In this issue

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This issue contains ten original papers, two reports of conferences and four book reviews. The ten original papers have distinct geographic contexts, the first being global followed by four papers concerning the Indian subcontinent, three concerning sub-Saharan Africa and one each for Central America and Brazil

The first of the original papers by Elisabeth Simelton and co-authors considers vulnerability to drought on a global scale and addresses the reasons for variation in sensitivity of different areas and different countries to drought stress, some being very susceptible to mild stress whereas others, subject to greater stress, are more resilient. Using wheat, rice and maize as the crops investigated, the authors found that, on average for all three crops, tropical areas were least vulnerable to drought, whereas cold areas were most vulnerable. Not surprisingly, countries where investment in agriculture was high were less vulnerable but a significant socio-political finding was that countries with authoritarian regimes or flawed democracies were most vulnerable. Not unrelated to this is the statement in Gordon Walker's book *Environmental Justice: concepts, evidence and politics* that "those who are poorly resourced are least able to achieve rights of recognition; those who are not recognised are discriminated against in the allocation of and access to resources" (see book review by Steve Hughes page 325). This is too true of many farmers in the developing world – particularly women farmers (see report of the conference *First Global Conference on Women in Agriculture* page 305).

The next two papers come from the Himalayan region of the Indian Subcontinent, one from Nepal by Hom Gartaula,

Anke Niehof and Leontine Visser and the other from the adjacent and newly established Indian state of Uttarakhand by Prakash Tiwari and Joshi Bhagwati. Although the actual areas studied are separated by a distance of some 900 Km, there are similarities in their socio-economic situations, the chief among them being outmigration. In Nepal, this is considered to be a livelihood choice rather than a necessity: not only are the remittances sent from abroad helpful to families left behind for immediate requirements or longer term improvements, such as better housing, but returning migrants are able to buy land. Those who already possess some agricultural land invest in residential land for two reasons, its value appreciates faster than agricultural land and returning migrants, in common with younger people, regard farming as a "dirty job", preferring a "clean" urban job – an attitude that threatens both the role of agriculture in rural livelihoods and the food security of the country as a whole. The paper from Uttarakhand paints a gloomier picture in which outmigration is not so much a choice but a necessity forced on the population by poor crop productivity. This has declined over the last 30 years, resulting in a food deficit in the area studied, of 1883 tonnes for the year 2010 and representing 65 % of the demand. Furthermore, as opportunities for off-farm work in the area are declining, the remittances sent home by migrants constitute the principal source of cash income and purchasing power of the rural population. The authors conclude that, in addition to generating off-farm employment in the area, it is imperative that a community oriented framework for the management of land, water and forest resources be implemented.

Moving south from the Himalaya area to the plains of India, the next two papers are concerned more specifically with food. In the first, Basavaraj Gali and Pigali Parthasarathy Rao draw attention to the decline in sorghum

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consumption over India as a whole, a crop which is grown mainly in the states of Maharashtra, Karnataka and Andhra Pradesh. In 2004–5 consumption for all India was only 32 % and 27 % in urban and rural areas, respectively, of what it was in 1972–3. Of the two types of sorghum, *rabi* is preferred as a food, the alternative, *kharif* being of poorer quality and subject to infestation by fungi: consequently, it is mainly used as feed and for alcohol production. Although the crop is grown in the three states there is a deficit even here in production of the *rabi* type which is made up with the better quality *kharif* type. The authors suggest that research into the *rabi* type should be increased in order to augment its yield and to provide food for the poorer sections of the community. Food security is an ever present concern of the tribal people of Orissa state in the east of India. According to Ajay Mahapatra and Pratap Panda, tribal people collect on average about 242 Kg per household of wild fruit from the forests. Consumption of such fruit runs at about 73 Kg per annum per adult and their sale contributes about 15 % of household income. Despite their importance as a source of food and income, nearly half of the sample of tribal people did not think it imperative to domesticate any of the 56 species that were identified, citing shortage of farmland and unprofitability as the main reasons. Thus, in the plains of India there seems to be opportunities to increase food security both by means of increasing the productivity of a cultivated crop, sorghum, and domesticating a number of wild species.

Three papers concerning food security are from sub-Saharan Africa. Stefano Mainardi calls attention to the fact that every year in the months preceding harvest some regions of Africa experience higher levels of malnutrition and morbidity, severe water shortages and price spikes. However, in semi-arid countries of East and West Africa no systematic variation over time was detected with regard to either the onset and length of periods of seasonal food insecurity or between seasons in relation to the volatility of food prices. Nevertheless, owing to the persistence of these problems, the author advocates more targeted support programmes to improve the capacity to deal with drought stress and to foster long-term sustainability and resilience to climate change. Lamin Dibba and co-authors document the impressive improvement in both yield and income from NERICA rice in the Gambia, an important advance as the demand for rice in that country is 106,000 tonnes per annum of which only 20,000 tonnes are grown locally. NERICA is an abbreviation of New Rice for Africa and refers to the successful cross-breeding of landraces of *Oryza sativa* and *O. glaberrima*. These varieties not only have significantly higher yields than either parent under conditions of drought and acidity, but also mature earlier than most local varieties giving them an advantage in terms of demand for labour. Tadele Tefera calls attention to the post-harvest losses of

maize, the most important food staple for resource-poor smallholder farmers in Africa. These are caused by weevils (*Sitophilus zeamais* and *S. oryzae*), the larger grain borer (*Prostephanus truncatus*) and the angoumois grain moth (*Sitotroga cerealella*) and amount to between 14 and 36 % loss. A perhaps more insidious problem is infection of the maize cob by fungi which produce mycotoxins. Certain species of *Aspergillus* and *Fusarium* produce aflatoxins and fumonisins, respectively, which are not only toxic but powerful carcinogens. These problems clearly call for improved storage.

Improved storage, principally of maize and beans, in four Central American countries is the subject of a paper by Raushan Bokusheva and co-authors and concerns factors that influence the adoption of metal silos in four Central American Countries, El Salvador, Guatemala, Honduras and Nicaragua. Originally the silos were produced and distributed by the Swiss Agency for Development and Cooperation but >310,000 silos have been distributed since 2003 when the programme ended. Adoption was influenced by regional policies and various socio-economic characteristics but the effects on households that had adopted silos have been improved food security and well-being.

In the final original paper of this issue of *Food Security*, Rodrigo Pinheiro de Toledo Vianna and co-authors used the Brazilian Household Food Insecure Scale (EBIA) to assess the prevalence of household food insecurity at the municipal level. EBIA had previously been validated at the regional and country level but not on the smaller municipal scale. They chose 14 of the poorest municipalities of Paraíba state in North eastern Brazil, the state itself being the fourth poorest in the country. All of the municipalities had populations of <50, 000 inhabitants. Results demonstrated the validity of operating the scale at this level and further showed that household food insecurity was greater in rural than urban areas.

The first of two conference reports has already been alluded to – that of the *First Global Conference on Women in Agriculture (GCWA)* which had the subtitle *Empowering women in agriculture: rethinking agricultural needs and actions through the eyes of women*. The conference involved many international organizations and was attended by 760 participants from 50 countries. Many of the issues raised will be familiar to readers of *Food Security* such as lack of access to credit, fertilizer, improved seeds and extension. One telling statistic is that, whereas women do 75 % of the agricultural work in Cameroon, they own less than 10 % of the land. A set of five priorities was agreed which will form the basis of action through Gender in Agriculture Partnership (GAP), which was formally launched at the conference. The second conference report is a synthesis of four conferences which have taken place annually, starting in 2008 at McGill University, Canada. Again many of the issues will

be familiar to readers of *Food Security*. These include underinvestment in the agriculture sector, water scarcity, declines in the rate of increase of crop yields, crop failures, population growth and biofuels. Solutions offered include greater investment in the agriculture sector, better management of soil and water and access to markets and credit.

This issue is completed by four book reviews. The first, *Earth Grab. Geopiracy, the New Biomassters and Capturing Climate Genes* by Bronson, Shand, Thomas and Wetter, as its title suggests, is a polemic and is reviewed by Saskia Vermeylen and Dan van der Horst. A more sober view may be found in *Fighting for the Future of Food: Activists versus Agribusiness in the Struggle over Biotechnology* by Rachel Schurman and William A Munro. Here, the reviewer, Steve Yearley, asks if it really is the case that the views of both activists and agribusiness follow symmetrically from contrasting philosophical underpinnings. He, nevertheless, finds the book well researched and thinks that it should

provide “a corrective to the more tendentious versions of the GMO debate that still circulate”. Gordon Walker’s *Environmental Justice: concepts, evidence and politics* has already been remarked upon and is reviewed by Steve Hughes. Finally, our book review editor, David Ingram, discusses the 49th volume of the *Annual Review of Phytopathology*. He picks out four reviews from the 26 for special mention, two of which concern rust diseases of wheat and the third is about emerging virus diseases transmitted by whiteflies. These and some of the other reviews should serve as reminders as to the subtlety and complexity of the host-parasite relations of organisms that attack our crop plants and how constant vigilance is required to prevent their attacks becoming human catastrophes. The fourth review selected is an appreciation of the life of the late Norman Borlaug, who was the inspiration for the founding of this journal and, as father of the green revolution, is credited with saving more lives than anyone in history.