

# Low Cost Sustainable Agriculture Kits (SAKs) as an Agronomic Strategy to Improve Farmer Livelihoods in Nepal

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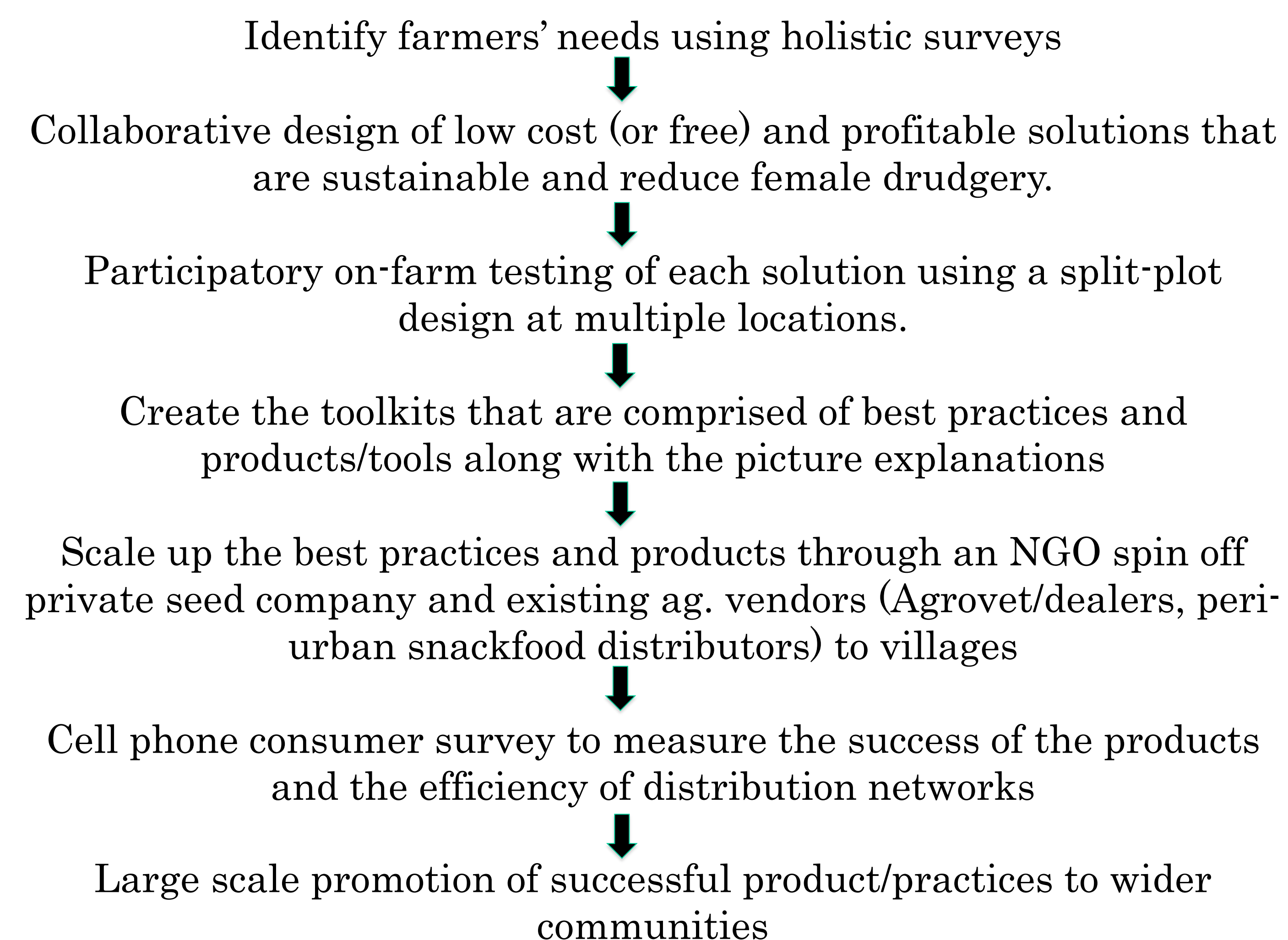
## Introduction

The world's 1.1 billion subsistence farmers do not have access to peer-reviewed knowledge of best agronomic practices, good seeds, or inexpensive farm tools. What is lacking is a means to package, deliver and share these technologies to farmers who earn \$1-\$2 per day. Like a restaurant menu, Sustainable Agriculture Kits (SAKs) are intended to be regional menus of private sector technologies and ecological practices – from which an individual farmer can purchase one or more items at a cost of \$1 (ideally) to assemble a technology kit that is appropriate for his/her own needs. The items are intended for sale at stalls in villages. A SAK consists of 3 components: (1) locally approved seeds, (2) low cost tools and technologies focused on reducing female drudgery, and (3) an agricultural extension picture book to communicate best agronomic practices (indigenous and scientific) to empower illiterate farmers. In rural Nepal, following grassroots surveying of households, we are in the process of conducting on-farm agronomic trials to test the efficacy of the identified SAK interventions. In parallel, we are scaling up SAK products and practices that have previously been validated, using participatory approaches. To enable distribution of these products, we are piggybacking onto a pre-existing snackfood distribution network as well as the franchises of a Nepalese private seed company. The picture book of best agronomic practices is open access and will be available online shortly at [www.SAKNepal.org](http://www.SAKNepal.org).

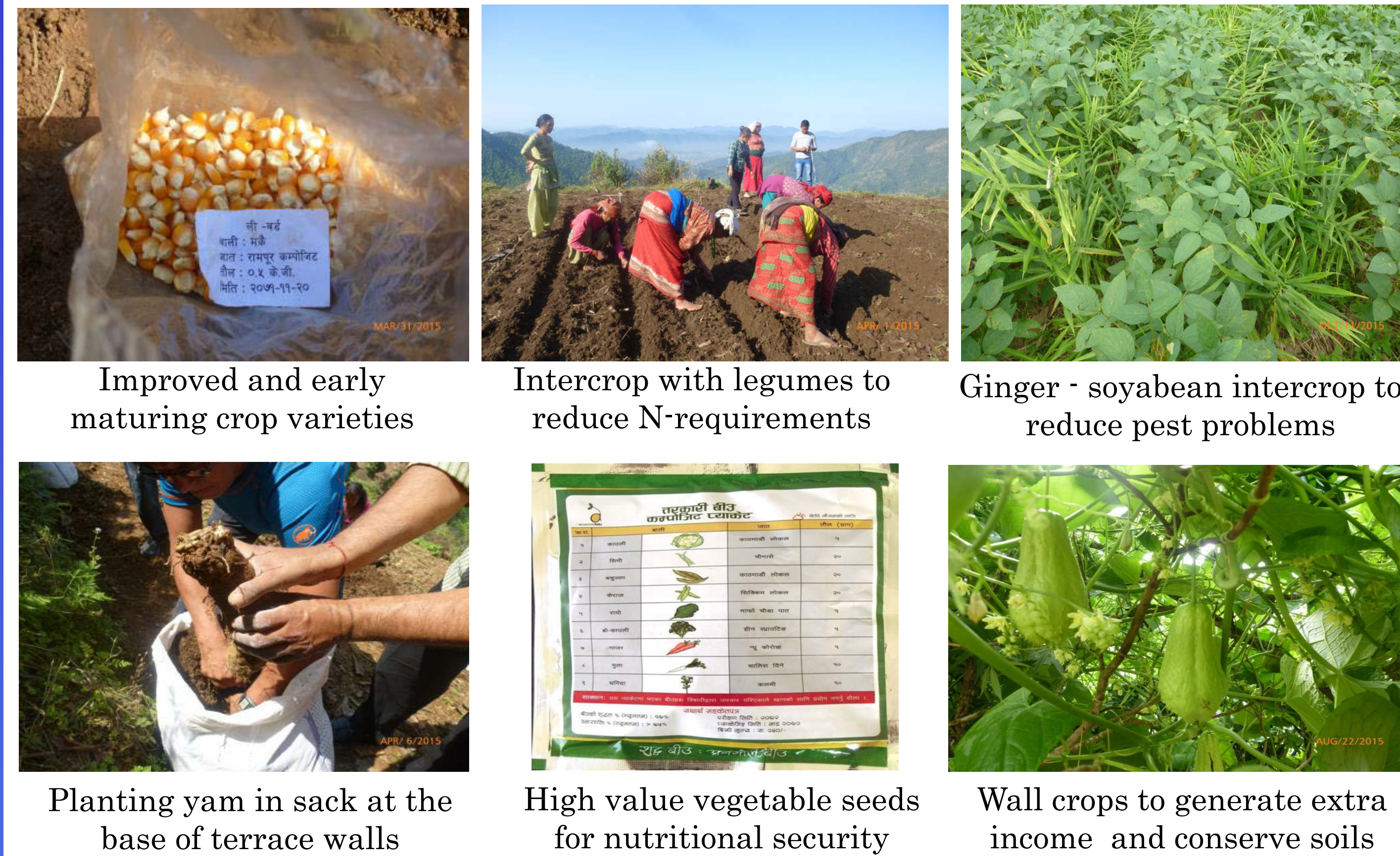
## Objectives

- Test at least 20 best-practices and products for inclusion in the SAKs (e.g. [on-farm trials with test farmers](#));
- Test innovative knowledge extension models for targeted communities (e.g. [SAK Picture Book](#));
- Test the SAK scaling up model (e.g. [snackfood dealers](#), [consumer feedback cell phone survey](#)).

## Methodology



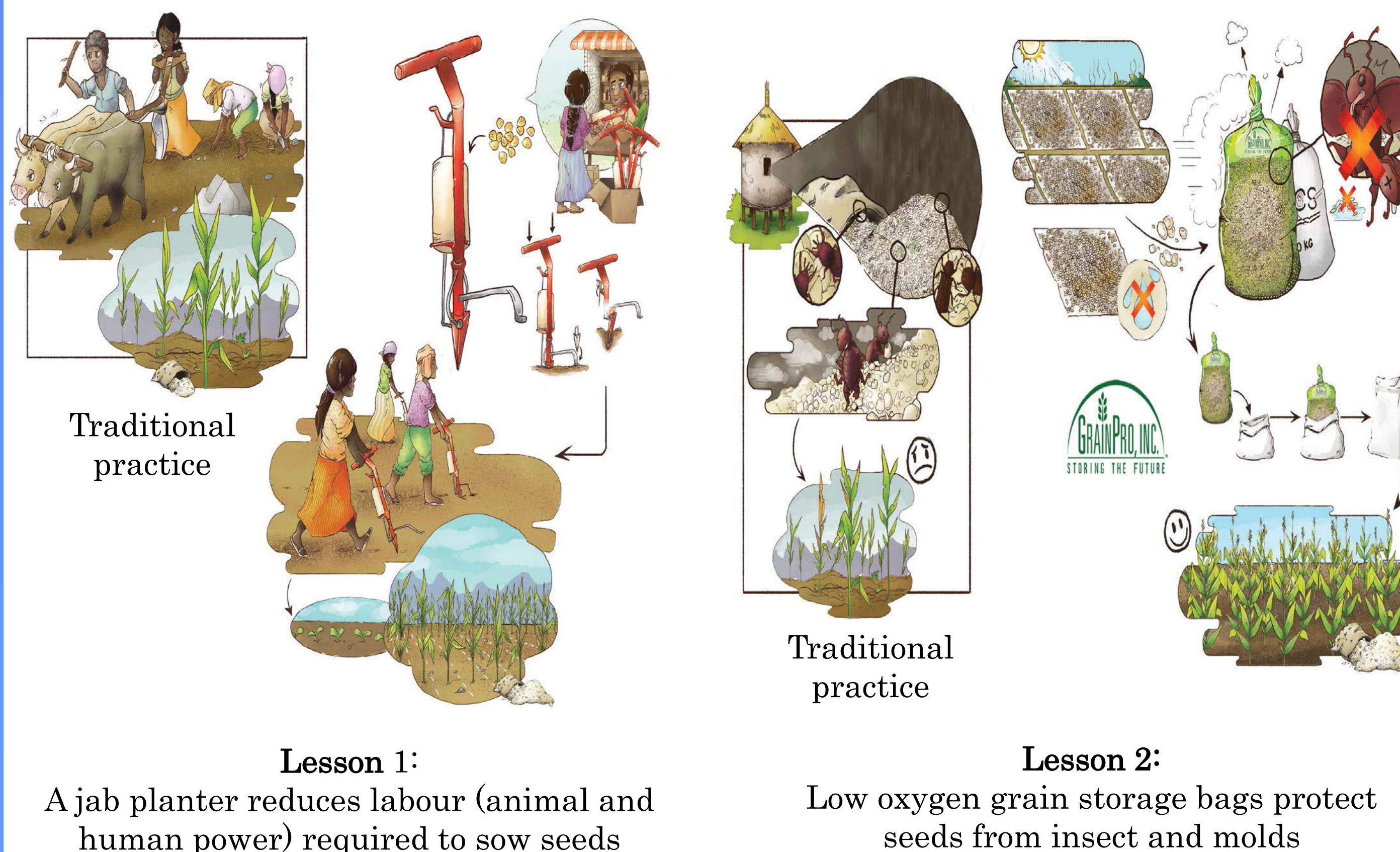
## Toolkit Component 1: Seeds for the Cropping System



## Toolkit Component 2: Low Cost (\$1-\$10) Technologies

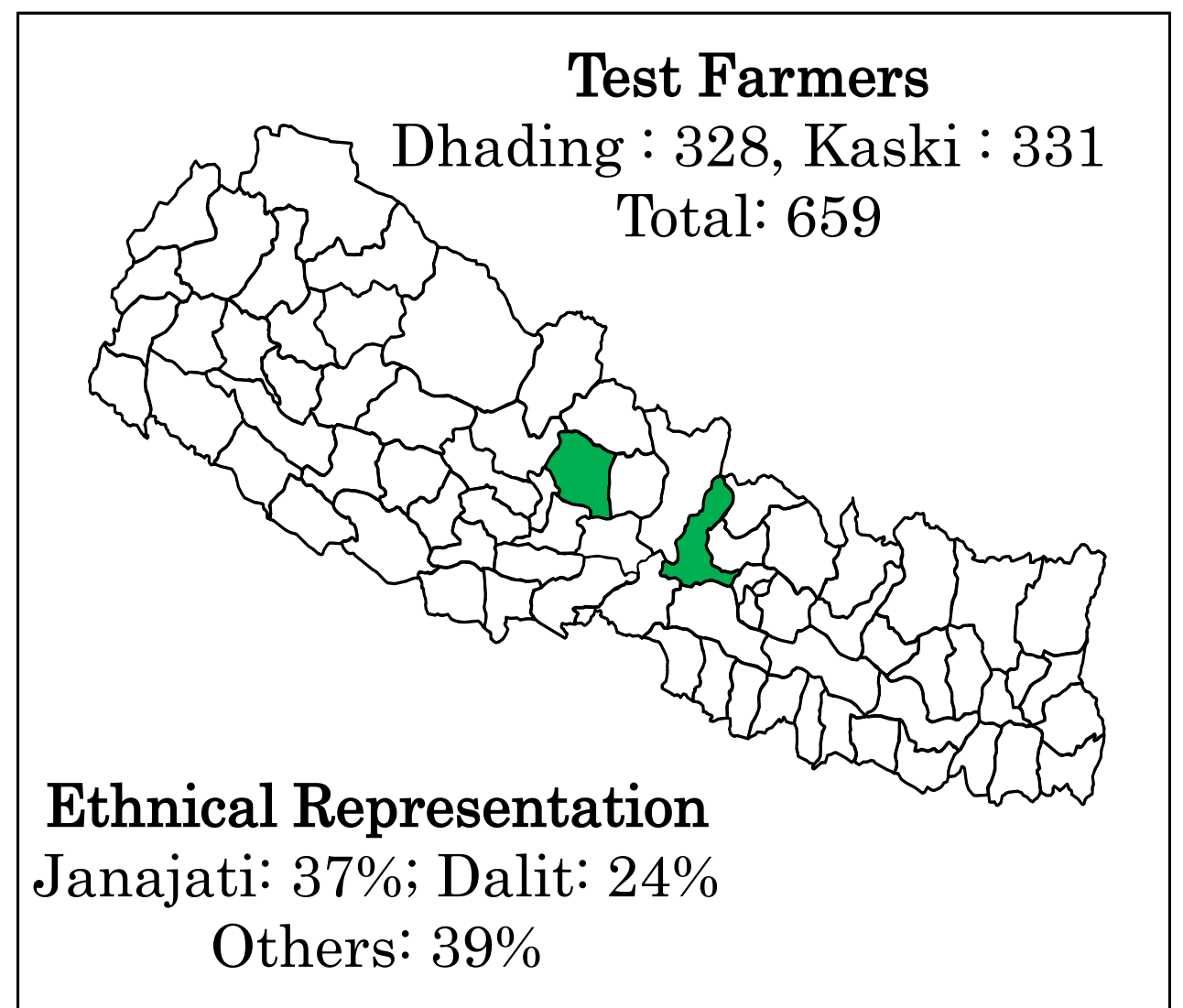
- Hand-held corn sheller
  - Wall crops in vertical slopes
  - Legume seeds coated with rhizobia
  - Jab planter
  - Maize-ginger intercropping
  - FYM improvement practices
  - Hand gloves
  - Low oxygen grain storage bags
  - High value legumes in rotation
  - Fork weeders
  - Legumes on terrace edge
  - Living grass barriers
  - Seed cleaning
  - Fertilizer micro-dosing
  - Rainwater harvesting
  - Grafting (fruit/fodder)
  - Cattle urine as insecticide
  - Dry season legume forage
  - Line/grid sowing tools
  - Balanced fertilization
  - Micronutrient fertilization
  - Post harvest value addition
  - Plastic tunnel for seedlings
  - Electric finger-millet thresher\*
  - Mini-tillers\*
- \*Community SAK products

## Toolkit Component 3: Picture Book of Best Practices for Illiterate Women Farmers



## Progress

1. We conducted extensive quantitative surveys at project sites to identify needs, survey indigenous innovations and identify local entrepreneurs.



2. We have been working collaboratively with farmers to agree upon initial toolkit components



3. We are field testing toolkit components using a controlled split-plot design at multiple locations.

SAK Nepal Trials	Preliminary Results
Intercropping trials	Increased land productivity by 20-49%
Wall crops on vertical slopes	Net income increased (up to \$80/plant)
Legumes on terrace edge	Provided extra benefits to farmers
Crop rotation with high value legumes	Net economic returns increased by 25%
Improved farm yard manures	Improved FYM quality, matured early
Rhizobium inoculation trials	Increased nodules, better crop growth
Trials with planting, weeding, harvesting and threshing tools	Reduced female drudgery in agriculture by reducing time, pain and efforts

4. Local vendors/distributors have been identified and the scaling up process has begun.



5. An open access online picture book describing ~120 low cost technologies is being field tested.



## Conclusions

- Subsistence hill-side farmers have been extensively surveyed to identify "low hanging fruit" bottlenecks that can be helped with simple, low cost interventions.
- Candidate low cost interventions are being tested in controlled, split-plot trials to enable their incorporation into low cost commercial Sustainable Agriculture Kits (SAKs).
- Local vendors/distributors have been identified in 7 districts who can transition SAKs to profit-based private businesses for scaling up of SAKs to reach 100,000 farmers in Nepal.
- An online, open-access, free manual describing 120 low cost technologies has been created to help farmers, entrepreneurs, and NGOs to get started with their own SAK projects.

## Acknowledgements

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