Friendships promote better farming in developing countries

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A study that examined how rural farmers in Ethiopia learn new farming techniques and adopt them on their own farms discovered that learning from a friend was a stronger motivator than learning from neighbors in close proximity.

The goal of the study was to find out how farmers in Ethiopia learn and ultimately adopt new agricultural technologies such as using fertilizers in the production of grains, trying new grain crop varieties, and installing an irrigation system to grow new high-value fruit and vegetable crops.

"One strategy used by extension in developing countries is to identify someone who will adopt a new technology and expect that he'll serve as a demonstration for other people," said University of Illinois agricultural economist Alex Winter-Nelson.

Winter-Nelson said they know that people learn from others but wanted to track how it occurs. Do farmers learn directly from extension agents, or are they more influenced from observing their neighbors' success?

"We wanted to know if new innovations just spread over time and space as people observe one another," said Winter-Nelson.

"If we can get a few farmers to adopt a technology in a community, will it just spread as other people observe them? Or do people have to be taught actively by other people?

"The problem we observed was that people don't always talk to their neighbors. They might not like their neighbors. And the one farmer that extension agents get to adopt the new technology might not be plugged into a lot of what we call purposeful networks – networks of friendship," Winter-Nelson said.

The study was done collaboratively with U of I graduate student Saweda Liverpool-Tasie, who is now on the faculty at Michigan State University, and colleagues at the International Food Policy Research Institute (IFPRI) with funding from USAID. The researchers utilized data from the Ethiopian Rural Household Survey that interviews 1,400 households from 12 districts. Winter-Nelson said they selected three of the villages on which to focus additional data collection because more people in those villages had adopted new technologies.

"We had a history on those households that dates back to 1994," he said. "The advantage is that we know a lot about what these households have experienced in about the last 15 years in terms of their income, consumption and poverty issues. We had a team of three people who interviewed members of 135 households and asked them additional questions about their experience with specific technologies and micro-finance interventions."

The primary purpose was to measure the impacts of the number of friends and neighbors who had previously adopted a technology on the likelihood of a farmer adopting that same technology.

"What we found was that in terms of neighbors, there was really no impact," Winter-Nelson said. "But when we looked at their friendships, there was a strong effect. This led to our conclusion that proximity doesn't contribute to the spread of technologies, but friendships do contribute."

Winter-Nelson said that people tend to think that once some innovation makes sense in a place, everyone who has access to it uses it. But what actually occurs is uneven, and there's more involved than just learning it from someone.

"Chemical fertilizers aren't a new technology to farmers in this region," Winter-Nelson said. "They know it works. But they showed resistance to adopting new varieties of maize and barley, even though they are grown successfully in the area. And use of irrigation to grow fruit and vegetable crops was even harder for them to adopt. Both the technical skills required and the understanding of the market needed makes the technology more uncertain. For them, using irrigation to produce a crop that goes to a whole new market chain seemed a lot riskier to a poor household." Only farmers who had learned a good deal about the techniques and the markets could adopt the innovation.

The study found that proximity doesn't play much of a role in encouraging farmers to adopt new technologies such as irrigation that require a lot of nuance. "Instead, the technologies spread through people who are friends or people who choose to interact voluntarily," Winter-Nelson said.

Winter-Nelson explained that with irrigation and the production of fruits and vegetables you need to know more than what you can casually observe.

"With the fertilizer, you can see the results," Winter-Nelson said. "You can casually observe that your neighbor bought fertilizer and his beans are doing really well. It's not that nuanced to apply fertilizer. People know how to do it. So with these simpler technologies like fertilizer, friendship wasn't as important in determining the spread. If anybody used it, everybody could see it work, and the knowledge spreads passively just by observation.

But the bigger payoff technologies, such as irrigation, are more complicated and require people to talk more to people they like or at least interact with socially.

"I can casually observe that my neighbor has irrigation and is growing green beans, but I need to know a lot of details about how he weeds, when he weeds, how he contracts with a buyer, and when he makes all of these arrangements that I can't learn by just casually watching," Winter-Nelson said. "I can only pick that up if we're friends. So if you want to spread those kinds of technologies, you really need to target people who are locked into a lot of voluntary social networks."

Another example in terms of irrigation was that the physical environmental constraints to irrigation, such as proximity to a river, didn't determine the outcomes.

"We were surprised to learn that there were a lot of people who irrigated and a lot of people who didn't irrigate who had the same physical access," Winter-Nelson said. "So it wasn't just that people who were near the river irrigated and people far away didn't."

Winter-Nelson said the take-away lesson is that if we want new agricultural technologies to spread, extension services need to be actively identifying social networks where people communicate rather than just have a demonstration field that people passively observe.

"Perhaps educational programs and pamphlets may not be the way to convince people to adopt a technology; find friendships," Winter-Nelson said. "Where podcasts and programs won't work, particularly in illiterate communities, maybe we just need to find the friends. That can increase the impact of the small number of extension agents that are available," he said.