In this issue

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This issue contains a letter to the editor, four reviews, ten original papers, a conference report and two book reviews

The letter to the editor is a rebuttal of the criticisms made of work of the International Food Policy Research Institute and the Bill and Melinda Gates Foundation. The criticisms may be found in the paper by A.S. Garcia and T. Wanner “Gender inequality and food security: lessons from the gender-responsive work of the International Food Policy Research Institute and the Bill and Melinda Gates Foundation”, published in *Food Security* (2017) 9:1091–1103.

The first four papers are reviews, the first concerning the role of gender in the adoption of sustainable agricultural practices, the second with the appropriate use of fertilizers, the third with the governance of food systems and the last with food loss and waste in the Arab world. The next four papers are about the diversity and improvement of crops and are followed by a paper that discusses the suitability of minimum tillage for smallholder farmers. Papers on smallholder fertilizer demand in Kenya, management of post-harvest losses of cassava in southern Ethiopia and restricted diet suffered by the Roma people in Romania follow. The last two papers are matters of policy dealing with cash transfers and the rise of smallholder grain trading by multinationals in Zambia.

The first of the reviews is by Beatrice Muriithi and co-authors who, reporting on a case study in Kenya, asks the question whether gender matters in the adoption of sustainable agricultural practices, including push-pull pest management. They found that jointly managed plots were more likely to receive animal manure and soil and water conservation measures compared to male-managed or female-managed plots. However, there were no gender differences in the adoption of maize-grain legume intercropping, crop rotation, fertilizer use and improved maize seeds, or in the adoption of push-pull

pest management. It is perhaps worth reiterating that this amazingly successful biological control technique not only simultaneously controls stemborers of cereals and the devastating parasitic weed, *Striga*, but also improves soil fertility as cultivation of legumes is part of the procedure (see *Food Security* 9: 1359–1372:2017).

In their aptly titled review, ‘Unlocking the multiple public good services from balanced fertilizers’, Prem Bindraban and co-authors point out that over half of the world’s food production is attributable to the use of fertilizers. However, uptake of fertilizers by crop plants is inefficient. The authors discuss how balanced mineral fertilizers can increase the nutritional value of crops, improve human nutrition and health, reduce biocide use, raise tolerance to biocide stress and improve taste and shelf-life. The authors point out that these multiple public benefits satisfy several of the UNDP’s Sustainable Development Goals.

Aogán Delaney and co-authors note that governance of food systems is a poorly understood determinant of food security and attribute this to lack of empirical studies and existing studies being case based and not amenable to generalization. To combat this and inform future research, the authors reviewed the literature in order to identify methodological indicators of governance in food research. Concentrations of indicators were found in food production at local to national levels but fewer papers investigated how food governance affects food distribution and consumption. Indicators of institutional structure were many and those dealing with social agency and across different scales were moderately represented but critical perspectives on governance were lacking. The authors suggest that these gaps are an opportunity for future empirical research.

According to Mohamad Abiad and Lokman Meho, food loss and waste in Arab countries sometimes exceeds 210 kg annually per person. Unfortunately, there are few studies in areas relevant to this topic and those that exist cannot be generalized over the region, which is home to more than 400 million people. The authors conclude that further research into food loss and waste along the food supply chain is necessary.

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Subjects for such research include trends, causes, and social, technological, behavioral, attitudinal, and cultural drivers.

Henry Kankwamba and co-authors, in the first of the original papers, report that crop diversification in Malawi had deteriorated between cropping seasons 2004/05 and 2010/11, although farms that had benefitted from the Farm Input Subsidy Program had become more diversified. As agricultural diversification promotes human nutrition, raises household incomes and allows the flexibility for farmers to adapt to climate change, the authors advocate further progress in this area.

Rahma Adam and co-authors report on smallholder farmers' acquisition and distribution of sweet potato planting material (SPPM) in the Lake Victoria Region of Tanzania. They studied three issues: farmers' sources of SPPM; factors that influence farmers' sourcing of SPPM outside their own farms; and the types of transactions and social relations involved in farmers' acquisition and distribution of SPPM. More than half of the farmers produced their own planting material but obtaining it outside their own farms was strongly influenced by social ties and was often gifted. In contrast, purchase/sale prevailed where social ties were weak or where exotic planting material was involved, providing entry points for the introduction of high quality sweet potato germplasm, strengthening research and integrating formal and informal systems of exchange and distribution of SPPM.

Cassava is of tremendous importance as a food security crop in tropical America, Africa and Asia (see 'Alerts for policy makers' in this April 2018 issue of Food Security and the original article in the journal 9: 907–927:2018). Unfortunately, it suffers grievously from two virus diseases, Cassava Mosaic Disease and Cassava Brown Streak Disease. Silver Tumwegamire and co-authors report on a project, led by the International Institute of Tropical Agriculture, involving the cassava breeding programs of five nations, Malawi, Mozambique, Kenya, Tanzania and Uganda. The aim is to clean elite germplasm from the viruses and promote the exchange of the resulting virus free material. Experiences of cleaning cassava from the viruses, micropropagation and distribution of virus-free plantlets to the participating countries are detailed in the paper.

Tahirou Abdoulaye and co-authors examined the productivity and welfare outcomes of improved maize varieties in Nigeria using an endogenous switching regression approach to control for both observed and unobserved sources of heterogeneity between adopters and non-adopters. Adoption of improved maize varieties increased maize grain yield by 574 kg/ha and per-capita total expenditure by US\$ 77 per annum.

Endogenous switching regression was also used to test if minimum tillage (MT) was a suitable procedure for smallholder farmers in sub-Saharan Africa. Hambulo Ngoma found that MT was associated with an average yield gain for maize,

groundnut, sunflower, soybean and cotton of 334 kg/ha but it had no significant effects on crop income (from sales and for subsistence) of households in the short-term. However, there were a number of caveats relating to additional costs, including those of implements, herbicides, and labor for weed control and land preparation.

David Mather and Thomas Jayne point out that the impact of input subsidy programs depends on the extent to which they increase fertilizer use. In data obtained from Kenya, the authors found that for every kilogram of subsidized fertilizer allocated to farmers the quantity of commercial fertilizer purchased was reduced by 0.40 kg. They suggest that better targeting of subsidy programs towards poorer households would increase total fertilizer use and thus increase national food production and food security.

Aditya Parmar and co-authors report that high yielding and disease resistant cassava was introduced into Ethiopia at the onset of the twenty-first century but that there is a lack of information about the crop concerning post-production aspects of the value chain and related food losses. In Ethiopia, the majority of the crop is processed into dry chips and milled into a composite flour with teff and maize to prepare the staple bread (*injera*). Losses occurred during sun-drying (4%) and stockpiling at farm and marketplace (30–50%). The authors conclude that there should be further progress on improving processing and storage facilities in order to reduce losses. Also there should be better recovery of by-products, especially leaves which could be a source of protein for human diets.

Food consumption and diet quality choices of Roma people in Romania were studied by Pavel Ciain and co-authors using counterfactual analysis. This showed that Roma have inferior diet diversity compared to non-Roma. About one-third of the diet diversity gap is explained by socio-economic factors. In particular, it is apparent that informal institutions and traditions are observed by Roma which reduce their diet diversity. Moreover, Roma are discriminated against in the labour market.

Jad Chaaban and co-authors propose an empirical method for targeting food and cash to vulnerable people which minimizes under-coverage and leakage. The method was applied to data on Syrian refugees in Lebanon and was found to perform much better than current policy in terms of efficacy and accuracy.

Nicholas Sitko and co-authors report that direct purchases by multinationals of smallholder maize and soybeans have increased rapidly in Zambia and amounted to 90,000 mt and 5600 mt, respectively in 2014/15. This rise has been influenced inter alia by an increase in larger smallholder farms, rapid expansion of processing capacity for animal feed and soybean oil, and reasonably stable macro-economic and foreign investment policy. Also, despite the entry of multinationals, competition from domestic market traders remains robust.

A 3-day workshop held at the end of 2016 was convened at Sydney University to discuss a planetary health approach to secure, safe and sustainable food systems. Experts came from 17 countries across six continents, representing practitioners, researchers, policy makers and community development workers. Issues discussed included the failure of current food systems to provide nutritious and safe food (as well as water) to support good health for all and the need for consensus among individuals and societies to overcome this failure.

In the book review section Sheryl Hendriks applauds *Nutrition Economics: Principles and Policy Applications*, finding that “aside from providing a solid go-to text on the economics of nutrition within a broader development framework, the book offers a more fundamental contribution to improving the quality of research in food security and nutrition more generally, and within the SDG development agenda”. Eric Boa found *Cacao Diseases: Principles and Policy Applications* an enjoyable read and thinks that it will remain a standard text on cocoa diseases for a long time.