

## Conservation Agriculture Adaptive Research in Timor-Leste

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Timor-Leste is one of the poorest countries in the Asia-Pacific region with economic performance. This is mainly due to high population growth and low capital expenditure on the productive sectors. Poverty is endemic and worsening. The incidence of poverty is much higher in rural areas than in urban areas. Food insecurity is also worsening in rural areas, with 79 percent of the rural population suffering at least one month of low food consumption annually. On average, rural households suffer 3.8 months without enough rice or maize to eat, whilst urban households suffer two months.

Cultivable soils of Timor-Leste tend to be infertile, degraded and prone to erosion. Mono-cropping of rice and maize crops and continuous soil tillage caused the degradation. Promoting Conservation agriculture (CA) may help mitigating the problems and introduce the most cost-effective and environmentally stable approach to producing rice, maize, legumes, root crops, etc.

CA is a concept for resource-saving crop production that strives to achieve acceptable profits together with high and sustainable production levels while concurrently conserving the environment. Interventions such as mechanical soil tillage are reduced to an absolute minimum and the use of external inputs such as agro-chemicals and nutrients of mineral or organic origin are applied at an optimum level and in a way and quantity that does not interfere with, or disrupt, the biological processes. CA (a) provides and maintains an optimum environment in the root zone to a maximum possible depth; (b) favours beneficial biological activity in the soil in order to rebuild soil structure and levels of soil organic matter and contribute to capture, retention and slow release of plant nutrients and water; and (c) avoids physical or chemical damage to roots that disrupts their effective functioning or limits their maximum potential for nutrient uptake.

During the Project's first cropping season (2013 – 2014), FAO and partners supported 18 farmers' groups to each establish and manage a group demonstration plot comprising Control (burning, Ploughing and Traditional maize cropping) and three to five CA treatments (no burning and no/minimum tillage) with variables appropriate to the respective agro-ecological zones, namely mulching, maize varieties, different intercropped legumes and cereals.

Fifteen of the 18 Farmer Field Schools (FFSs) successfully completed their adaptive research to test CA practices. Some of the groups experienced up to a 40 percent reduction in the time farmers used for land preparation and weeding between the CA sub-plots and the controls. The FFSs at Uma Boco in Manatuto District reported that weeding of the CA sub-plots each took a total of one day per season compared to two days for the control plot. In addition, six of FFSs reported higher maize yields in all of the CA sub-plots than in the controls (photo). Overall, the remaining nine FFSs reported similar yields between the CA and controls. The main reasons cited by farmers for an increase or no change in maize yields was less competition from weeds due to the mulches and cover crops and moisture conservation because of the mulches.

Keywords:

Conservation Agriculture, minimum tillage, food security, Timor-Leste, Farmer Field School, adaptive research