

NEPAL TERRACE FARMERS AND SUSTAINABLE AGRICULTURE KITS

PROVEN MODEL EXPANDS ACCESS TO LOW-COST INNOVATIONS THAT REDUCE FEMALE DRUDGERY AND INCREASE CROP DIVERSITY, YIELDS AND INCOMES

WHAT CANADIAN AND NEPALI COLLABORATORS DISCOVERED:

- ✓ A sustainable model that enables farmers to select what they need from a commercial menu of low-cost agronomic practices, simple tools, and locally approved seeds
- ✓ A proven business case for selling products that piggybacks onto existing retail distribution networks (e.g., local agrovet stores and snackfood dealers)
- ✓ Higher adoption of innovations using demonstration plots, farmer trials, picture books, and graphical flyers
- ✓ A framework for how the international community can help subsistence farmers after a natural disaster by distributing emergency SAKs

BY THE NUMBERS

- Reached more than 60,000 smallholder farming households (benefiting ~260,000 people) in 9 districts in Central Nepal with SAK innovations.
- Of the 56,445 products sold (>80% women users), 25,955 were fully paid for by farmers and 30,490 were subsidized by non-governmental organizations (NGOs).
- Of 46 products and practices field tested by farmers, 10 products and 11 practices were selected and improved as “champion SAKs” for scaling up. An additional 150 best practices were included in the SAK extension picture book and smaller booklets.
- 64,795 farmers (79% women) are using these practices.
- Nearly 500 Canadian Youth Agri-Food Trade Ambassadors have identified, evaluated and promoted ~500 unique bi-lateral trade opportunities between Canada and Nepal.

THE IMPACT:

Tens of thousands of remote hillside farmers in Nepal, especially women, have purchased proven solutions that reduce female drudgery, increase farm productivity, and contribute to climate change resiliency. This sustainable business model uses established local retailers to sell affordable products farmers have identified as both needing and willing to pay for, including locally approved seeds and low-cost tools such as corn shellers and farm rakes. Picture books explaining sustainable practices like intercropping and weed control are designed to increase adoption among illiterate farmers (especially women) in Nepal and other countries. What makes this approach sustainable is that farmers select only those innovations that are useful to their daily lives.

THE CHALLENGE:

The livelihoods of over 13 million Nepalese depend on farming small terraced plots in hilly and mountainous regions where crop yields are low and food insecurity is high. This difficult and time-consuming work is done mostly by women and girls. Female drudgery is a consequence of dwindling male farm labour, harsh geography, climate change, and natural disasters. Terrace farmers live in remote regions that are less accessible to NGOs and government extension workers. As a result, many development projects reach only hundreds of farmers, at great



cost, in regions inhabited by millions of needy households. Free or low-cost interventions exist but are usually inaccessible to poor farmers as existing distribution networks are underutilized. Low female literacy in rural areas also makes it difficult to share best practices through written materials.

TRANSLATING RESEARCH INTO ACTION

Translating research into action:

“We used to shell maize (with hands). By this method my skin around my nails used to peel off and blisters used to appear. It also used to take a lot of time... Now (with a corn thresher) it is quite easy. We can shell 17.5 kg of maize within half an hour. It took 2 to 2.5 hours to do so by traditional methods.

Kumari Dallakoti, Woman Farmer

Saving women time and labour

- The biggest seller has been the handheld corn sheller (~\$2.50 CAD each). It removes kernels 70% faster, and with fewer damaged seeds. It also increased male participation in this traditionally female activity. Tens of thousands of shellers have been sold in remote Nepal during the project.
- Community millet threshers (500-\$700 USD) cut threshing times by 75% and significantly reduced women’s physical strain, resulting in more men participating in the task.
- Other popular products have included: farm rakes (\$3.75 CAD); garden gloves (~\$1 CAD); vegetable seed kits (\$1.25 CAD); hermetic grain storage bags that prevented post-harvest losses from pests (\$3.75 CAD).
- Picture books illustrating best practices and products to assist farmers in the proper use of these innovations.

Improving nutrition and agricultural productivity

“We cannot literally plough and sow crops on terrace walls, usually just the centre of the terrace is used for this kind of cultivation. But now I plant maize on the terrace centres, legumes on the terrace edges and pumpkins on the vertical walls.”

Binda Chepang, Woman Farmer

- New techniques for growing high-protein legumes and micronutrient-rich vegetables on underutilized terrace walls (e.g., yams planted in sacks at base of the wall) earned families up to \$200 a season and reduced female drudgery. Some 34,636 households received these kits, impacting more than 173,000 people.
- 33%-137% increases in farmer net incomes due to intercropping legumes with maize, millet, wheat, and mustard. Intercropping also minimized damage from hailstorms.
- A package that combines plastic greenhouses, drip irrigation and tarpaulin-lined ponds (CAD \$187) increased incomes CAD\$100-\$250 per household for a season. Local government agencies have included this intervention in their annual plans for longer-term scaling up.
- Practices being adopted fastest: yam planted in sacks; legumes on terrace edges; maize + cowpea, and ginger + maize intercropping; and plastic greenhouse package.
- A new cost-effective diagnostic technology (GInLux) was developed that estimates the amount of nitrogen fixation in plants (CAD\$1.30/test).
- Improved manure practices reduced animal disease and female drudgery, and increased manure quality, leading to higher yields (average 11% increase).
- Discovered a novel defence mechanism that allows finger millet plants to work with soil-dwelling bacteria to protect against a devastating fungus.

Scaling up innovations

Private sector actors can find the optimum cost-effective ways to procure and supply the products to their customers. Utilizing existing distribution networks, such as snack food dealers and utensil/hardware retailers were promising avenues to market certain tools and products.

SAKNepal

- 5 versions of the picture books created (South Asia, Sub-Sub Saharan Africa/Caribbean, East Asia, Latin America, North Africa/Middle East) for free download
- A parallel book (Encyclopedia of Subsistence Farming Solutions) evaluating more than 100 SAK products/practices (www.SAKBooks.com) can help farmers in other countries understand/adopt SAKs.
- The distribution company (e.g., Anamolbiu) and existing retail networks are promising avenues to market certain tools and products.
- Consumer satisfaction surveys with farmers via cell phones identified the most suitable products and practices for scaling up.

WHAT'S NEXT?

Post-project feedback surveys revealed that sales are continuing and the commercial component of the project (sales of SAK tools and seeds by Anamolbiu) is now self-sustaining. The SAK model, notably its picture books and distribution approach, will allow the product and agronomic innovations to be scaled up as a franchise model to terrace farmers worldwide, especially to improve the livelihoods of women and girls.

LEARN MORE ABOUT THIS PROJECT:

Project abstract: <https://www.idrc.ca/en/project/nepal-terrace-farmers-and-sustainable-agriculture-kits-cifsr-phase-2>

Project website: www.sakglobal.org / <http://saknepal.org>

Research in Action: <https://www.idrc.ca/en/research-in-action/sustainable-agriculture-kits-terrace-farmers-nepal>

KEY OUTPUTS

VIDEO

Sustainable Agriculture Kits - Full Film. https://www.youtube.com/watch?v=HTt0jvG_Yws

SAK Global YouTube channel: <https://www.youtube.com/channel/UCrkWhLffIZVpErHNWuakYkg>

PROJECT WEBSITES:

- www.saknepal.org
- www.sakglobal.org
- www.sakbooks.com

SYNTHESIS REPORT

Country report : innovations for terrace farmers in Nepal and testing of private sector scaling up using sustainable agriculture kits (SAKs) and stall-based franchises Wiggins, Steve; Ghimire, Anita (2018-07)

STORIES OF CHANGE

Sustainable agriculture kits (SAKs) reduce drudgery and increase farm income. (2018) Sthapit, Sajal; Pudasaini, Roshan; Raizada, Manish. URI: <http://hdl.handle.net/10625/56828>

Testing and scaling up of sustainable agriculture kits. (2018) Sthapit, Sajal; Pudasaini, Roshan. URI: <http://hdl.handle.net/10625/56827>

Model for NGO and private sector partnership for scaling up sustainable agriculture kits (SAKs). (2018) Pudasaini, Roshan; Sthapit, Sajal. URI: <http://hdl.handle.net/10625/57138>

Testing and scaling up of sustainable agriculture kits. (2018) Sthapit, Sajal; Pudasaini, Roshan. URI: <http://hdl.handle.net/10625/57139>

JOURNAL ARTICLES

Chapagain T and Raizada MN (2017) Agronomic Challenges and Opportunities for Smallholder Terrace Agriculture in Developing Countries. *Front. Plant Sci.* 8:331. doi : 10.3389/fpls.2017.00331 <https://idl-bnc-idrc.dspacedirect.org/handle/10625/57059>

Chapagain T and Raizada MN (2017). Impacts of natural disasters on smallholder farmers: gaps and recommendations. *Agric & Food Secur* (2017) 6:39 DOI 10.1186/s40066-017-0116-6 <https://idl-bnc-idrc.dspacedirect.org/handle/10625/57141>

VIEW ALL RELATED PROJECT OUTPUTS IN THE IDRC DIGITAL LIBRARY

<https://idl-bnc-idrc.dspacedirect.org/browse?type=project&value=107791>

QUICK FACTS

Project location(s): Nepal

Institutions: University of Guelph (Canada); Local Initiatives for Biodiversity, Research and Development (LI-BIRD) (Nepal)

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