Target the pathways to scale out climate-smart agricultural technologies to farming communities

Summary

- The process of getting climate-smart agricultural (CSA) interventions and practices to farmers is just as important as the interventions and practices.
- Given the complex systems in which CSA is implemented and the various CSA practices and technologies, there is no one-size-fits-all scaling pathway – so far
- Best-fit climate-smart agricultural scaling approaches are guided by the biophysical, socioeconomic and institutional context and attributes of the CSA technology.

Outcome

There are many scaling pathways to supporting innovation adoption and targeted extension approaches will help to achieve wide-ranging CSA adoption

What?

There is debate about the most effective approaches for enabling smallholder farmers to take up innovations or practices on a wider scale. They can be done through government or private sector-led extension services, through innovative certification schemes, through farmer-to-farmer learning, via new financing initiatives or through a combination of models.

Both supply- and demand-driven extension approaches exist and have their merits and demerits. Often, supply-driven extension influences what farmers are growing, the market, and even the farming practices used. Technical advice on planting of improved seeds is increasingly being provided by the private sector on the seed packaging material. Farmers are now active stakeholders who are seeking new and relevant information to improve their farming.

The success of any extension model is based on how well it realigns to the realities and constraints under which implementation is conducted and addresses the CSA needs.

Why?

- Evidence shows that agricultural extension is a smart investment with positive outcomes, for example increased productivity, reduced poverty and better nutrition.
- National agricultural extension systems have often yielded unsatisfactory performance and in many parts of sub-Saharan Africa, extension-to-farmer ratio is less than 1:5,000, far below the World Bank's recommendation of 1:500.
- There are challenges such as inadequate finance, mismatch between enterprises that farmers prioritize and those promoted through the government-led extension service, limited human resources, numerous farmers, and climate change and variability.
- Scaling out CSA is complex because it involves more than scaling up of technological innovations in agriculture. Several extension pathways exist but each model has potential and constraints. Extension models also need to be scalable.
- Envisioning, implementing, and monitoring CSA requires that farmers adapt to biophysical, socioeconomic and institutional dimensions at different scales. This means that an extension services model that works in one place may not be the best fit in a different context, which may not be in any way limited to locality.

How?

Table 1 shows that different approaches and methods to stimulate innovation adoption have different attributes that can help meet the objectives of different actors, from farmers to policy makers.

Table 1. Performance of different CSA scaling pathways in Nwoya district, Uganda

	Demonstration plots	Peer to peer	Mother baby	Host farmer	Farmer field school
Potential to focus on complex practices	High	Low	Medium	Low	High
Cost effectiveness	Medium	High	Medium	Medium	Medium
Time availability	High	Medium	High	Medium	High
Geographical coverage	Low	High	Medium	Low	Medium
Coverage in remote areas	Low	High	Medium	Medium	Medium
Demonstrate benefits of the technologies clearly	High	Medium	Medium	Medium	High
Requires literacy of the farmers	Low	Low	Low	Low	Low
Promotes inclusive decision making	Medium	Low	Medium	Low	Medium
Women's inclusion	Medium	Medium	Medium	Medium	Medium
Improve extension-to-research interaction	High	Low	Medium	Medium	High
Capacity of farmers to demand training	Medium	Low	Low	Low	Medium
Diversify provision beyond production	High	High	High	High	High
Capacity to provide rewards & recognition of the best extension service agents	Low	High	Medium	High	High
Capacity for oversight of extension service	High	Low	Medium	Medium	Medium
Participatory approach	High	Low	Low	Low	Low
Allows indigenous knowledge and innovation	Low	Medium	Medium	Medium	Low
Supply-driven approach	Medium	Medium	Medium	Medium	Medium

	Demonstration plots	Peer to peer	Mother baby	Host farmer	Farmer field school
Empowering farmers to manage advisory services	Medium	High	High	High	High
Accessibility by poor farmers	Medium	High	High	Medium	Medium
Opportunities for experience sharing	High	Medium	Low	High	High
Sustainability	Low	High	Medium	High	Low
Level of motivation required to participate	High	High	High	High	High
Diffusion to non-participanting farmers	Medium	High	Medium	Medium	Medium

Table 2. Identification of best-fit extension pathways to promote prioritized CSA technologies in Nwoya, Uganda and Lushoto, Tanzania

CSA Technology	Attributes of the technology	Criteria considered in selection of the extension model	Best-fit pathway selected with target communities
Improved crop varieties	❯ Simple practice oriented to a single technology ❯ Learning process can be theoretical or practical ❯ Full benefits of the technology can be observed in the short term from the first season	❯ Farmers are helped to acquire the new seed ❯ Interest of farmers and local leaders in the practice ❯ Presence of farmers regarded as role models ❯ Farmers with passion to share information with their peers without expecting rewards ❯ Farmers have in-depth knowledge and experience of local varieties and therefore can disseminate innovation more efficiently	❯ Farmer-to-farmer learning ❯ Farmer field schools

CSA Technology	Attributes of the technology	Criteria considered in selection of the extension model	Best-fit pathway selected with target communities
Conservation agriculture	❯ Complex system involving a technology package, practices implemented in unison ❯ Farmers learn through hands-on experiential learning approach; it is difficult to convey through verbal communication ❯ A more participatory approach is required where farmers are supported with provision of equipment and training to experiment with the technology and fine-tune it to their context ❯ Requires continuous technical support; it may be more appropriate to have technical experts, not farmers, conducting the training ❯ Takes a longer period of time for all benefits of the technology to be observed ❯ Implies a radical change from conventional farming systems, which requires institutional and policy support to adapt and validate the technology to the local environment	❯ Interest of farmers and local leaders in the practice ❯ Government extension limited by a low number of extension agents ❯ Availability of trained human resources at the site on the technology is limited Some of the villages are remote and it is difficult to reach farmers ❯ Community/farmers willing to set aside land for demonstrations, and reachable by other farmers ❯ Opportunities for contracting services with linkage to the private sector where it may be difficult to access equipment	❯ Demonstration plots ❯ Farmer field schools
Manure composting	❯ Short-term practice which yields tangible results within a short period of time (in one production season) ❯ Practice is easy to test, experiment with, and adapt using materials available at the site ❯ Farmers can follow the composting process on their own	❯ Farmers and local leaders are interested in the practice ❯ Composting materials easily accessible at the sites ❯ Farmers are organized in groups, and those not in groups are interested in joining one	❯ Host farmer approach ❯ Demonstration plots

CSA Technology	Attributes of the technology	Criteria considered in selection of the extension model	Best-fit pathway selected with target communities
Manure composting	› Learning can be experiential or verbal › Is labor consuming and therefore easier to locate the technology near where most materials are sourced e.g. the homestead › Complements existing farming practices such as livestock production and application of inorganic fertilizers	› Community/farmers are willing to set aside land for demonstrations, and are reachable by other farmers › Farmers are willing to set aside land for a demonstration plot › Demonstration farms are easy to access › Presence of farmers practicing the technology › Presence of farmers regarded as role models › Farmers with passion to share information with peers without expecting rewards › Farmers have in-depth knowledge of local conditions and practices and therefore can disseminate innovation more efficiently	

› The ultimate goal of scaling out is to reach more farmers and its success greatly depends on the effectiveness of the scaling pathway. These pathways are the basic models that can add value to, and be integrated into other government, nongovernmental organization (NGO) or private sector extension services. Sustainability can be enhanced by combining and leveraging the strengths of different approaches, promoting local ownership, and providing continued technical, logistical, and policy support.

More information

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Supporting Materials

CSA Lesson Brief 4:

Support farmer-to-farmer and community-widesocial learning

CSA Lesson Brief 8:

Invest in climate-smart soil and land health

CSA Lesson Brief 9:

Monitor climate-smart agricultural interventions with a real-time participatory tool

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Target the pathways to scale out climate-smart agricultural technologies to farming communities.
International Center for Tropical Agriculture (CIAT). Cali.

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