FUTURE DIRECTIONS IN RESEARCH RELATING TO FOOD SECURITY

A CONSULTATION BY THE
BIOTECHNOLOGY AND BIOLOGICAL SCIENCES RESEARCH COUNCIL (BBSRC)
ON BEHALF OF THE UK RESEARCH COUNCILS

JOINT RESPONSE BY MEMBERS OF THE ENVIRONMENT, HEALTH AND DEVELOPMENT NETWORK

http://www.uea.ac.uk/dev/ehdnet

Andrew Adam-Bradford[1], Youssef Aboussaleh[2], Sabah Benjelloun[3], Natalie Dickinson[4], Roger Few[5], Jixia Lu[6], Elizabeth Westaway[5]

[1]Department of Geography, University of Sheffield, Sheffield, UK
[2]Department of Biology, Ibn Tofail University, Kenitra, Morocco
[3]Consultant, Nutrition and Development, Rabat, Morocco
[4]School of Engineering and Science, University of the West of Scotland, Paisley, Scotland
[5]School of International Development, University of East Anglia, Norwich, UK
[6]College of Humanities and Development, China Agricultural University, Beijing, China

July 2009

Please note that the comments made in this consultation response are those contributed by the authors alone. They do not necessarily reflect the views of all members of the Environment, Health and Development Network.

RESPONSES TO CONSULTATION QUESTIONS

The following points address a series of questions set out in the consultation document. Most of these points are focussed on meeting the food security needs of poorer people in developing countries (the Environment, Health and Development Network's core interest is in the interactions between poverty, health and environment).

Q1 Drivers and wider considerations

Are the challenges outlined [in the consultation document] the most important drivers and wider considerations as the background to food security? What other considerations or drivers should be taken into account?

• Context of scale

Effectiveness and efficiency can be enhanced when food security interventions are designed and implemented to address a range of production scales (including homegarden – small plot – open spaces) to maximize the utilization of land and water resources, and enhance accessibility to food for all. It is the combination of a range of production systems that brings food security; hence the importance of regional planning tools such as integrated watershed management.

• Urban and peri-urban agriculture

The role of urban and peri-urban agriculture in meeting regional and urban food security should not be overlooked. Such production systems need to planned and designed to complement rural agricultural production. These systems also allow the maximisation of wastewater irrigation and urban organic waste recycling, which provide crucial alternatives in water scarce regions, although these strategies have to be carefully managed to minimize risk while maximising the benefits.

• Food insecurity and emergency agriculture

Food insecurity caused by wars and/or natural disasters continue to be an issue for large numbers of people in the world. Climate change and more numerous political conflicts around the world and in the near future may increase the size of affected populations. Hence, this issue may become a greater priority in future. Emergency agricultural interventions can provide a means of rapid crop production during times of crises and in response to disasters and emergencies when normal food security strategies may be interrupted. Emergency agriculture is also applicable in the refugee camp context, where the use of small gardens can also enhance the nutritional content of distributed food aid.

• Industrialization and market-oriented production

As the development of industrialization continues worldwide, the quality and structure of farmland is deeply affected. As a result, farmers in China, for example, increasingly conduct their agricultural production in line with market-oriented needs. This inevitably leads to the adjustment of agricultural structure and shifts in the balance between production of food and non-food crops.

• Nutrition transition in developing countries

The problems of obesity and nutrition-related non-communicable diseases are a concern in many developing countries, including among the lower-income groups. Sometimes, the

problems of under-nutrition and over-nutrition co-exist in the same household (e.g. the under-five children being stunted/underweight/wasted while the mother is obese).

Q2 Overarching issues

What, if any, additional overarching issues need to be taken into account when formulating priorities for research relating to food security?

• Putting people at the centre of research

Systems-based approaches alone are unlikely to be sufficient. It is also essential to address food security issues from a people-centred perspective, that goes beyond bioscientific solutions. Social change and innovation takes time, and we need to understand from the bottom up how low technology levels, limited capacity of poor individuals and communities, lack of infrastructure and collective poverty constrain people options to enhance food security through technical means. We also need to understand how vulnerability is socially differentiated and the full spectrum of coping strategies people use on the ground.

• Integrated local scale research

Food security issues impacting on real people in real places need to be placed in the local context and integrated with a range of social, economic, political and environmental factors if they are to be understood and addressed. For example, analysis of agricultural practices in a rural village in Africa will almost certainly need to look at a range of related factors including community power structures, gender, land rights, poverty, use of hand-tools, and use of cooking fuels/stoves.

• Role of developing countries

Research on food security in developing countries should not simply be seen as a North-to-South knowledge transfer process: research partners from developing countries should be able to engage in and lead the research agenda.

Q3 Crop production

Please comment on the research targets for crop production – which are the most important and/or most urgent priorities, and what other important topics should be added (including wider social and economic considerations)?

• Integrated crop production systems

Greater application of integrated crop production systems, such as agroforestry, which bring multi-benefits, including spatial crop stacking and production, nitrogen fixing, soil and water conversation, livestock shelter, wind protection, integrated pest management.

• Agroecological marginal environments

Design of agricultural systems for agroecological marginal environments such as dryland forestry with underutilised local tree crops (e.g. *Acacia senegal* for Arabic gum production) for arid and semi-arid conditions.

• Hydroponics

Design and application of hydroponic food producing systems using appropriate technologies and inputs to grow e.g. high nutritional value vegetable crops.

• Conservation of traditional crops
Traditional crops are commonly at a production, marketing and price disadvantage vis-à-vis modern crops. However, maintenance of traditional crops has advantages beyond conservation of biodiversity, and there is a role for applied research in understanding the economic, social and environmental conditions through which traditional crops can continue to be promoted.

• Indigenous vegetables
Greater understanding, application and use of underutilised indigenous vegetables, particularly in the context of maximising productivity in marginal environments where such crops are found and also meeting specific nutrient requirements. It is also important to recognise and consider cultural differences in terms of food preferences.

Q4 Livestock and fish production
Please comment on the research targets for livestock and fish production – which are the most important and/or most urgent priorities, and what other important topics should be added (including wider social and economic considerations)?

• Livestock services provision
Research on mechanisms for effective livestock services provision in developing countries e.g. to increase agricultural extension workers, veterinary services, access to livestock drugs, vaccinations, tse tse fly spraying.

• Aquaponics
Design and application of hydroponic food producing systems that combine aquaculture using appropriate technologies and inputs to grow high nutritional value vegetable crops while rearing fish in the hydroponic water systems.

Q5 Agricultural practice
Please comment on the research targets for agricultural practice – which are the most important and/or most urgent priorities, and what other important topics should be added (including wider social and economic considerations)?

• Uptake of new practices
Investigating social barriers to improving farming practices in developing countries – understanding what shapes the willingness of communities to adapt to (or reject) new practices.

• Favouring grazing livestock
There are strong arguments for the production of less meat, with better nutritional quality (less and better composition fats) and organoleptic quality (better taste). This means we need to investigate more on traditional grazing livestock husbandry, which can fulfil this objective at the same time as it provides better welfare for the animals. Nutrition and health studies have shown that decreasing meat consumption prevents cardiovascular diseases and cancers. Hence, promoting research in this area will fulfil all these objectives and when it helps traditional producers in developing countries, it will embrace an economic and social objective as well.

Q6 Food safety

Please comment on the research targets for food safety – which are the most important and/or most urgent priorities, and what other important topics should be added (including wider social and economic considerations)?

• Wastewater irrigation

Development of risk management tools to address potential environmental impacts from wastewater components such as pathogens, salts, heavy metals, and persistent organic pollutants (POPs).

Q7 Nutrition, food quality, processing and manufacture

Please comment on the research targets for nutrition, food quality, processing and manufacture – which are the most important and/or most urgent priorities, and what other important topics should be added (including wider social and economic considerations)?

• Food composition and labelling

Addressing the issue of creating or how to, adapt food compositions data in developing countries that do not have their own systems. Also, nutrition labelling even when allowed by national or international laws based on scientific evidence can create unfair competition for more nutritious and healthy foods that cannot be labelled as such for technical reasons (all unprocessed foods: fruits and vegetables, many foods sold in vrac, traditional healthy foods, etc.)

• Nutrition behaviour

Social scientific analysis of nutritional choice sand behaviour, especially of the poor, including: the cultural and political backgrounds of the nutrition transition in developing countries; fruits and legumes consumption and barriers in developing countries; barriers to breast-feeding, especially in areas with poor water quality; optimal weaning practice and follow on food for young children; routine over-cooking of vegetables.

• Micronutrient deficiencies

Understand the nature of micronutrient deficiencies and the double burden with emerging chronic diseases in children adults and elderly.

• New foods/crop varieties

Development of new foods/crop varieties which are not only of acceptable quality, but can be cultivated with minimal additional effort and cost – important for adoption in developing countries.

• 'Slow food' movement

Research is needed on the adoption and impact of the Slow Food movement on consumer behaviour and on the need to fulfil the new demands. Similarly, the demand for less processed food and organically produced food is increasing, and requires more research in the area of consumer behaviour. These areas are often ignored by scientific research leaving consumers unprotected and not able to distinguish scientifically proven facts from foggy 'spiritual' dogmas.

Q8 Overall priorities for research

Considering all the research targets outlined: Which should be the most important overall priorities? What (if any) additional research targets would make a real difference?
In which topics could UK research make the greatest impact in improving food security for developing countries?

• Food security research rooted in an understanding of poverty
The poor tend to be the sharp end of food security issues. People living in chronic poverty may face chronic food insecurity. Technical research on food production and nutrition must be combined with social and economic research disciplines if the conditions that lead to insecurity and the opportunities for building food security for the poor are to be identified. Sometimes action on food security will also require thinking out of the food/nutrition 'box' – for example, effective measures could include improving diversification of livelihoods and/or credit transfer to increase the ability of people to purchase seeds, livestock and/or food

• Urban/peri-urban agriculture
Understanding and enhancing the role of urban and peri-urban agriculture in meeting regional and urban food security.

• Nutrition transition
Both problems of under and over-nutrition as well as the process of what has been called 'transition' needs more research, to ensure food security for all in developing countries. UK researchers can play a key role by collaborating with researchers in these countries.

• Linking food security and vulnerability
Greater understanding is needed of the linkages between food security and vulnerability, which operate at a range of scales from individual – household – community – regional – national – global. Food security increases human resilience to disasters and emergencies, while ecosystem services can be planned and design to reduce physical vulnerability through flood management, slope stabilisation and conservation of marginal environments.

• Food security during humanitarian crises
More research is needed on the processes for delivering adequate food to crisis-affected populations, including issues of design and application of emergency agricultural interventions, food aid availability and practical ways to deliver the available food to refugees. Greater understanding is also needed of food aid utilization by refugees and displaced populations: for example, under what conditions does food aid intended for subsistence become a commodity for sale or exchange?

Q9 Knowledge transfer

How should the translation of research into practical application for food security be best supported? What new funding mechanisms for knowledge transfer and translational research would be beneficial? How can relevant industries be encouraged to invest more in R&D?

• International networks
Research is needed on how to create/and enlarge existing scientific networks in order to allow a more efficient knowledge transfer and a better flow of information and research findings (in

both directions: from developed countries to developing countries and vice versa; and among developing countries).

Q10 Training, skills and career paths

What important areas of expertise and what levels of skills related to food security are in short supply, what are the causes of the shortages and how best should these needs be met? What areas are most urgent to address, and on what basis should investment in training and skills be prioritised?

• Engage more sociology and anthropology researchers in food security research.
Few researchers on food security are from sociological and anthropological backgrounds, but such perspectives are critical to research on human behaviour related to the issue, and in informing applied research geared to mobilizing public consciousness on food security and promoting behavioural changes. Targeted training should be developed especially for new researchers and researchers from developing countries.

• Food security in emergencies training
There is a shortage of suitably trained/experienced food security experts working in emergency situations for NGOs - need for short, intensive training courses.

• Nutrition and medical staff
Ensure that nutrition is taught to nursing, medical and allied profession students. Nutrition is a complex subject and is often not taken seriously/prioritised.

Q11 Coordination across funders

How should coordination of research related to food security be improved (in the UK and internationally)? What overseas models for funding and coordination should the UK consider adopting?

• Postgraduate funding
The Agropolis Progamme of the International Development Research Centre, Canada, provides a model for postgraduate research support. The Programme funds postgraduate studies and overseas fieldwork for students engaging in urban agriculture research in Canada and in lower-income countries.

Q13 Public engagement

How can we best capture the views, aspirations and concerns of stakeholders, including different interest groups across society, and ensure that these contribute to developing a food security strategy?

• Micro-level research
Encourage micro-level studies in remote rural areas in developing countries (beyond the ‘tarmac bias’).

• Education
Ensure that agriculture and nutrition are included in nursery, primary and secondary school curriculae.

Q14 Additional barriers

What additional barriers (beyond those outlined) may prevent the successful implementation of a strategy for research to improve food security, and how might such additional barriers be overcome?

• Failure to build on existing research

Fully utilise the findings of research undertaken for the last 50 plus years by both northern and southern institutions.

• Reliance on high-tech solutions

For the poor in developing countries, low-technology innovations are likely to be more sustainable and effective.

NB The consultation questions are listed in full in the consultation document at:
http://www.bbsrc.ac.uk/organisation/policies/reviews/consultations/0905_food_security.html