In this issue

Richard Strange

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This issue consists of eleven papers, five of which have African countries as their subjects and two book reviews.

The first two papers are concerned with metrics but at the opposite ends of the food chain: Victor Sadras and co-authors question the reliability of crop production data while Margarita Lovon and Astrid Mathiassen ask if the World Food Programme's food consumption groups are good proxies for energy deficiency. Victor Sadras and his group point out that reliability of crop production data is crucial for obtaining accurate information on yield gaps, trends in production over time and trading, which, in turn, influence policy decisions. Estimated production data from a pair of independent organizations in Nebraska, USA and another pair in Argentina showed congruence between the pairs within a small range in many cases, giving confidence that the estimates were accurate. However, there were considerable discrepancies in some of the data and, in those from Argentina, these appeared to be related more to estimates of area on which crops were grown rather than yield. As the data were from only two sources it was not possible to say which was right and which wrong. The World Food Programme (WFP), besides responding to disasters worldwide, assesses the food security of over 65 countries every year. These assessments are made using a Food Consumption Score (FCS) and are vital for targeting those who are in need. The FCS is based on the number of days in a week eight food groups are eaten. Households are classified according to their scores as having poor, borderline or acceptable food consumption. However, other indicators suggest that the thresholds for these classifications are set too low, in particular with regard to caloric consumption, the quantitative aspect of the score. Margarita Lovon and Astrid Mathiassen found that it was not appropriate to

identify caloric thresholds on FCS and conclude that a future strategy should be to establish thresholds that reflect both the qualitative and quantitative aspects of food security.

The next two papers are concerned with the physical constraints to the production of food on the African continent, one at the continent level and the other at the household level in a district of South Africa. Wenjiao Shi and Fulu Tao examined climate variables during the period 1961 to 2010. They found that temperature increased and precipitation and the standardized precipitation evapotranspiration index (SPEI) decreased over the period and these correlated with a progressive decline in maize yields at the whole continent scale over the time period studied. In order to boost maize yields in the future, they advocate better irrigation and fertilizer application and development of maize varieties with greater heat and drought tolerance. Sikhulumile Sinyolo and co-authors describe factors that affect the water security of households in the Mzinyathi district of South Africa. They found that the perception of water security had a direct effect on food security. Factors that promoted water security were off-farm income, membership of farmer associations, use of pumps, location at the upper-end of irrigation canals and training in collective water governance and water conservation techniques.

The following three papers are all concerned with the nurture or nature of food crops. Lindsey Norgrove and Stefan Hauser review experiments on the cultivation of plantain, an important staple in West and Central Africa, where it is grown mainly by smallholder farmers. In a similar vein to the paper on maize production in Africa over five decades by Wenjiao Shi and Fulu Tao, described above, the authors review regional plantain research published between 1976 and 2013. Topics included intercropping, fertilizer and mulch application, sucker sanitation methods and controlled yield loss studies on nematodes and the fungal disease, black sigatoka. Employing the best techniques and the highest yielding local landrace

R. Strange (✉)
Birkbeck College, University of London, London, UK
e-mail: r.strange@sbk.bbk.ac.uk

type, the authors claim that on-farm yields could be increased from 7.8 t ha⁻¹ to 35.5 t ha⁻¹. Conny Almekinders and co-authors describe the long-standing practice in the Netherlands of Participatory Plant Breeding as applied to potato, where it is regarded as a ‘hobby’, farmer-breeders seeking what is, in his or her view, the ‘perfect potato’. This approach has resulted in a diversity of genotypes and has several attributes which the authors suggest could be of benefit to developing countries. Sylvie Bonny takes stock of the genetically modified (GM) seed sector worldwide and puts it in the context of the seed sector as a whole. Production of transgenics is expensive and therefore unlikely to be pursued by any but the largest biotech companies. Addressing the concern that GM seed puts such seeds into the hands of very few companies (a major criticism of GM) she points out that it is important to distinguish “trait ownership” from “seed ownership”. Thus, although the majority of the GM seeds in use in the US carry traits from Monsanto, a large proportion is commercialised by other seed companies. Perhaps such diffusion will, in time, allay the fears of some who worry about the concentration of genotypes of important crop plants in the hands of few companies. In the meantime it would seem perverse to abandon this technology, which has already shown its benefits and has the potential to provide many more for humanity (e.g. golden rice), if allowed to do so.

The next two papers, both concerning African countries, have different takes on the problem of providing food security. Tal Lee Anderman and co-authors review the effect of cash cropping on the food security of farmers in Ghana while Amy Trefry and co-authors describe the roles of culture and home gardens in the Eastern Cape Province of South Africa. Cash cropping has been recommended as a way to improve food security as the cash generated could be used for food purchases. However, there is little evidence for this but rather, as the Ghanaian work shows, there is a negative relationship between the intensity of cash crop production and the three pillars of food security – availability, access and utilization. In the South African paper, culture is defined as a set of ideas, rituals, and rules about access to and the utilization of food. These involve, among other factors, power and gender. As

emphasized by many other studies there is a positive relationship between female participation in agriculture and food security, but women often lack the power to obtain the resources for achieving good yields. The study also emphasizes the role of the local gardening programme in maintaining a “culture of farming”.

The interrelated topics of economics and governance of food security are the themes of the last two papers. Aikaterina Kavalleri and co-authors ask if shocks in economic growth cause “shocking effects on food security”. Using a supply–demand model they find that higher economic growth influences demand more than supply. The effect of this on developing countries is that their trade balance improves but this does not necessarily result in better food security. Conversely, in an economic downturn, developing countries import more and increase their per capita food calorie intake but this increased reliance on imports renders them more vulnerable to disruptions of world agricultural markets. Jeroen Candel has made a systematic survey of the literature of food security relating to governance in which he found that governance was viewed predominantly as a problem-solving mechanism rather than being part of the problem. He advocates empirical investigation of current governance arrangements, particularly at sub-national levels. The results from these, it is hoped, would form a baseline from which better policies could emerge.

Peter Gregory discusses ‘Food Security in a World of Natural Resource Scarcity – The Role of Agricultural Technologies,’ the first of the two books reviewed in this issue of Food Security. The multi-authored text is from the International Food Policy Research Institute and concerns modeling the application of 11 agricultural technologies to maize, wheat and rice in the quest for solving the problem of feeding the world’s increasing population without further damage to the environment. David Ingram found the second book, ‘The Science of Cheese’ by Michael Tunick, although written for a lay audience, both enjoyable and enlightening. Among other matters it appears that the making of lactose free cheese is an ancient art, which may explain why ruminant herding became widespread among lactose intolerant populations.