

Mini-Review

Securing food from field to table: what can we do?

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Food security has emerged as one of the most pressing socio-economic and health issues of our time. While the formal processes of international and national governance are short-changing the need for action, an increasing number of professional science-based organisations are rallying to reduce the presence and risks of food insecurity. Examples are the Food in Health Security Network (FIHS) for the Asia Pacific region and the 'Healthy Agriculture, Healthy Nutrition, Healthy People' initiative of the World Council on Genetics, Nutrition and Fitness for Health. The common denominator is the threat to ecosystems which are intrinsic to food and health systems. To increase their prospects for sustainability and health promotion, coordinated partnerships between agriculture and health as well as other sectors are imperative

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With economic development and industrialization and the increasing growth of population, food security and nutrition have become critical global issues. In order to meet these growing needs, agriculture, food production, processing, distribution and marketing systems have meant dramatic changes in the food system. Traditional systems of fishing, animal production, fruits and vegetables cultivation and cereal harvest have changed to more efficient, more productive, but potentially less sustainable methods.¹ These 'developed' systems require improved soil conditions, seed availability, relevant fertilizers, and often large amounts of processed feeds for aquatic and animal production,² with technologically improved and energy-dependent equipment for crop cultivation and harvesting, food processing, storage, distribution and sale.³

Healthy and sustainable agriculture must be achieved by efficient use of water and other inputs such as fertilizer with more sustainable and affordable profiles if the improvements in crop and animal production yields are to be maintained, let alone increased,⁴ and waste minimised to cope with increased population size.^{5,6} Likewise, although aquaculture has been increased in many countries through technological developments, as natural marine and freshwater fish populations have dropped dramatically due to over-fishing, temperature and climate change, it also poses its own set of environmental threats and caveats about sustainability.⁷

Healthy ecosystems are basic for food security, nutritionally related health, and sustainable development. Food, the environment and human health are closely inter-connected in myriad of micro-ecosystems, themselves mutually dependent in ways which can be sustainable or vulnerable to degradation. Regrettably, we cannot be sure how close to the limits of ecological resilience we are since we are not fully cognizant of how eco-biological, rather than biologically anthropocentric we are as a species. There is a pressing imperative for an ecosystem approach to food and health so that policy can be shaped by the opportunities and threats which are informed by what we know about adaptation and critical limits.⁸

We are at the point when the quest for a more comfortable and less personally demanding life by more and more of the human species is placing excessive demands on the ecosystems which sustain us and are, actually, part of us. We do not seem to appreciate that we are at most ten percent eukaryotic and the rest a prokaryotic species, with no clear-cut interface between the two, making us an integral part of our ecosystem, wherever that may be. It is increasingly conceivable that our ecosystem could be irreversibly damaged without us being fully aware.⁹ In the meantime, humankind continues to degrade and destroy habitats through pollution, excessive resource consumption, lack of conservation and land-care with disafforestation, loss of arable land to housing and industrial development and more. The loss of our eco-biological heritage is unprecedented with largely unknown consequences.¹⁰

Efforts are being made by the United Nations system, some countries and various international and regional organizations, with varying support or obstruction from the private sector, to protect ecosystems and with it the human species at a population size which is sustainable, with its food supply and its well-being intact. Recently, a Food in Health Security (FIHS) in the Asia Pacific region roundtable in conjunction with the World Vegetable Center, supported by the National Science Council and Academia Sinica in Taiwan and the Australian Academies of Science and of Science Technology and Engineering was held in Taiwan, August 2-5th 2009. A FIHS Network was established to further the initiative.¹

Various kindred efforts are being made like the "Action Plan for a Healthy Agriculture, Healthy Nutrition, Healthy People" which was initiated at "The Inaugural Conference on 'Healthy Agriculture, Healthy Nutrition, Healthy People'

of the World Council on Genetics, Nutrition and Fitness for Health was held at Ancient Olympia, Greece on October 5-8, 2010.”¹¹ It is appended to this Commentary. Such action plans and networks encourage cognate researchers to join together to address comprehensively and in timely fashion these ecosystem challenges which we face as we step into an unpredictable future.

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