-harvest losses, would more than make up the extra food needed by 2050.”

Nations should adopt sustainable agricultural practices such as agroecology, organic farming, regenerative agriculture Herren said. These practices would rebuild soil health, allow the growth of healthy plants, the raising of healthy animals and sequester much of the carbon that is causing climate change. Thus, sustainable agriculture can not only be carbon neutral, it can help reverse climate change. What the green revolution focused on was supply of food, but it failed to address a key related issues – access to food, healthy and diverse nutrition.

## **MORE FOOD IS NOT BETTER FOOD**

Lifestyle-linked diseases are emerging in countries of the Caribbean Community



▲ From left: Neela Badrie, Ajmal Khan, Michiel Kolman

[CARICOM], with some stemming from a combination of poor food quality and low physical activity.

“Chronic diseases pose high costs to individuals and to the nation itself, in terms of human suffering, expensive treatments and loss of productiveness,” observed Neela Badrie, who spoke at the food session in Vienna. Badrie is a 2011 TWAS Fellow and a professor and researcher in food microbiology and safety at the University of the West Indies in St. Augustine, Trinidad and Tobago.

▼ Bananas for sale at market in Trivandrum, India. [Photo: Adam Jones, adamjones.freeseervers.com/Wikimedia Commons]



Poor food quality in the Caribbean region, she observed, is linked to lack of interest in agricultural careers among young people. “In 1991 there were 43,000 registered farmers,” Badrie said. In 2004, there were 19,000 – and this means more food imports, and a drag on the local economy.

That’s why the government of Trinidad and Tobago launched the National Food Production Plan [2012-2015], with the aim of reducing food imports and national inflation and boosting long-term employment and economic diversification.

### INVESTING IN RESEARCH

Other nations face different challenges. For example, about 25% of irrigated land in Pakistan is affected by high salinity. “Salt-affected lands and brackish water should not be treated as waste: they are precious resources available to mankind,” said TWAS Fellow Ajmal Khan, Distinguished National Professor at the

“Business as usual is not a feasible option.”

*Hans Herren, president of the Millennium Institute, on food security*

Institute of Sustainable Halophyte Utilization at the University of Karachi in Pakistan.

Scientists in Pakistan and elsewhere are investigating the use of halophytes – plants that can live in saline environments – for food. They also may be used as forage or fodder [at least 95 varieties are apt for this purpose in Pakistan], biofuel, edible oil, and for medical purposes.

Research – and communication of the results – are essential for driving scientific advances related to food security, said Michiel Kolman, senior vice president at Elsevier. Kolman noted that annual food security research nearly doubled over the period 2010-2014.

“Food security research is growing at a rate of 16% per year,” he explained. That signals that the research “should remain a key priority for governments, funding bodies and institutions.”