

In this issue

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Published online: 9 January 2015

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Food security is such a vast subject that it is usually convenient to divide it: for example, along the lines of the subtitle of this journal – the science, sociology and economics of food production and access to food. Science, too, is a vast subject even when confined to those sciences that are of direct relevance to food security and here it is also possible to make a division - into the physical sciences and the biological sciences. The ten original papers in this issue can be roughly classified into these four categories: the physical and biological sciences, sociology and economics but not all fit neatly into them, some straddling at least two. In addition, this issue contains alerts for policy makers, one conference report and two book reviews.

The first three papers are all concerned with the physical constraints to food production. Christian Thierfelder and colleagues examined the feasibility and viability of conservation agriculture (CA) in an area of Southern Zimbabwe where soil fertility is low and rainfall erratic. They found that a CA seeding system using animal traction increased maize productivity by up to 235 % (1761 kg ha⁻¹) and legume productivity by 173 % (265 kg ha⁻¹). Nevertheless, uptake of CA by farmers was low owing to perceived risks and lack of resources. The authors conclude that, given the conditions of the physical and social environment, extensive livestock production or game ranching could be more profitable uses of the land.

Whereas the physical factors of low soil fertility and erratic rainfall are limitations to crop production in Southern Zimbabwe, Luo Li and colleagues show that urban expansion onto cultivated land is an important constraint in China. Using a Global Agro-Ecological Zones (GAEZ) model, they

calculated that, over a period of two decades (1990–2010), potential yield decreased by approximately 34.90 million tons, equivalent to 6.52 % of China's total actual production.

Another concern in China is the pollution of soil in mining areas and the health risk this presents to the local inhabitants. The contaminated area of farmland in Hunan province has been reported as 11,300 ha, representing a considerable reduction in area suitable for agriculture. Ming Lei and colleagues measured the concentrations of lead, cadmium, copper and zinc in paddy soils and white rice around seven mining-affected areas in Hunan Province. They found their concentrations in soil in the vicinity of mines exceeded the maximum recommended for paddy rice and the their combined concentration in rice exceeded the maximum acceptable levels, with cadmium being the major contributor.

The next three papers are mixtures of the biological and the sociological aspects of food security. William Erskine and colleagues studied the role of wild foods in food security of the developing world, using Timor-Leste as their example. They found that stored maize grain was depleted in half of the households surveyed by August in normal years but 2 months earlier in food deficit years. This difference was reflected in the earlier onset of foraging for wild foods. These were mainly lesser yam (*Dioscorea esculenta*), elephant's foot yam (*Amorphophallus paeoniifolius*) and bitter bean (*Phaseolus lunatus*).

Graham Pilling and colleagues ask if the tropical Western and Central Pacific tuna purse seine (a particular type of fishing procedure) fishery can contribute to food security of Pacific Island populations. They point out that the inhabitants of these island countries face increasing food insecurity owing to population increase, declines in per capita net food production and growing reliance on imports. Tuna fish are a major source of food and revenue, the latter through licensing fishing to foreign countries. Trade-offs between these two are considered by the authors to be critical national and regional policy

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issues in the area. They also point out that edible but non-target fish, which are often thrown back into the sea, could play a significant but generally small role in satisfying the protein requirement of the islanders.

Sieglinde Snapp and Monica Fisher address the complex issues of investment in agriculture as a means to food security and its effect on dietary diversity through gains or losses in income or purchasing power. They found, through a household survey in Malawi conducted multiple times, that agricultural subsidies were associated with dietary diversity both directly and indirectly, the latter through the adoption of modern maize varieties giving rise to commercialization and resulting in income which could be used to support diverse food purchases. However, education, income, market access, and availability of improved storage technologies had a greater influence on dietary diversity. They also stress the need for complementary investments in both education and employment creation, particularly for female heads of households.

The next paper by Pepijn Schreinemachers and colleagues is essentially sociological and concerns the better nutrition provided by vegetable production as a result of investment in the training of women to improve cultivation of their home gardens in Bangladesh. Considerable increases in yields during 2012 of mostly leafy vegetable yields compared with a control group not receiving the training were recorded, resulting in increased supply of plant proteins (171 %), iron (284 %), vitamin A (189 %) and vitamin C (290 %).

The paper by Eduardo Abbade and Homero Dewes is also concerned with nutrition and is a mixture of the environmental and sociological factors that affect it. They found that countries worldwide could be divided into nine clusters according to their food supply patterns (FSPs). These differed significantly in their macronutrient contents, some of which were associated with malnutrition. For example, the FSPs of Southern Africa were associated with child overweight and those for Southern Asia with child underweight.

The final two papers both concern the economics of rice. In the first, Ben Groom and Mehroosh Tak examine the impact of a ban on export of rice and an increase in farm gate price support for farmers in India during the 2007–2008 global food crisis. The ban was effective as it cushioned the Indian population, 84 % of whom are net consumers of rice, from the adverse effect of the crisis and rice producers benefitted from the increase in farm gate prices. However, as the poor are

heterogeneous these policies did not affect them all equally, those who did not cultivate rice being the worst off.

In the second paper, Vietnam, a major exporter of rice and also a consumer, did not ban rice export altogether but restricted it during the 2007–2008 global food crisis. Jonas Luckmann and colleagues found that this policy did suppress the price in the main producing region of the Mekong delta in the south of the country but not in the rice deficit regions of the north. They concluded that it would be more efficient to target food security programs specifically to the poor rather than attempt to insulate the whole country from the world market.

Paul Teng and co-authors report on a conference with the title ‘Towards Asia 2025: Policy and Technology Imperatives’, which took place in Singapore on 21–22 August 2014. The policy and technology imperatives centred around ensuring food security in Asia by 2025 and details the hurdles that have to be overcome to achieve this.

Harro Maat and Dominic Glover review the multi-authored ‘Handbook on Agriculture, Biotechnology and Development’ edited by S. J. Smyth, P. W. B. Phillips and D. Castle. Although the reviewers felt that the term ‘handbook’ implied greater completeness than offered, they found many chapters were well written and informative.

Athayde Tonhasca reviews ‘The Bee: a natural history’ by Noah Wilson-Rich, Kelly Allin, Norman Carreck and Andrea Quigley. He found it an attractive and comprehensive book although it might have benefitted from a rather sharper editorial eye.



Richard Strange Editor-in-Chief of Food Security. Richard Strange’s background is in Plant Pathology, a subject to which he was attracted by its relevance to food security and in which he has published over 100 papers and two books. He currently holds an Honorary Chair at University College London and an Honorary Fellowship at Birkbeck College, University of London. He has been involved in numerous overseas projects, several of which were located in different African

countries and has supervised Ph.D. students from these and other countries of the Developing World in topics directly concerned with plant disease problems affecting their food security.