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Is Africa really undergoing a smallholder agricultural revolution?

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Good news stories about transformation in African agriculture abound with some positive statistics to back them up. The general story is that farmers are adopting improved agricultural practices, that productivity is increasing and that rural economies are burgeoning.

Oxfam East Africa via Wikimedia Commons

But many of the stories tend to focus on the overall growth based on large scale commercial endeavours and gloss over the smallholder situation. While overall production in Africa has increased, there's been little at the smallholder level. And much of the overall production increases are due to land expansion.

So, is African smallholder agriculture really in the midst of a revolution?

In our recent study we tried to get a more granular understanding of the situation on the ground. Most studies frame adoption as a "yes" or "no" outcome. Instead, we proposed to view adoption as a process. Farmers learn about a technology, assess it and experiment with it. Then they act on their assessment, either dis-adopting, modifying, using on a limited area or fully utilise.

What we found is that farmers are yet to fully embrace key practices that will help them increase their production. Despite many claims in the opposite, our study suggests that Africa hasn't (yet) started a smallholder agricultural revolution.

The problem

The problem is that there are questionable methodologies being used which distort our understanding of the number of smallholder farmers that embrace improved agricultural practices. And these numbers have painted a picture that the revolution is underway. Progress has generally been measured in terms of how many farmers have become "adopters" of the interventions. Little focus has been placed on how they adopt, to what extent or how use has continued over time.

Indeed, the way in which “adoption” is measured falls short under scrutiny. When most studies estimate they tend to be unclear on what constitutes being classified an “adopter”. Because of this ambiguity, we can often find ourselves comparing apples with oranges.

This is clearly evident when we talk of conservation agriculture, which underpins many African governments’ and NGOs’ efforts to increase smallholder productivity and improve the sustainability of farming systems. Conservation agriculture packages three principles together: minimum disturbance of the soil, using crop remains to cover and protect the soil and planting a variety of crops. Claims of its adoption have underwritten the idea that African smallholder farming is in wholesale change.

But data supplied by the Food and Agriculture Organisation as well as individual studies use personal estimates from “informed individuals”. Such studies are hard to validate independently or replicate; they are open to accusation of bias, and they are often ambiguous in how they classify adoption. This means that there’s little merit in comparing one study to another.

New methods

We propose new methods to understand adoption. While most study it as a binary outcome – that is, you are either an adopter or not an adopter – we frame it as a process. This allows us to understand issues such as:

- reasons for non-adoption: Do farmers not adopt because they don’t know about it? Or do they simply think it’s not for them? Or maybe they want to but they aren’t able to?

- experimental and subsidised use: Should a farmer who is given subsidises to perform a 10m by 10m trial really be classified as an adopter? Is that farmer truly an adopter if no personal resources are invested? What about someone who’s experimenting on a small area but hasn’t decided to commit to it?

- intensity of use: Is all adoption the same? What if a farmer only practices on one of their fields? What about if they only have the resources to apply at half intensity?

In our study, despite assertions of wholesale adoption of conservation agriculture, we found that only 22 of more than 6,500 farmers surveyed across five countries had fully embraced conservation agriculture and could be called “total adopters”. The majority of use was at low intensity in modified forms.

For example, we noted many farmers were only able to practice conservation agriculture on a field close to their house. This was done in order to protect their field from roaming cattle or rodent hunters who might disturb the crop remains left in their field to protect the soil. Many also were only able to apply conservation agriculture to a small area because they lacked the financial resources to truly embrace it.

Basically, if adoption occurs, it’s at a very low intensity, and few farmers have truly embraced these technologies. When prior estimates have been made, they tended to overestimate adoption because they grouped any use of a technology as adoption. Accounting for this, adoption was far more limited than most have estimated.

We also found large pockets of dis-adoption. For example, nearly 3 in every 4 farmers who have used minimum tillage practices (a key component of conservation agriculture) in Malawi had dis-adopted, nearly 1 in 2 in Kenya and nearly 1 in 4 in Ethiopia. This highlights the risks in classifying experimentation as adoption, with few farmers continuing use. We also found half of the Tanzanian farmers in our survey who knew about minimum tillage practices had no interest in implementing it. Such issues have generally been overlooked due to previous classification methods.

Implications for the "revolution"

This leads us to conclude that conservation agriculture may not suit many African smallholder farmers. And this story reflects that it, like many technologies promoted in Africa, hasn't been locally adapted to make it relevant to smallholder farmers. It might be beneficial, but often it isn't possible or doesn't fix a problem the farmer appreciates. This means that more needs to be done to ensure that technologies being promoted to farmers are not only beneficial but relevant and feasible.

However, there are some encouraging signs. Conservation agriculture comprises several elements packaged together, and we found that more than 90% of farmers in Kenya, Tanzania, Malawi and Mozambique are doing some element of the conservation agriculture package in some way. But conservation agriculture also requires a balance to obtain the most benefit. The challenge will be finding ways to foster that balance and match it to farmer wants, needs, and abilities.

There's hope for the future if we can build on these foundations, but it seems that African smallholder farming might be undergoing more of a slower evolution rather than a revolution.

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