

# Developing methods in agriculture and health research

## 3rd Annual LCIRAH Conference

June 13-14 2013, London

**A**griculture and health interact in complex patterns through food systems, nutrition and the environment, creating positive and negative synergies; this is of particular importance in international development, where the problems associated with economic and environmental change are poorly understood and affect particularly vulnerable populations. Research in these areas has historically proceeded in relative isolation, with different disciplines applying distinct methods to generate knowledge and influence action. This segregated working is not beneficial if research is to inform the design of programs and policies that comprehensively address this nexus; multi-sectoral action will be necessary to reduce the harms and enhance the benefits of the agriculture-health relationship, and research needs to engage with this complex picture if findings are to be relevant. In response to this interdisciplinary challenge, the Leverhulme Centre for Integrative Research on Agriculture and Health (LCIRAH) was established in 2010 with a grant from the Leverhulme Trust to develop “unifying approaches and methodologies for understanding the relationship between agricultural production and population health, and the factors which drive them both” – an approach which it calls agri-health. The focus of this third annual LCIRAH conference was on methodological and integrative aspects of research on agriculture and health, and featured the work of researchers in agricultural development, nutrition, public health, economics, anthropology, veterinary science and other related fields. Held at the London School of Hygiene and Tropical Medicine over two days in June, the programme focused on work by early-career researchers- though as noted by the director of LCIRAH, Jeff Waage, in his welcome address, in such a new discipline as agri-health, even the most seasoned academic can be a novice!

### Putting agri-health research in the driving seat

The pool of strong agri-health research is growing, with increasing interest from research institutes, donors and others in generating the evidence needed for better policies and programming. Until recently, however, much of this work has been ‘agri-health by accident’, with researchers identifying and studying important questions around the interactions between agriculture, food systems, nutrition and health, without explicitly linking these into a body of research. Theoretical work by LCIRAH, IFPRI and others looking at the conceptual pathways connecting these sectors has laid the foundations for more strategic investigation of different parts of the puzzle, but agri-health in general and food systems in particular present a highly complex picture, and a challenge for researchers and practitioners alike. Not least among the trials for those undertaking research in this area is how to communicate to the necessarily interdisciplinary audiences doing and using the research, and the challenge of narrowly-focussed academic journals. Notwithstanding these issues, it is clear that agri-health research must now be in the driving seat; we need carefully asked questions, carefully designed studies, new partnerships, and innovation in thinking and problem solving if we are to produce a coherent and useful body of work. Along with LCIRAH, another key agri-health initiative presented at the conference- the CGIAR’s Agriculture for Nutrition and Health (A4NH) programme- offers additional opportunities to bring research together under a clear conceptual framework going forward, to start to achieve this goal.

### Improving research in agri-health

A broad range of methods and metrics is currently being used in agri-health research, and the presentations at the conference reflected this (see panel overleaf). A survey by the FAO presented at the meeting, of indicators used in agriculture projects with a nutrition goal (continuing a mapping of these projects by LCIRAH), found that most steps along the causal pathways from agriculture to nutrition were covered across the range of projects, but that some steps were often neglected- including women’s empowerment and natural resource management- and the focus of most measurement was on nutritional status, rather than the wider food system. The study noted that there has however been a useful shift towards measuring diet quality and diversity outcomes, with several new metrics used which warrant validation.

Several studies presented used modelling to tease out the contribution of different factors to nutrition, health, or food safety. The conference felt that there is a need when designing these models for more conceptual sophistication; for instance, many of the determinants of malnutrition are known (in particular the broad food, health

## Tools, measures and methods reported:

- **External M&E teams**  
Use of personnel external to a program to generate quality data at sentinel sites
- **Own-price and cross-price elasticities**  
Modelling of effects on demand for food when prices change
- **Counterfactual decomposition**  
Simulation of conditions in one area, in an area with a different outcome
- **Regression analysis**  
Modelling of different factors thought to be important to an outcome
- **Causal mechanism analysis**  
Assessment of causal impact pathways using econometric methods
- **Experimental auctions**  
Investigation of consumer preferences and willingness to pay
- **Cluster randomized / randomized control trials**  
Random allocation of units to different groups, to control for confounding factors
- **Household agriculture nutrition development index (HAND)**  
Participatory index for bringing rigour to behaviour change interventions
- **Nutrition causal analysis**  
Comprehensive assessment method for context-specific causes of malnutrition
- **Functional diversity methods**  
Assessment of the number of functional groups, within an ecosystem or within the diet, contributing to diversity
- **Participant observation**  
Systematic description of complexity at local level through inductive reasoning
- **Action research**  
Participatory, community-based exploration of causes and consequences
- **Vital Signs tool**  
Integrated monitoring of economic, ecological and human wellbeing
- **Rapid integrated food safety and nutrition assessment**  
Comprehensive conceptual framework for directing integrated assessments
- **Value chain and epidemiological risk analysis**  
Adaptation of existing methods to form a combined risk assessment

and care determinants), and variables included in models need to account for these. There is also a need to treat the response to food crises, such as food aid or cash transfers, as endogenous to models, and to try to understand the complex interplay of crisis and response.

There remains a lack of integrated datasets containing both agriculture and health information, although this disconnect has certainly been recognised and there are initiatives underway to improve data availability. There is also a need, at the level of data but also research design, to characterize and distinguish more explicitly between subsistence systems and larger food systems, and to understand the links between them and changes over time.

Almost every presentation introduced a conceptual framework in order to place its analysis in the broader context of complex agri-health effects. Similarities between frameworks were reassuring, and they revealed as well the challenge of integrating direct and indirect (income-related) effects of interventions on nutrition, and the relationship between nutrition, environmental processes and food safety, all of which are now being addressed through new research. The utility of common frameworks for assessment of costing elements, and the importance of having cost data, was discussed.

Another common challenge was that of informational interventions (providing information, messages, or behaviour change communication), and a need was identified to bring in learning from disciplines further advanced in this work. Alongside this is the need for clarity on definitions; the concept of the 'household' was cited as a case where definitions are unclear and sometimes inaccurate and unhelpful in research in different contexts.

Along with the importance of basic study design elements such as sample sizes and clear and logical methods, the conference debated the importance of engaging program designers during research design where evaluations are being undertaken, and the consequence of misunderstandings around design elements such as randomization.

## Building capacity and addressing complexity

In summary, the multiple methods and frameworks presented at the conference are clearly a starting point on a quest for clarity in a highly complex field. There was an identified need for new tools, and better and consistent application of existing tools and frameworks across disciplines; better quality and availability of integrated data across subjects; better research conceptualization; and more understanding of mechanisms and incentives for multi-disciplinary research and multi-sectoral working.

LCIRAH and A4NH will be launching, with other institutions, an Agri-Health Academy to build inter-disciplinary capacity and form a community of researchers in this field, as a step towards the objectives identified above. A report on this is will be available over the summer of 2013.

In closing, the conference noted the importance of considering the trade-off and synergy between doing good research and having development impact, and clearly delineating the roles of the multiple players involved in research, policy and programming. We currently work in a time of great interest in agriculture, nutrition and health for development, and the agri-health research community must seize this opportunity to create the evidence that will inform the next generation of action.