

## Researcher

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# Social Networks and the Diffusion of Information and Technology in a Biofortification Program in Uganda

I will study the diffusion of a biofortified crop through social networks and the impact on maternal and child health. With the goal of reducing micronutrient deficiencies, biofortification programs encourage farm households to adopt newly bred crop varieties that are denser in the deficient micronutrients. Biofortification programs are being tested in poor rural areas with weak formal product markets, so the crop and information about it diffuse by word of mouth through social networks. Thus, the architecture of social networks and strength of social norms like altruism, trust, and reciprocity will influence how rapidly, to where, and to whom the technology diffuses. By leveraging an existing prospective randomized controlled trial of a biofortified sweet potato in Uganda, I intend to estimate the impact both of the program and of social networks and norms on child and maternal health and on crop adoption. Additional data collection will help estimate the spatial and temporal extent of crop and nutrition knowledge diffusion and the role of social networks therein.

## Country where the research will take place

Uganda

## How does the research describe the impact of population/reproductive health on poverty reduction and/or economic growth?

Biofortification has tremendous potential for reducing poverty by improving child and maternal micronutrient status. I will work to estimate indirect treatment effects on adoption and knowledge in communities near, but not included in, the program; study the spatial and temporal facets of diffusion of the agricultural technology, information about the crop, and information about nutrition; and determine the characteristics of beneficiaries and their peers that promote diffusion.

## How will the research address a policy need, and what kind of policy lesson is expected?

Biofortification programs may be able to improve health, reduce poverty, and bring child and maternal health to the fore in economic development policy. Because information about the biofortified sweet potato and its nutritional benefits spread through word of mouth, the architecture of social networks will be pivotal to the viability of biofortification as a cost-effective strategy to combat micronutritional deficiencies. Yet, researchers know little about how information and crops move from mother-to-mother and from farmer-to-farmer in the developing world. Social network architecture, gender, and the spatial distribution of the beneficiaries may be pivotal in the diffusion of the crop and nutrition information.

This research will strengthen the evaluation of Harvest Plus' Uganda biofortification project by analyzing social networks and norms and expanding the scope of gender in the analysis, and by studying in detail the transmission of nutrition information. Another product of this research will be to suggest methods for leveraging social networks, norms, and gender in future biofortification projects. Such information will help NGOs and governments form policies that promote and target biofortification programs.

## Methods used

Some analysis will be conducted on data from a prospective randomized controlled trial (RCT). Other analysis will be conducted from planned follow-up surveys of nearby communities. Using these data, we will employ the following strategies to identify the treatment effect: Our primary identification strategy leverages the RCT by selecting communities near both treatment groups and control groups, enabling us to estimate treatment effects on and to study the role of social networks in crop adoption, knowledge, and nutrition outcomes. Secondary identification strategies will be based on social and geographic proximity to the treatment.

## Data used

Data on the direct and indirect beneficiaries of the Reaching End Users program, initiated by the NGOs Harvest Plus and the International Potato Center, in the Mukono, Kamuli, and Bukedea Districts of Uganda. The International Food Policy Research Institute (IFPRI) conducted baseline and endline surveys of the program's pri-

mary beneficiaries in July 2007 and July 2009. These surveys contain data on household demographics, agricultural production, consumption, serum retinol levels, and social networks. To better understand how the technology diffuses, in July and August 2010, IFPRI and the Hewlett/PRB fellow will survey 600 potential secondary beneficiaries:

households in 40 communities near the initial intervention into which the technology is likely to diffuse. We will collect data on demographics, agricultural production, social networks, social norms, vitamin A levels, and nutrition and farming knowledge relating to the biofortified crop.