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International Maize and Wheat Improvement Center

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GOING TO SCALE: How do Conservation Agriculture Practices Spread among Farmers in Kenya?

Key messages

Demonstration sites will continue to be centers of experimentation and learning for farmers. The results presented in this brief, demonstrates the efficacy of the demonstration approach to agriculture extension. It is emerging that group cohesion and multi-stakeholder methodology approaches have the potential to be effective and efficient. Field days were found to be effective in awareness creation of conservation agriculture (CA) technologies.

How it started

The Sustainable Intensification of Maize-Legume Cropping Systems for Food Security in Eastern and Southern Africa (SIMLESA) project began working with 48 farmers in eastern and western Kenya in 2010. The project worked on eight sites representing diverse communities and agroecological zones (AEZ) and established conservation agriculture (CA) demonstrations in eastern (Embu, Meru South and Imenti South) and western (Siaya and Bungoma) Kenya. SIMLESA took advantage of the already existing multi-actor and multi-objective scenario of the agricultural extension system in the country and pulled the actors together in a coordinated manner to share knowledge and experience, and worked toward an effective and efficient maize-legume agricultural value chain. Together, they provided technical assistance and training in good agricultural practices.

2010
The year SIMLESA started

Eastern and western Kenya
Parts of the country where it began

48
Initial number of farmers

8
Initial number of sites representing diverse communities and agroecological zones (AEZ)

One reason why there is so much interest in the diffusion of innovations is because getting a new idea adopted, even when it has obvious advantages, is often very difficult.

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How it worked: Innovation platforms

The project used the demonstration approach in which SIMLESA technicians and agronomists employed "hands-on" methods to demonstrate and convey good agricultural practices, innovative cropping systems and techniques, to improve and maximize yields. This is called innovation platform (IP). Forty-eight farmers were recruited in a farmer group meeting as the host farmers for the initial CA demonstrations. Each year during 2010 - 2014, CA demonstrations were then set up on the 48 farms during April rains in western Kenya and during October rains in eastern Kenya. The CA tillage methods set under maize/legume cropping system were CA (no till), and furrows and ridges. In addition to the CA options, farmers' normal practices were included. In western Kenya, desmodium was integrated in the no till method (Table 1) below.

Promising maize and legume varieties were identified through Participatory Varietal Selection (PVS)[1] and promoted alongside CA. The promising crop varieties were different across the regions. While groundnuts varieties were prominent in western Kenya, pigeon peas varieties featured more prominently in eastern Kenya as shown in Table 2 below. Promising maize and bean varieties were evaluated and promoted in both western and eastern Kenya. The crop varieties are also shown in Table 2.

Table 1: Tillage practices and cropping systems applied in Eastern and Western Kenya sites

Tillage Method	Cropping Pattern	
	Eastern Kenya	**Western Kenya**
Conventional Tillage (CT);	Maize intercrop with bean	Maize intercrop with bean
Conservation agriculture; No till; weeding by herbicides; residue returned	Maize intercrop with bean	Maize intercrop with bean
Conservation agriculture; furrows/ridges; weeding by herbicides; residue returned	Maize intercrop with bean	Not applicable
Conservation agriculture; No till + Desmodium; weeding by herbicides; residue returned	Not applicable	Maize intercrop with bean

[1]This is a method where farmers are involved in determining preferred crop varieties for possible promotion by participating in visual evaluation of established maize plots of different varieties gown side by side at a varietal evaluation site. Farmers then independently vote on the preferred varieties.

HIGHLIGHTS

Innovation platform involving "hands-on" methods to demonstrate and convey good agricultural practices, innovative cropping systems and techniques, to improve and maximize yields.

Each year during 2010 - 2014 CA demonstrations were then set up on the 48 farms during April rains in western Kenya and during October rains in eastern Kenya.

Table 2: Varieties promoted

Region	Maize	Beans	Pigeonpeas	Groundnuts
Eastern Kenya	KH500-39E, KH500-38E, KDV1, KDV2, KH 633A	KK8, KK15, KATX69, Embean 14	ICEAP 00850, ICPL87091	Not applicable
Western Kenya		KK8, KK15		ICGV99568, ICGV 90704, ICGV12991
			Not applicable	
	H520, KSTP 94			

Dissemination strategy

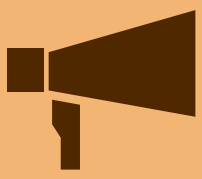
Established demonstration sites brought together farmers, technical experts and at times input suppliers and other stakeholders. Each of the demonstration plots had a site for training and field days. The CA demonstration plots served as learning sites, to showcase and compare best practices to optimize productivity. The demonstration plots embraced a broad spectrum of agricultural development practices, including practical training in planting techniques, weed control, plant nutrition, integrated pest management and disease control, safe use of agrochemicals and crop husbandry and overall best management practices.

The CA demonstrations that were established in 48 host farms created awareness on CA among the farmers in the following ways: individual farmer visits and field days organized at the close of each cropping season by an innovation platform (IP)[2] on selected host farms. These field days were important in attracting farmers in the project villages and beyond. In addition to using the host demonstrations to create awareness, maize and legume varieties were evaluated and promoted through the "mother" and "baby" trial approach. The mother and baby trial approach consists of demonstrations with blocks of sets of varieties under recommended agronomic practices. Farmers were invited at different stages of crop growth to evaluate the varieties for possible consideration for promotion. Other out- scaling strategies included farmer-to-farmer exchange visits, radio and print media.

[2] A stakeholder forum for the purpose of solving a felt need

Established demonstration sites brought together farmers, technical experts and at times input suppliers and other stakeholders.

The CA demonstration plots served as learning sites.



Awareness on CA among the farmers were done by individual farmer visits, and field days.

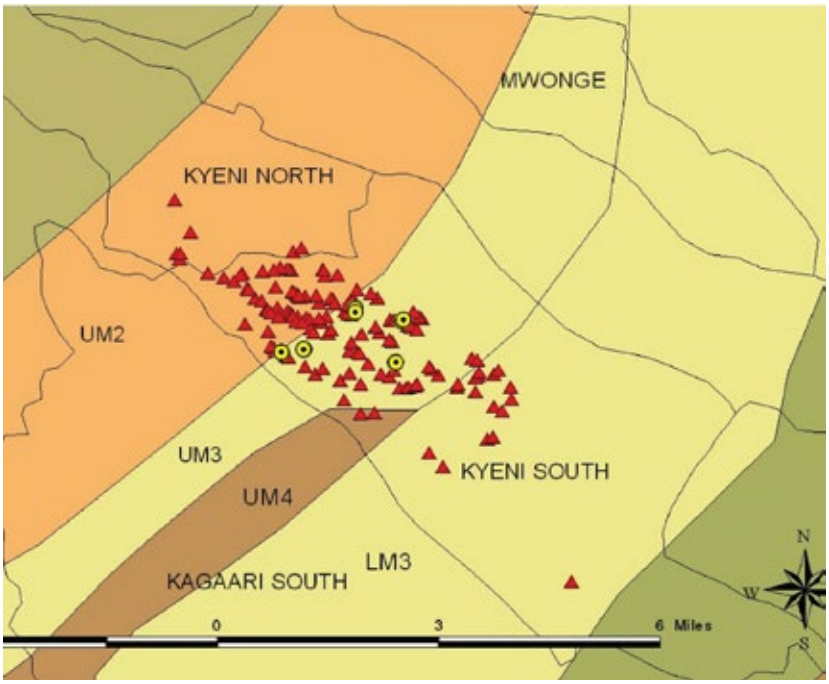
What came out of all this?: Results and impacts

One reason why there is so much interest in the diffusion of innovations is because getting a new idea adopted, even when it has obvious advantages, is often very difficult. Various mechanisms can be used to create awareness among the target population. As already discussed in the preceding section, various strategies were used to reach farmers in the project area. By 2013, 20,000 farmers were already aware of CA technologies in eastern and western Kenya, having participated in field days organized by SIMLESA (Figure 1). This is a conservative estimate considering that participants in PVS trials were not counted. Nevertheless, the results show that more women than men farmers have attended field days and demonstrations, which would seem to suggest that either awareness is higher among female farmers than men or that women showed more interest in getting information on CA and related practices. Field days attracted more farmers than any other scaling-out strategy because of the effort put in mobilizing farmers and other stakeholders.

Figure 1: Number of farmers reached by gender through fields days and other strategies in eastern and western Kenya

The project anticipated progressive spread of the CA technologies and associated practices from the initial eight CA villages in 2010 to 48 by 2013. The results of the monitoring survey revealed that the CA technology had spread to 41 villages by 2013. This was attributable to follow-up farmers picking components of the CA through observation of the host demonstration fields and trying them on their farms. An example in eastern Kenya (Figure 2) gives encouraging results about the diffusion of the CA technologies and associated practices from the host farms and villages to newer villages.

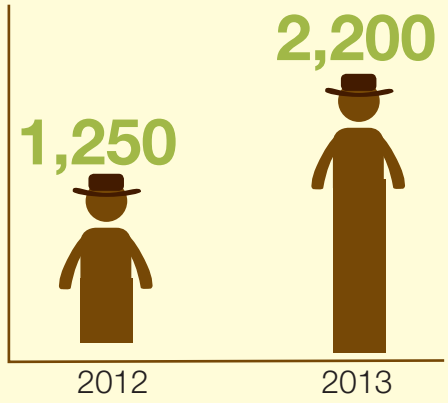
Figure 2: Map showing host farmers and follow-up farmers in one eastern Kenya community



(Red triangles are follow-up farmers, yellow are host farmers)

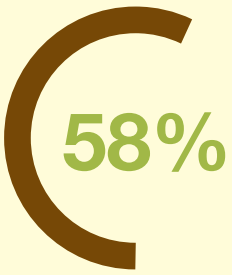
While farmers learned good agricultural practices in growing maize and legumes under CA technologies, it was also necessary to check the trends in the number of farmers adopting any of these technologies. The results of the adoption monitoring survey in eastern Kenya conducted in 2012 and 2013 revealed an increase in the number of farmers adopting CA practices increased from about 1,250 in 2012 to 2,200 in 2013 (Figure 3). At baseline in 2011, only 1 percent of the farmers applied CA on their farms. The results of the adoption monitoring survey conducted in 2012 in eastern and western Kenya and the following year in 2013 in eastern Kenya, showed significant improvements in CA adoption levels. In eastern Kenya and western Kenya, 58 percent of the farmers in the project villages reported using CA (no till). Thirty eight percent of the farmers in eastern Kenya used CA (furrows and ridges) (Figure 4). The results in Figure 4 show that more women than men preferred CA (no till), while more men than women preferred furrows and ridges.

The number of farmers already aware of CA technologies in eastern and western Kenya by 2013.

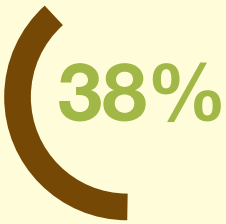


Increase in the number of farmers adopting CA practices in eastern Kenya.

The number of villages CA technology had spread to by 2013.



Farmers in the project villages reported using CA (no till).



Farmers in eastern Kenya who used CA (furrows and ridges).

Figure 3: Number of farmers adopting CA technologies in eastern and western Kenya

Figure 4: Farmers using CA (no till) and CA (furrows and ridges) in eastern and western Kenya

The adoption monitoring survey also investigated the use of CA among the host farmers. Particular focus was on the extent of expansion of CA beyond the initial area under trials, area covered by CA, and farmers who had visited the demonstrations. The survey results showed that there were large numbers of farmers who had visited and learned about CA management practices, suggesting that the strategies that had been used in the promotion of the CA practices were working.

Figure 5: Host farmers expanding CA technologies

Technology type	N	% Expanding	Additional area* (acres)	Farmers who visited host farmers
CA-No till	16	81.3	0.62	445
CA-FR	16	75.0	0.39	545
Embean14	14	100.0	0.84	643
KATX56	4	100.0	2.55	157
KDV1	5	60.0	0.25	72
Embu synthetic	2	50.0	.	30
KH539E	2	50.0	.	26
KDV6	5	40.0	1.25	52
KH631Q	4	25.0	0.25	2
TOTAL				1972

Note: *The additional area on which the farmers were beginning to try CA practices.

Conclusion

The focus of the adoption monitoring survey was to document use of CA technologies and practices among farmers in eastern and western Kenya over time based on the farmer engagement strategies used in creating awareness and its importance in smallholder agricultural production practices. Demonstration sites in eastern and western Kenya will continue to be centers of experimentation and learning for farmers. The experience in this adoption monitoring study demonstrates the efficacy of the demonstration approach to agriculture extension. It is emerging that group cohesion and multi-stakeholder methodology approaches have the potential to be effective and efficient. Field days were found to be effective in awareness creation of CA technologies among farmers and therefore such events should be enhanced. The adoption levels within a span of three years are also encouraging and are attributable to a combination of outreach activities (innovation platforms, field days).

More women farmers are adopting Embean 14 variety and CA-no till, while more male farmers were found to be adopting CA based furrows and ridges. Heavy labour requirement in the initial establishment of furrows and ridges seem to discourage more women from adopting. Nevertheless, the apparent increase in the uptake of zero tillage by women suggests that its labour conserving benefits may appeal to women who experience labour shortages. Lastly, more thought need to be put on understanding the combination of CA technologies because such combinations are expected to have more benefits to farmers than adoption of sole components of CA packages.

Further readings

Rogers, E. (1995). Communication of Innovations. New York: Free Press.
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Acknowledgments

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