**Introduction**

Degraded landscapes are expanding annually in Southeast Asia. Rural poverty in upland communities increases pressure on natural resources like forest, soil, and water. These are the last “capital” for the poor and they are rapidly diminishing due to non-sustainable management. Such practices reduce agricultural productivity, which in turn heightens food insecurity and exacerbates poverty.

**Objectives**

The goal is to promote conservation agriculture production systems (CAPS) as technologically-feasible, environmentally-sustainable, economically-viable, and gender-responsive systems that will contribute to the food security of small farms in Cambodia and the Philippines. Conservation agriculture practice involves minimum soil disturbance, continuous mulch, and diverse species rotation. The objectives has an acronym GETS and they are:

- **Gender**: Identified gender limitations and advantages that can promote adoption of CAPS, and determine if CAPS will increase labor burden on women.
- **Economies**: Identify field and farm-level CAPS that will minimize smallholder costs and risks while maximizing benefits and adoption.
- **Technology network**: Quantify the effectiveness of SANREM-supported farmer groups in training knowledge leaders, in being knowledge transmission points, and in facilitating network connections leading to widespread adoption of CAPS; and
- **Silt quality**: Assess soil quality and measure crop yield and biomass from CAPS, and compare them with soil quality and crop yield and biomass from conventional plow-based systems.

**Methodology**

Sites: The project sites are in Rattanak Mondul, Battambang province, Cambodia and Claveria Misamis Oriental province, Philippines.

**CREATE approach**: CREATE is an iterative process which is on-farm, with farmers, and for farmers. CAPS are tested and selected with farmer groups, local government, scientists, and other stakeholders in the community. Proposed CAPS are analyzed in terms of farm household accessibility, A, and scientific and economic stability. B. The CREATE protocol is: CAPS is proposed; ii) research on proposed CAPS conducted; iii) CAPS with tested and proven prospects diffused; and iv) necessary conditions provided for feasible CAPS to be adapted or adopted.

**Treatments**: Baseline data for each objective were gathered and networks are being established with stakeholders who can implement CAPS adoption when CAPS technology is proven to be successful.

Stakeholders are getting involved while CAPS technology is being developed. Synchronization of the Cambodian and Philippine studies was done allowing for an excellent cross-cutting partnership that will benefit both countries. For both sites researcher managed and farmer managed sites were implemented. Twenty four farmers in Cambodia and 24 farmers in the Philippines subjected most of the existing CAPS. Researcher managed experiments for both countries had been established. For the Philippines, five promising cropping patterns were tested in comparison to conventional maize tillage.

Table 1 shows the treatments. Treatments 1-6 uses double method in sowing maize in the first cropping year compared to all other treatments hacing maize. The spacing between plants as well as the low infestations inputs that might have resulted in competition effects between maize and the cover crops. The crops were only fertilized with nitrogen levels 0N:30P2O6:0K2O and 0N:30P2O6:10K2O. Fertilizer input reduction might cause competition effects and thus is adjusted on the next production cycle.

**Results**

**Cambodia**: The assessment of the main cropping systems shows an increase with time in the Gross Profit Margin (GPM) (Table 2 and Fig. 1). GPM for the most productive, the yield is increasing from year to year while charges are decreasing: no ploughing, decreasing weed pressure, etc. The GPM on CAPS managed plots is slightly lower than the traditional ones during the two first years. However, the constant decrease of the yields observed in the ploughing-based systems leads to an ineptable drop in the profit margins when those from CAPS plots increase with the number of crop cycles.

**Philippines**: Cassava with *Stylosanthes*(T5) gave the highest total dry matter yield among all other treatments followed by conventional maize production (T4a). Maize plus cowpea plus upward rice (T3) performed the least in dry matter yield (Fig. 4a) but relatively high in price of beans. Also, maize alone in conventional system performed the least in biomass production compared to *Stylosanthes*. In terms of maize yield, conventional maize in the first cropping year can be able to provide adequate maize for next cropping year compared to all other treatments hacing maize. The spacing between plants as well as the low infestations inputs that might have resulted in competition effects between maize and the cover crops. The crops were only fertilized with nitrogen levels 0N:30P2O6:0K2O and 0N:30P2O6:10K2O. Fertilizer input reduction might cause competition effects and thus is adjusted on the next production cycle.

**CPS treatments** are diverse compared with conventional maize (Table 1). Maize with cowpea relayed with cowpea plus upward rice CAPS is more diverse, having 3 crop components, than other treatments (Fig. 5a). The soil cover provided by CAPS act as effective soil binding function on surface soil productivity erosion as observed in conventional plow-based maize cropping (Fig. 5b).

**Conclusion**

Conservation agriculture being practiced in many parts of the world yielding promising sustainable production systems. This project brings conservation agriculture in the humid tropical climate of Southeast Asia. Initial results showed that in Cambodia CAPS gradually produced higher maize yield within three years. The addition of CAPS plots network is quite positive, but the transition period from the CAPS trials in three years can be tricky for farmers. CAPS trials could be considered as a way to indirectly provide incentives for a pronounced technical change and to finance the soil capital restoration. Similar system, e.g. public security fund allocated to the Micro-Finance Institution providing credit line to farmers and/or farmers organizations, should be implemented aiming at a large extension, especially when targeted on small-medium farmers. In the Philippines, maize, cowpea, and upward rice in rice-cover cropping could significantly increase the grain yield of maize and total dry matter yield but provided the most income due to higher market price of cowpea seeds. This system has low turn-around period and the most diverse cropping pattern and offers continuous ground cover. Conventionally grown maize provided the highest maize yield due to lesser competition under low fertilizer application rate and the least diverse and most prone to erosion. Among cover crops tested, *Stylosanthes* showed to be more productive than A. pinito making it a suitable cover crop under CAPS.