

Programs promoting sustainable agriculture for smallholders

A review of five Campbell systematic reviews

What is this review of reviews about?

The majority of poor people around the world depend on farming. Food security and agriculture are being promoted by development agencies and developing country governments as a pro-poor, growth-oriented development strategy.

Agricultural interventions include technology, skills and the regulatory environment. Five systematic reviews have been published in the Campbell Library examining the impact of the following interventions: land titling, training and technology, farmer field schools, payment for environmental services, and decentralized forest management.

What have we learned from Campbell reviews in agriculture?

Land titling

Land titling reform provides tenure security for smallholder farmers. A Campbell review summarized evidence from 20 impact



Formal land titling has improved agricultural productivity in Asia and Latin America but not in Africa

evaluations and nine qualitative evaluations of land tenure reform in 17 countries.

There are positive effects on agricultural productivity and incomes for those benefiting from the formalization of freehold land titles in Asia and Latin America. But formal land titling has not been effective in sub-Saharan Africa where farmers may be too poor or lack access to inputs to invest without additional support.

Few impact evaluations have addressed the social consequences of tenure reform. Qualitative studies suggest that land reform can have negative consequences, such as conflict, displacement, or reduced property rights for women.

Training and technology

Technological innovations such as improved seeds and training (agricultural extension) are intended to improve food security and household income. A Campbell review summarized evidence from 19 rigorous impact evaluations conducted in sub-Saharan Africa.

Improved crop varieties are particularly effective in boosting production. There is no evidence that training alone is generally effective

Evidence from eight countries in east and southern Africa, and one country in west Africa, indicates that input innovations like biofortified crops have a positive impact on household food security, as measured by nutritional status.

Orange-fleshed sweet potatoes in Kenya, Mozambique, South Africa and Uganda have been particularly effective in improving nutritional status. Agricultural innovations such as improved seeds also increase the monetary value of cash crop harvests and overall household income.

In contrast, the evidence does not suggest that top-down training interventions such as agricultural extension are generally effective in improving harvests.

Farmer Field Schools

Training for farmers has shifted towards bottom-up approaches to meet smallholder farmers' needs, such as Farmer Field Schools

(FFS). At least 10 million farmers in 90 low- and middle-income countries across Asia, Africa and Latin America have attended FFS.

A Campbell review summarized impact evaluations of 71 programmes and qualitative evidence from a further 20 programmes across 30 countries. Farmer field schools make a difference to agricultural outcomes along the causal chain – knowledge, adoption of improved practices, farm yields and incomes – for farmers who participated in small-scale pilot programmes. Farm yields increase by 13 percent on average. Environmental damage may be reduced as a result of the schools.

But neighbouring farmers do not benefit from spontaneous diffusion of knowledge from field school graduates, and hence do not experience improvements in farming practices or yields.

Barriers to diffusion, such as the importance of observing benefits directly, were not addressed adequately in the design of many programmes.

There was also no evidence of impact from evaluations of national level FFS programmes. The effectiveness of scaling-up FFS has been hampered by problems in recruiting, training and back-stopping a sufficient number of facilitators.



Payment for environmental services and decentralized forest management

Payment for environmental services (PES) schemes provide financial incentives for conservation. Decentralized forest management (DFM) shifts decision-making about forest use to forest communities.

Both PES and DFM have been implemented around the world as part of government strategies to manage forest loss and climate change. Many programmes also aim to improve the welfare of those living in and around forests.

Two Campbell reviews summarized 18 studies covering 13 PES and DFM programmes in 12 countries in Asia, Africa and Latin America.

Overall the evidence from these studies suggests PES has only a small effect on deforestation. DFM has varying effects in different contexts.

The authors conclude that the small effects of PES suggest it may not be a cost-effective strategy.

What questions remain?

To understand why some programmes are more or less effective than others, systematic reviews of interventions for smallholder farmers need to address questions about implementation.

More primary evidence is also needed. Very little is known about the effectiveness of technological innovation and training for

Payment for environmental service schemes probably have environmental benefits which are too small to justify their costs

Farmer field schools pilot programmes improve agricultural outcomes among field school graduates. But farmers need to experience the training themselves, so there is no evidence for diffusion in the wider community. And there is no evidence that farmer field schools work at a national scale

cash-crops in improving farm incomes in Africa, or land reform approaches such as the statutory recognition of communal land rights, which is used in a number of African countries.

New evaluations should collect evidence on the full range of relevant impacts. For example, despite the stated empowerment objectives of many FFS programmes, very little rigorous evidence has been collected on their effects on farmer empowerment.

Land tenure reform studies need to evaluate broader social outcomes, especially among those who may lose out. New studies should measure human and environmental outcomes consistently to enable the assessment of programme replication in different contexts.

There is also a need for better evaluative evidence, including from randomized impact evaluations. For example, all the studies identified in the review of FFS used quasi-experimental (non-randomized) approaches. Cluster-randomized assignment is a feasible and effective option for the evaluation of such schemes.

Included Campbell reviews

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Stewart, R., Langer, L., Rebelo Da Silva, N., Muchiri, E., Zaranyika, H., Erasmus, Y., Randall, N., Rafferty, S., Korth, M., Madinga, N., and de Wet, T. 2015. The Effects of training, innovation and new technology on african smallholder farmers' wealth and food security: A systematic review. *Campbell Systematic Reviews*, 2015:16 DOI: 10.4073/csr.2015.16

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International Fund for Agricultural Development (IFAD), 2010. Rural poverty report 2011: new realities, new challenges: New opportunities for tomorrow's generation. IFAD, Rome

Waddington, H. and White, H., 2014. Farmer field schools: From agricultural extension to adult education. *Systematic Review Summary Report 1*. 3ie, New Delhi.

World Bank, 2007. World Development Report 2008: Agriculture for development. The World Bank, Washington, D.C.

About Campbell

The Campbell Collaboration is an international network devoted to producing a world library of systematic reviews of research to inform social policy and practice decisions and improve human wellbeing worldwide.

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