

Research needed to improve developing country food chains

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For food production to benefit poor people in developing countries and be environmentally sustainable, much more research is needed, says a Cornell researcher in a policy article in the June 3 issue of *Science*.

The paper addresses food value chains, which account for agricultural production, processing, storage, marketing, distribution and consumption -- all activities needed to bring food from farms to consumers. In developing countries where populations and incomes are growing and diets include more meat and processed foods, these chains are rapidly changing from being very local to becoming increasingly complex, interactive and larger.

For example, modern supermarkets, whose numbers are growing quickly in developing countries, not only lower prices and increase availability of diverse foods for consumers, but they also force changes in quality standards and how food is stored. Also, consumers and policymakers now demand more information about products, such as ingredients and nutrient content, food safety, environmental impacts and how revenues are shared.

To evaluate such multifaceted food value chains, researchers need to integrate current knowledge into rigorous models and develop measures and methods, according to the paper.

"These changes require researchers to revisit their toolkit with regard to developing country food value chains," said Miguel Gómez, assistant professor of applied economics and management and the paper's lead author. "We are far away from having good answers because these value chains have changed rapidly in recent years."

Ultimately, Gómez and his co-authors wonder how these shifts will affect the poor and what the implications might be for environmental sustainability. To answer some of these questions, the researchers offer six principles to guide scholars in advancing research on rapidly changing food value chains, including the following:

- Although food value chains in developing countries mostly involve domestically produced foods, most of the research conducted is on such high value exports as cocoa and coffee. The authors argue that more research is needed on how policy, private firm decisions and innovations might improve the functioning of domestic food value chains.
- Academics may be focusing too much on directly integrating smallholder farmers into food value chains, thereby missing opportunities for better

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understanding such indirect effects as how job creation in off-farm sectors might produce greater overall economic benefits.

- Methods for increasing yields have been heavily researched, but 15 to 50 percent of those yields in developing countries are lost postharvest. Thus, more research is needed on storage and transportation infrastructure.
- Although certification of fair trade or sustainable practices may be necessary to ensure quality and to elicit premium pricings, poor farmers cannot always afford to pay for such certification and are, thus, excluded from high value markets. More research is needed on whether certification restricts smallholder farmers' entry into higher priced markets, promotes sustainable farming practices or fosters farm-level innovation.

"We need to be humble on how little we know about the complexity of food value chains and the effects on poverty and environment, and we need to be careful on what we recommend to policymakers," Gómez said.

Co-authors include Christopher Barrett, Dennis Miller and Alice Pell from Cornell, Thomas Reardon of Michigan State University and Jo Swinnen of the Katholieke Universiteit in Belgium, among others.

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