

# Farming reboot could lay seeds for prosperity in poor and food insecure regions

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Credit: Andre F. Van Rooyen

Agriculture experts from The Australian National University (ANU) have teamed up with government bodies and NGOs in sub-Saharan Africa to improve irrigation schemes and boost crop production.

The researchers' work is improving food security, reducing water waste and lifting people out of poverty.

"This simple reboot of irrigation schemes made up of small farms could help stamp out poverty in farming communities around the world," Professor Jamie Pittock, from the ANU Fenner School of Environment and Society, said.

The 'transforming irrigation in southern Africa' project is empowering farmers by giving them the knowledge and tools needed to consistently grow high-yielding and profitable [crops](#) while minimizing water usage. The research is published in *Nature Food*.

"Hundreds of millions of dollars have been invested in infrastructure to support [irrigation systems](#) and grow crops that return a profit, but unfortunately crop yields in Africa are very low and often not much better than the dry land farms around them," Professor Pittock said.

"Africa has one of the largest populations living in rural areas that depend on agriculture for their livelihoods but sadly irrigation schemes have traditionally been somewhat of a failed sector across the continent.

"Our interventions have been directed at rebooting these failed irrigation schemes so that they do produce food reliably, they are profitable, and they bring people out of poverty."

This system reboot involves providing farmers with simple-to-use tools—developed by CSIRO—to help them measure whether the soil in their fields is wet enough and has sufficient nutrients to grow a high-yielding crop. This empowers the farmers to make their own decisions rather than relying on government help.

This new intervention has proven to be more successful than past

government-led methods used to grow crops in which farmers were advised to apply specific amounts of fertilizer to grow crops such as maize or corn.

"What we found was governments weren't helping farmers do a simple cost and profit loss assessment of the crops they were growing, so we have provided the farmers with basic field books to help them calculate what it'll cost to grow a crop and the necessary labor required and figure out how much income they'll get from growing that crop," Professor Pittock said.

Professor Pittock says these simple but effective interventions have proven "revolutionary" because farmers are minimizing their water usage.

"Prior to this they were putting too much water on their fields and actually drowning their crops. Knowing how much water they need to grow their crops means the farmers are conserving water and saving up to two days of labor a week, which can instead be spent on other livelihood activities," he said.

"There is also more water available to support other farmers and the rivers.

"Because the farmers are no longer clashing over [water](#), they're starting to work together to share resources and help one another maximize food production in the region. In the process, we're seeing farmers employ those in their community resulting in a much-needed boost to the economy."

While this intervention has been "extremely successful" in helping farmers grow food, Professor Pittock says producing high-yielding crops means nothing if farmers are flooding the market with product and

driving down the price of that food so much so that it's not very profitable for them to grow it.

To address this issue, the ANU researchers facilitated conversations between the farmers and buyers to give them insight into the market and inform their farming decisions.

"When the farmers start to have that dialog with the buyers, they can then work together to negotiate a planting schedule so they're continually producing crops that are in demand," Professor Pittock said.

"Once the farmers know what quality of product the buyers want and expect, all of a sudden they're getting much higher prices for their product.

"We've also introduced the farmers to seed and fertilizer suppliers and since they're now cooperating with one another, the farmers are starting to buy quality inputs in bulk, which is driving down their overheads because they're paying less than what they were when they were buying only for themselves.

"We've since surveyed the farmers we've worked with who've told us that with the extra money they now have, they are buying more nutritious food for their family, investing in healthcare and are paying for their children to have an education.

"These sorts of techniques used to empower farmers with knowledge could make a tremendous difference in terms of supporting more sustainable development and will be critical in helping the poorest members of society in rural areas achieve better livelihoods."

**More information:** André F. Van Rooyen et al, Beyond fertilizer for closing yield gaps in sub-Saharan Africa, *Nature Food* (2021). [DOI:](#)

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