



Australian Centre  
for International  
Agricultural Research



# ACIAR SLAM/2020/141 – Increasing on-farm labour productivity for sustainable production, nutrition and livelihood gains in Timor-Leste

This ACIAR-funded project focusses on improving livelihoods of small-holder farming households through innovations that are likely to improve labour productivity.

Intervention and innovations can potentially impact household labour productivity by either:

- reducing the amount of time taken to do complete cropping tasks, or
- increasing the yield from the time spent on cropping tasks, or
- both

Mechanisation is one way to address labour productivity in cropping.

## SLAM Activity 4: Approach to Mechanisation - Information for Researchers

**Mechanisation:** There have been many mechanisation projects implemented in Timor-Leste. Many of them have not led to longer term adoption, beyond the length of the project. Project evaluations have identified many reasons for this:

- the selection of inappropriate machinery to roll out
- a lack of preparation and training for farmers to gain the skills to operate the machinery
- a lack of training for farmers in the routine maintenance of machinery
- a lack of access to mechanics to repair machinery
- bad early experiences with inappropriate machinery, that discourage further investigation
- undeveloped ownership models to ensure ongoing use, maintenance and repair
- a distribution model based on government or agency gifts of machinery rather than standard commercial models of supply

In this project we aim to structure the engagement of farmers with mechanisation. The study of mechanisation starts with participatory action research. This structured approach will involve the following phases.

### Phase 1 – Participatory action research – introducing and testing machinery

- New machinery is introduced to the participating communities, on-farm
- Machinery is investigated using Participatory Action Research (PAR)
- This involves demonstrations, trialing by users, early identification of improvements and modifications
- This process is iterative through the life of the activity

## Phase 2 – Training for farmers and key support staff

- Appropriate training will be identified
- Training starts with *project* funded training of 2-3 farmers from each Aldeia
- These farmers (nominated by their farmer group) will receive formal training in machinery use
- These trained farmers will then be supported by trained project staff, in their communities to use and maintain machinery
- These supported farmers will then become the focal point for machinery use in their farmer group, in their Aldeia
- Project staff or partners will continue with technical support as appropriate until the end of the *ACIAR SLAM Labour productivity* project – at which point the participating farmers will be local experts
- This phase of the project will ensure that early experiences with machinery are supported, positive and safe
- This phase will be paced at a speed that suits farmer learning, rather than project timelines and targets

## Phase 3 – Collaborative machinery testing, for onsite conditions, ahead of release

- New off-the-shelf farm machines usually need modification, to perform under local conditions
- Technical support and structured testing will be supported by research staff within project partners (MALFF, TOSKA, Dom Bosco, UNTL), based on PAR outcomes

### Example 1: Seeder testing and release

- Seeder performance will vary depending upon soil type, crop type, site preparation and the available tractor to pull it
- It is also determined by the rate at which seed is released, the resulting seed density and depth of seed burial
- All these factors may also affect seed germination, seedling establishment and yield
- Some quantitative assessment may best be done off-farm by MALFF research staff, and early modification be done pre-release to on-farm use
- Participatory action research may be used for ongoing improvement of seeder performance, on farm
- Strongly interested farmers may be supported to participate or advise on research testing if they are interested
- This approach will reduce farmer fatigue, and the likelihood of early disengagement or rejection due to initially poor seeder performance, without modification

## Phase 4 – Connecting farmers with ongoing supply and maintenance

- Preparation and distribution of instruction manuals appropriate to the users for those machines adopted
- Long term connection with repair maintenance and supplier enterprises
- Farmer support to develop ownership models appropriate for each community
- Identifying opportunities to access finance

## Summary

This project aims to support farmer engagement with mechanisation with the following key approaches:

- Testing and release of machines be phased to match **farmer learning needs** rather than project targets and milestones
- **Pre-release research testing** and modification of machinery by research staff occurs on research centre land, ahead of release to farmers, to avoid farmer fatigue and potential disengagement
- Empowering farmers through **high quality and sustained training and post training support**
- Long term **connection with repair maintenance, finance and supplier enterprises**