



Australian Government

Australian Centre for  
International Agricultural Research

Crops

# Improved Mungbean Harvesting and Seed Production for Bangladesh, Myanmar and Pakistan



## Overview

**High labour costs and labour shortages at harvest time constrain mungbean production in Bangladesh, Myanmar and Pakistan.**

Harvesting costs account for more than half of the crop's total production costs, preventing expansion at a time when the nutritious legume is in high demand. Rising prices increasingly put mungbean beyond the reach of the poor.

In South Asia, mungbean was traditionally harvested by hand as the pods dried, which was labour-intensive but resulted in a high-quality grain. As labour costs increased, this practice has been replaced by cutting the whole plant by hand, letting it dry in the field and thresh the harvested crop using a machine—a still relatively expensive technique exposing the grains to rain damage.

Machine harvesting using modified cereal harvesters is much faster and has been used for decades in Australia. This practice needs to be adapted for smallholder farms in Bangladesh, Myanmar and Pakistan. Women are traditionally the main harvesters of mungbean, so it is important to understand how the promotion of mechanical harvesting will affect them—either by potentially reducing unpaid drudgery or by taking away an important source of income.

## KEY FACTS

**ACIAR Project No.** CIM/2016/174

**Duration:** July 2017 – June 2021 (4 years)

**Target areas:** Bangladesh, Myanmar and Pakistan

**Budget:** A\$1,003,408

### Project Leader

Ramakrishnan Nair, World Vegetable Center  
(WorldVeg)

### Key partners

- Bangladesh Agricultural Research Institute
- Department of Agricultural Research, Myanmar
- Pakistan Agricultural Research Council
- Australian Mungbean Association (AMA)

### ACIAR Research Program Manager

Dr Eric Huttner



## Objective

### The project aims to establish and validate a practical and economically viable system that will enable smallholders in Bangladesh, Myanmar and Pakistan to harvest mungbean mechanically.

It will build on the International Mungbean Improvement Network (CIM-2014-079), and engage machinery manufacturers and suppliers from partner countries to adapt combine harvesters and develop and test appropriate harvest practices. In the process, it will explore business- to -business collaboration between the Australian Mungbean Association (and Australian combine suppliers) and relevant companies in the partner countries.

#### Specifically, the research seeks to:

- Develop a package of cropping practices to facilitate mechanical mungbean harvesting, including the safe and effective use of crop desiccants in all three countries, drawing on experiences in Pakistan.
- Develop and evaluate adapted combine harvesters for use with mungbean, in cooperation with combine harvester manufacturers. Contract harvester outfits to transfer the most effective and economical mechanical harvesting methods to progressive farmers, and harvester contractors and seed production companies to minimize harvest losses and deterioration in seed and grain quality.
- Communicate to all stakeholders the likely impact a change in harvesting practices will have on women and provide harvest management options that would potentially benefit the livelihoods of women.

#### Expected scientific results

- Studies carried out on: changes in farming practices to be promoted; the use of crop desiccants; preferred desiccants, their application methods and effects on grain and seed residues and germinability; local value chain systems and markets; existing cereal harvesting practices in the three countries; and the effect of harvesting on grain quality.
- Research published in high impact journals, and guidelines, videos and leaflets prepared on best harvesting practices for each country.
- Local harvesting hubs established in each of the targeted districts in Bangladesh and Myanmar.
- A business model for harvesting services developed, with a report on how women can engage in and benefit from such models.

- Capacity of local researchers and organisations in gender research strengthened thanks to three workshops.
- Insight provided from surveys on the current role of women in mungbean harvesting and the likely impacts of mechanical harvesting on their livelihoods.
- Policy implications shared with policy-makers to support decision-making.

#### Expected outcomes

- Progressive farmers and seed producers in the partner countries adopt good agricultural practices, including chemical desiccation, for mungbean production, and contract harvesters use tested, suitably adapted combine harvesters to harvest mungbean mechanically.
- Women family farmers are relieved of the drudgery of hand harvesting, and contracted women labourers have a possible alternative source of income.
- Farmers have access to good quality seed of improved varieties at the right time.
- The initial adoption by progressive farmers has motivated large numbers of other farmers in the partner countries to include mungbean in their cropping system and engage in mechanised harvesting.
- More combine harvesters are adapted/adaptable for harvesting mungbean, and more contractors are in the business of supplying mechanised mungbean harvesting services.

