In this issue

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This issue contains 15 papers, which illustrate the wide scope of Food Security, both the journal and the subject. As readers may know, for the purposes of editing, the subject matter has been divided into four ‘environments’: (i) the physical, (ii) the biological, (iii) the nutritional and sociological, which are considered together and (iv) the economic and political, which are also considered together. These correspond to the areas of expertise of the four Senior Editors, Eric Craswell, Stephen Waddington, Andrew Jones and Derrill Watson, respectively. Of course, many papers may deal with only a sub-section of these environments or, alternatively, straddle them, and this is recognized in the choices that Senior Editors make of Associate Editors. They, in turn, appoint reviewers whom they consider are most apt for any individual paper.

In the present issue, there are four papers that feature the physical environment, two that are essentially agronomic, three that deal with threats to food security, two concerned with nutrition, three economics papers and finally a paper dealing with aid distribution in Developing Countries.

In the first paper, Jin Huang and co-authors report on a spatio-temporal analysis of meteorological disasters affecting rice in Jiangsu Province, China. Applying a total of 17 rice meteorological disaster indices (RMDI) to data recorded between 1961 and 2012, they show that the south of the province is prone to heat stress and the north is prone to precipitation extremes and chilling injury. The most dramatic negative effects were caused by precipitation extremes, which, together with heat stress, were increasing trends, whereas chilling stress was a decreasing trend.

Massimo Peri points out that the volatility of prices of agricultural commodities is one of the main factors affecting food security. His paper reports a study of the effect of climate oscillations on agricultural price volatility, in particular those caused by the El Niño/Southern Oscillation (ENSO). The effects of ENSO on commodity price volatility may be ameliorated by the more efficient use of scarce water resources, the development of drought-tolerant varieties of crops, and the adoption of procedures to reduce the negative effects of floods and tropical storms.

Floods can often jeopardize food security. Chukwuedozie Ajaero examined the impact of the severe 2012 flood in rural Anambra state, Nigeria on Female headed and Male headed household food security. Before the flood, 89% of Female headed households and 84% of Male headed households were food secure, but after the flood these figures dropped to only 22% and 34%, respectively. The author points out that in many parts of Nigeria, women are excluded from owning land, an important factor that increases their vulnerability to disasters, should they become separated from their husbands or widowed.

Water is also the issue in the paper by Donna Mitchell and co-authors, but this time the lack of it. In Uzbekistan, during Soviet times, the vast water reserves from the Amu Darya and Syr Darya Rivers, which feed into the Aral Sea, were exploited to support extensive monoculture of cotton, resulting in reduction of the volume of the Sea by 90%. The government of Uzbekistan still distorts the market by economic policies, such as quotas, which, in 2014, specified that 40% of the total planting area should be occupied by cotton. Were this policy to be abandoned, it would be possible for Uzbekistan to be self-sufficient in wheat production, despite a predicted decline in water availability of 30–40%.

The first of the two agronomic papers also has a water theme in that it is concerned with the cultivation of a rice

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cultivar, Swarna-Sub, which is flood tolerant. As Manzoor Dar and co-authors point out, because about 30% of the Indian rice growing area of 12–14 M ha is prone to flash flooding, this variety holds considerable promise, yielding about twice that of traditional varieties, during both flooding and non-flooding years. Furthermore, as scheduled caste farmers have greater numbers of rice plots that are exposed to prolonged floods, there is a sociological advantage as they stand to benefit proportionately more from the new variety.

Alwin Keil and co-authors, draw attention to the fact that Zero-Tillage (ZT) is a proven technology for enhancing wheat productivity and reducing production costs which, if applied to farms in the Eastern Indo-Gangetic Plains, could help to meet state- and national-level food needs. However, only 44% of a sample of households from the area knew of ZT technology and proximity to custom-hire services was an important factor in adoption. The authors conclude that there is a need for more awareness-raising campaigns, especially among poorer farmers, and for more ZT service providers. In common with the previous paper there is therefore a sociological element to the inception of this technology.

In the first of the three papers dealing with threats to food security, Kabwe Mubanga and Willem Ferguson discuss the case of maize in Choma, Zambia. Despite extending the area planted to this crop to 73.4% of the available land, this was insufficient to keep up with Choma's population increase of 2.6% per annum. Mono-cropping of maize was encouraged by a guaranteed market from the Zambia Food Reserve Agency but the authors suggest that incentivising production and marketing of other agronomically suitable crops could reduce food insufficiency in the region.

Tian Huang and co-authors investigated dietary variety among the Malayalis, a Scheduled Tribe of the Kolli Hills in Southern India. They found that dietary diversity had declined over the last 20 years and a smaller number of foods are consumed from grain products, fruits, vegetables and meat products. The main reasons for this were an increased reliance on market systems, lack of money to obtain a varied diet and intergenerational changes in taste preferences. Moreover, subsidized rice purchased through Fair Price Shops tended to supplant millet, which involves considerable work in preparation for consumption.

Shea butter is a fat extracted from nuts of the shea tree, *Vitellaria paradoxa*. It is produced primarily by women in over 21 sub-Saharan countries and plays an important role in their and their families' food security and household economy. Shea butter is also of considerable social value in the cooperative labor for its production, gifting customs among women, and traditional and religious ceremonies. In a study in Mali during 2009 to 2014 Colleen Naughton and co-authors identified the major challenges for shea market expansion and food security potential as climate change and globalization of the world's other competing edible oils (see review in this

issue by Ann Bruce of the book 'The Tropical Oil Crop Revolution: Food, Feed, Fuel and Forests' by Derek Byerlee, Walter P. Falcon and Rosamond L. Naylor). Despite these threats, the authors claim that there are many opportunities to capitalize on shea butter for food security, social capital, women's empowerment, and poverty reduction.

In the first of the nutritional papers, Sarah Castine and co-authors advocate homestead pond polyculture in Bangladesh. They point out that small indigenous fish in carp ponds typically used to be poisoned as they were erroneously assumed to compete with carp for food. However, they can co-exist and, in three large-scale experiments, the small fish, mola (*Amblypharyngodon mola*), was shown to contribute half of the vitamin A and a quarter of the iron intake recommended for a family of four. Also, the proximity of homesteads to ponds makes them uniquely accessible to women who prepare the household food.

In the second nutritional paper, Simone Belluco and co-authors tackle the problem of legislation of novel foods from a European Union standpoint with special reference to edible insects. As the authors point out, novel foods require proper safety assessments before obtaining market permission in order to protect consumers. It is to be hoped, however, that an over zealous application of the precautionary principle will not delay the availability of this valuable source of protein.

In the first of the economic papers, Muhammad Usman and Mekbib Haile draw attention to the claim of Ethiopian government officials that the prevailing inflated price of food in the country is artificially caused by 'greedy traders', who have been accused of hoarding food products and causing price volatility and price rises. However, the authors of this paper found little evidence of asymmetric price transmission from producer to retail prices in the long run for teff, wheat and maize. There was therefore no strong empirical evidence to support so-called 'market power' or 'inventory holding' behaviour in the Ethiopian cereal markets. Nevertheless, price volatility and high food price inflation remain a major concern in the country.

Poverty is a major cause of food insecurity. Madhav Regmi and Krishna Paudel studied food security among subsistence farming households in Chitwan, Nepal. They found that international remittance money from Nepalese, who were working abroad, was crucial to the improvement of food security of rural people who were in the low and marginal food security categories.

Edward Martey and co-authors point out that in Northern Ghana there is a paucity of literature connecting agricultural commercialization and market orientation. They obtained primary data from a cross-section of 330 rural farm households and found that a 1% increase in market orientation increased the intensity of maize commercialization by 0.84%, demonstrating that market-oriented farm households were more likely to commercialize maize intensively. In contrast, land

fragmentation had a negative effect on market orientation leading the authors to suggest that farmers should be encouraged to adopt appropriate land management practices, especially where soil fertility is a major constraint to productivity.

Nearly half of all deaths of children under 5 years old are due to undernutrition and where the possibility of supplying the required food from local sources does not exist, the last resort is food aid. Kathryn Grace and co-authors propose a spatial analytic framework for assessing and improving food aid distribution in developing countries, based on work done in Mali. One finding of the project was that reallocation of existing food aid outlets towards areas that were more densely

populated and where vegetation is reduced could markedly increase access to these outlets by those with food needs.

Peter Gregory found that the book 'The End of Desertification? Disputing Environmental Change in the Drylands' is a call to action, not least because it reasons that, 'the current desertification concept is no longer useful and should be abandoned and replaced with better means to define and measure the degradation of dryland'.

Ann Bruce was impressed with 'The Tropical Oil Crop Revolution: Food, Feed, Fuel and Forests' by Derek Byerlee, Walter P. Falcon and Rosamond L. Naylor, finding it a mine of approachable information and an excellent resource, which she may use in her own teaching.