

In this issue

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This issue consists of 12 papers, one conference report and two book reviews. The first two papers are overviews, the first on agri-food systems and the second on the more specific topic of Australia's nutritional food balance. These are followed by three papers concerning, directly or indirectly, factors that affect households' ability to access food. The next four papers illustrate, in their different ways, the axiom that for food security it is necessary to grow healthy plants! These are followed by a paper relating resilience or rather its opposite, vulnerability, to child malnutrition. The final two papers are of a more psychological nature concerning aspirations in rural Ethiopia and perceptions of Orange Fleshed Sweet Potato in Malawi.

The first paper by Peter Horton and his associates is a *tour de force* in which it is advocated that the 'grand challenge' of global food security should be met by a system-wide approach to the food supply chain. After providing a holistic model of the agri-food system and showing how it necessitates research in many areas, the authors propose two ways forward: (1) a method for analysing and modelling agri-food systems in their totality, enabling the complexity to be reduced to its essential components and allowing its investigation by Life Cycle Analysis and related methods; and (2) a method for analysing the ethical, legal and political tensions that characterise such systems using deliberative fora. The paper concludes by proposing an agenda for research that combines these two approaches.

Bradley Ridoutt and co-authors point out that Australia's population is projected to increase from around 23 million in 2015 to 37.5 million by 2050 and that consequently there will be a requirement for a considerable increase in domestic food supply. As a result, food exports are likely to decrease, and imports increase with implications for the global food system.

The effectiveness of Food Assistance Programmes (FAPs) in Nepal is assessed by Yograj Gautam and Peter Andersen. They found that FAPs helped to reduce household food deficits and acted as a safety net by reducing the reliance on debt of poorer households as a means of securing food. However, the provision of food by FAPs was exploited by high caste households leading to their acquiring a disproportionately greater amount of food assistance. Community projects were also unsuccessful in that they failed to attract local participation. Thus, continuation of the FAPs programme, as currently practised in Nepal, tends to maintain the status quo and may even exacerbate local inequalities.

Rosemary Ito and David Kraybill found that remittances from family members, who had moved abroad, improved the intake of nutrients such as proteins, vitamin A, vitamin C and calcium of members of households in the Kilimanjaro region of Tanzania.

Whether consumption of tobacco and alcohol 'crowded-out' expenditure on other goods, such as food in rural India was investigated by Jaya Jumrani and P.S. BIRTHAL. They found that, in proportionate terms, the poor and socially-disadvantaged households spent more on these goods, crowding-out expenditure on food grains, although not as much as on consumer durables. The authors suggest that this can have far reaching effects on household food and nutritional security. Moreover, as peer pressure seemed to be instrumental in promoting the consumption of these 'temptation goods' the authors suggest that government interventions to control this behaviour would be more effective if those responsible for providing the peer pressure were targeted.

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Ayala Wineman and co-authors found that periods of drought were the most consistent negative weather shock in Kenya and that they reduced both on-farm and off-farm income. Deficits in farm production of food were compensated by food purchases. Household that had access to credit and had a more diverse income base were more resilient.

Mahesh Ghimiray and Ronnie Vernooy report on the flow of germplasm in and out of Bhutan. Since the 1960s, about 300 varieties of 46 food crops, including several non-traditional crops, were introduced and data show that there is heavy reliance on external germplasm for the country's major food crops e.g. 74% of the released rice varieties originated in other countries. The authors suggest that higher priority should be given to collaborative development of new crops in the Himalayan region and beyond.

Serge Savary and co-authors developed a framework for the analysis of plant diseases out of their effects on the components of food security i.e. availability, access, stability and utility. They argue that given the number of components and interactions at play, a systems modelling approach is required. This would help in the management, inter alia, of current diseases, shifts in the vulnerability of production situations and the evolving situation of crop health.

Catherine Ragasa and Antony Chapoto point out that despite major maize programmes and subsidies of inorganic fertilizer, maize productivity remains very low in Ghana. Optimal economic application of nitrogen is 225 kg/ha but the average application is only 44 kg/ha. Fertilizer prices were not the binding constraint, rather other factors, including access to modern varieties, mechanization, and hired labour appeared to inhibit the greater use of fertilizer and increase in productivity.

Marco d'Errico and Rebecca Pietrelli sought to link resilience and child malnutrition using data from Mali. They estimated a Resilience Capacity Index (RCI) using a structural equation model and the impact of resilience capacity on child malnutrition by using the institutional presence of the state as an instrument. Their empirical evidence demonstrates that higher resilience capacity is associated with the probability of lower numbers of malnourished children.

The final two papers are of a more psychological nature. Daniel Ayalew Mekonnen and Nicholas Gerber examine the relationship between aspirations of the household head and food security in Ethiopia. They found a strong positive association between the two, whether food security was measured as per-capita calorie consumption, food consumption score (FCS), or household dietary diversity score (HDDS). Correspondingly, aspirations were negatively associated with the household food insecurity access scale (HFIAS).

Netsayi Mudege and associates found that health and economic benefits were key determinants in the adoption of Orange Fleshed Sweet Potato (OFSP) varieties. Health benefits included increased energy and wellbeing and better cognitive development of children. Increased income came from selling OFSP roots and vines and was used in housing, purchase of livestock, food and land. The authors point out that, as livestock are a key investment option, making silage from OFSP, particularly vines, for animal feed would be an important investment.

Manda Foo and Paul Teng report on the main findings of the 27th Commonwealth Agriculture Conference held in Singapore on 2–4 November 2016, which had the title 'Agriculture at the Crossroads: Bridging the Rural Urban Divide'. The report is clearly divided into 11 sections: two of these are the potential of biotechnology to lift smallholder farmers, particularly women, out of poverty and hunger and global trends in areas such as malnutrition as a consequence of urbanization and associated changes in lifestyle.

Both the books reviewed in this issue of Food Security are good reads: Calestous Juma in *Innovation and its Enemies: Why People Resist New Technologies* and Australia's Role in Feeding the World edited by Hundloe, Blagrove and Dittton. Neither lends itself to a pithy comment as both are packed full of interesting and useful information. The authors of the reviews, Jonathan Gressel and Bill Davies, respectively, however, give good summaries of the topics discussed so the suggestion is to read their reviews and then decide if you wish to read the books!