Testing of Models to Scale up Low Cost Agriculture Practices and Tools in Hills of Nepal

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Background

Mid-hills in Nepal account for 70% cultivated agricultural land (3.1 million hectare) in the country. Terrace farming in hills and mountains is characterized by number of challenges like limited land surface area for cultivation, soil loss and poor soil nutrient quality, lower crop yield and female hardship (1, 2, 3).

Logistical barriers in terrace agriculture is inherent. Terrace farmers that are in mountainous regions always face problem to obtaining inputs and knowledge of best practices. These logistical challenges also inhibit extension workers and experts from visiting these sites. Such geographic hardship and isolation of hillside terrace farmers means they have a special need for interventions that create less dependency on public sector institutions.

There are number of technologies which are available inside the country or elsewhere in the world that are affordable to smallholder farmers and contribute to productivity and sustainability of the farm while reducing the drudgery. However, these products are often inaccessible to poor farmers due to the lack of proper distribution and promotion mechanisms.

Methodology

LI-BIRD with funding support from Global Affairs Canada (GAC) through the International Development Research Centre (IDRC) and technical support from the University of Guelph is testing a number of scaling up models, based on specific technologies. Such technology has been termed as Sustainable Agriculture Kits (SAKs) and can include knowledge, practice, tools or materials like seeds or storage bags.

The innovations were tested in Majhthana VDC of Kaski and Jogimara VDC of Dhading using on-farm experiments in which farmers' fields are divided into split plots (traditional farmer practice vs intervention; n=10 plots minimum). There were number of farmers' feedback surveys conducted to analyze the farmers' perceptions towards the tested technology.

In case of physical products such as tools, seeds and machines, Anamolbiu Pvt. Ltd. as a private sector partner of the project, is testing efficiency of different distribution channels including agro-vet stalls, farmers cooperatives, machinery suppliers and hardware suppliers.

Findings

After testing more than 30 SAKs, farmers and researchers jointly have identified ten low cost-sustainable agriculture technologies as champions, which are considered for scaling up.

Practices:

1. Growing yam in sacks
2. Growing legumes in terrace wall
3. Intercropping combination of ginger-maize and soybean
4. Combining animal shed + farm yard manure (FYM) improvement
5. Water harvesting combined with drip irrigation + plastic house

Tools/products

1. Corn sheller
2. Farm Rake
3. Silpaulin sheet
4. Super grain bag
5. Composite vegetable and legume kit

Chandra Maya Chepang from Jogimara, Dhading showing yam planted on sacks.

Maize and ginger intercropping at Jogimara, Dhading.

Hand held corn-sheller.

A farmer from Majhthana, Kaski with vegetable composite kits

For the extension of selected technologies, NGO and government agencies are mainly conducting knowledge dissemination and capacity building activities whereas private sectors like Anamolbiu or leader farmers are supplying seeds or materials associated. Out of the five practices that were selected as champion, 'cultivating yam in sacks' and 'intercropping of ginger-maize and soybean' have been adopted by farmers rapidly. For example, yam in sacks which was piloted with 10 farmers each in Kaski and Dhading in 2015 has now been adopted by over 100 farmers in 2016.

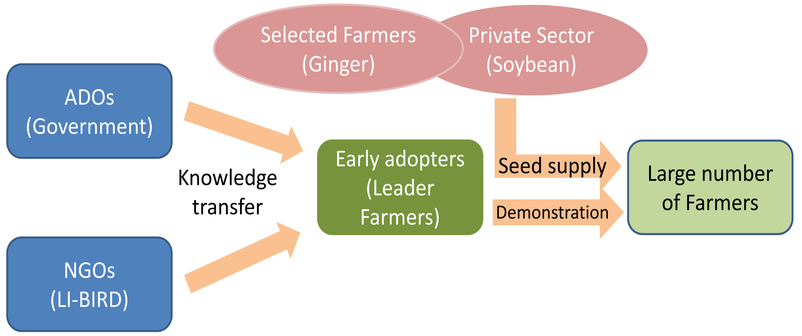

Fig: Business model to scale up Maize-Zinger and Soyabean intercropping

Table: Progress on scaling up practices, 2015-16

SN	Practice tested	Tested by (number of farmers)	Tested by (number of farmers)
1	Maize-ginger by additional 100 farmers	30	30
2	Legumes on terrace walls	40	40
3	Yam in sack-45 farmers, nursery by 5 farmers	20	20
4	Farmyard manure (FYM) improvement	20 (demonstrated)	20 (demonstrated)
5	Water harvesting-drip irrigation- vegetable in tunnel	30	30

Anamolbiu has been continuingly conducting comparative tests of SAK marketing channels, specifically with i) peri-urban snacksfood dealers, ii) agriculture cooperatives, iii) agro-veterinary dealers, and iv) machinery or hardware suppliers.

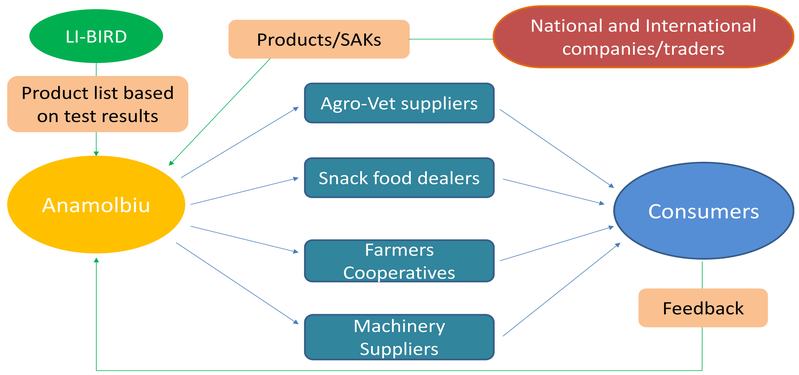

Fig: Business model to scale up tools and materials in the leadership of private sector

Hand held corn sheller and composite vegetable kits are the top two products that are being sold faster than other products. Agro-vets are able to sell more vegetable composite kits, whereas higher number of corn shellers are being supplied to the community by the cooperatives. Out of 535 corn shellers sold in 3 months (March-May 2016), 286 (53%) were sold through the farmers cooperatives.

Table: Progress on scaling up tools/materials, February-July 2016

Product	Total number distributed	Sales				Sales TOTAL
		Snackfood dealers	Agro-vets	Cooperatives	Machinery Suppliers	
Hand held corn sheller	3894	72	173	286	4	535
Composite veg seed kit	1840	33	293	693	NA	1019
Super grain storage bag	91	ns	6	ns	NA	6
Silpaulin sheets	28	1	14	NA	NA	15

Summary

Key lessons learned from the process: (1) farmers are willing to pay for a technology, provided they see clear benefit in terms of increasing production or reducing drudgery; (2) Farmers need to have proper access to knowledge and the associated tools/materials; (3) Technology and/or practice must be affordable; and, (4) Multiple channels/outlets will have to be used, depending on the types of products, to reach farmers. Hence, complementing existing technology promotion through extension model with private sector engagement using existing distribution mechanisms will yield higher rate of expansion of new and efficient technologies.

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