

MULTI-FUNDER INITIATIVE

Canadian International Food Security Research Fund (CIFSRF)

Developing innovative sustainable agricultural kits for Nepalese terrace farmers

A Canadian and Nepalese research team is testing a series of innovations for terrace farming and their commercial distribution through agricultural kits. These kits have the potential to improve the lives of terrace farmers and promote entrepreneurship in Nepal and throughout Asia.

Terraces hard to farm on

Nearly 70% of Nepal's cultivated crop land is on rain-fed terraces. While they are visually stunning, terraces limit mechanization and productivity for millions of farmers. Narrow terraces require planting and weeding by hand: work that is usually done by women. These often isolated hill regions are also marked by high rates of male out-migration and female illiteracy. As a result, hillside farmers lack support from government agricultural services, non-governmental organizations, and agribusiness.

Despite these challenges, terrace farming has been practiced for millennia and holds unique opportunities for innovation.

Innovation-packed \$10 kits

Building on earlier testing and research, this project's low-cost solutions will sustainably boost yields, create better working conditions for women, and help farmers cope with climate change.

The research will test a range of agricultural innovations to include in a sustainable agriculture kit. The useful kit will contain drought-resistant and soil-nourishing legume seeds that enhance yields and nutrition and grow well on terrace edges and walls. Also among the trial innovations is GlnLux, a Canadian-engineered microbial biosensor that helps farmers maximize organic nitrogen production from inter-planted crops.

The kit's tools will include simple seed planters and reusable storage bags that protect harvested grain from fungus and insects. Instructional picture books will teach farmers how to use the seeds and tools, breed hybrid seeds, conserve water, and improve animal feed.

To scale up the results, the project will also test a novel public-private partnership model to reach 25,000 households. An existing networks of market-stall vendors will sell the kits for \$10 or less. The project lessons could serve elsewhere in Asia and the world where terrace farming is common.

Expected outcomes

- Increase crop yields and incomes for 25,000 terrace farming households
- Improve working conditions for women
- Communicate farming techniques through a picture book for illiterate women
- Improve farmer self-reliance and resiliency to climate change
- Develop a commercially viable scaling up model.

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