



**Resource conservation in the uplands of Southern Shan:**  
**How climate smart agriculture can help**



**With support from IDRC and CGIAR global research program Climate Change, Agriculture, and Food Security (CCAFS), IIRR and its local NGO partners is implementing climate smart villages (CSV) to demonstrate community-based adaptation in agriculture in different agroecological zones in Myanmar.**

**This primer is based on IIRR baseline studies as well as desk research that IIRR commissioned to develop profiles of each CSV in the project. The purpose of this primer is to provide the reader background information as to the agriculture, livelihoods, nutrition, gender and climate change context of each CSV.**



Nyaung Shwe township in Shan State of Myanmar is the site for demonstrating the value of Climate Smart Villages (CSV) as platforms for building adaptive capacities and for generating Climate Smart Agriculture (CSA) technologies and practices.



Land around Inle Lake (with exception of rice lands) is classified as forest land but following a period of significant deforestation, local communities now farm in these areas. The majority of the farmers (70 %) have access to less than two hectares.



Hills with moderate slopes typically dominate the topography. These are prone to erosion. Soils are clayey in nature, moderately to strongly acidic, with very low organic matter, nitrogen, and phosphorus levels. In general, soils are low fertility and farmer rely on moderate use of chemical fertilizers in addition to the use of animal manure.

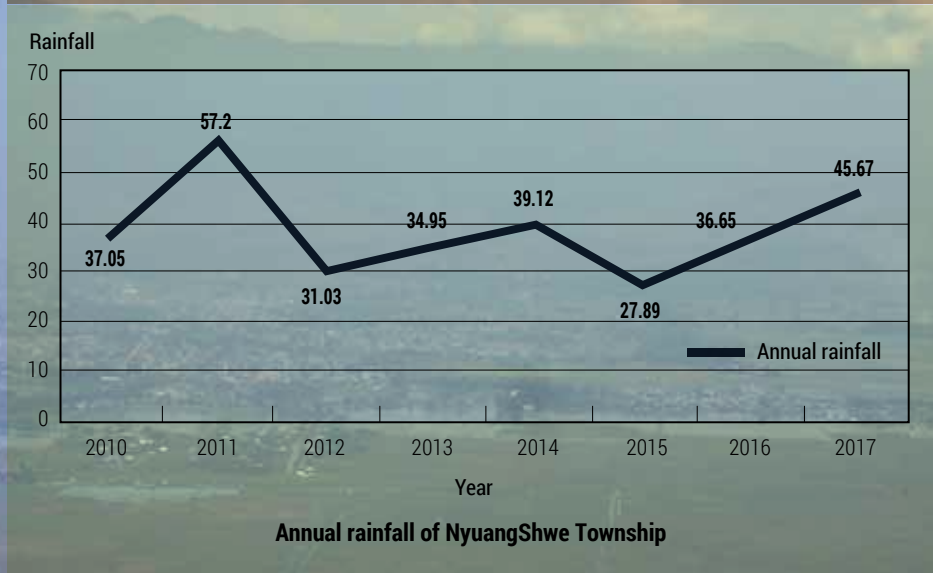


Rotation farming is practiced to address this issue of declining fertility and increasing soil erosion. Land usage and access is regulated by the Forestry Department. A bigger role for on farm agroforestry has to be considered in Southern Shan to address the degradation.



Climate change is manifesting itself locally in a number of ways. Temperatures are generally lower due to the higher elevation. It rises in summer during the dry periods. Rainfall is erratic and is often extreme. The wet season is from April to November peaking in August. The figure presents rainfall data from a neighboring site.

Figure 2: Rainfall Trend in NyaungShwe Township from 2010 to 2017.



Source: Department of Agriculture, NyaungShwe Township.

**Water scarcity is noted in summer where both humans and livestock suffer from this limitation. The villages rely heavily on large livestock (cattle and buffaloes). Water impoundment is an important CSA option.**





Farmers rely on upland rice in many of these areas (grown mainly for food). Following upland rice, ginger is planted. The ginger crop keeps the soil covered for six months thus, reducing soil erosion and land degradation. Weed control in upland rice is achieved by spraying common salt in water.



Corn, millets and pigeon pea are also grown. In ThaungKhamuk village, every home grows as many as five varieties of bananas. Simple management practices like micro dosing of chemical fertilizers used in conjunction with animal manure and better residue management can help increase the productivity of both improved modern and traditional varieties. In a changing climate, new varieties alone will not suffice. Better water, soil, and nutrient management is essential.



Livestock are an asset to these upland farmers. Nowadays summer season shortages of water and fodder adversely affect livestock productivity. Without supplementary fodder sources, livestock farmers are at risk. Fodder grasses and trees grown on farms and in homesteads help serve as emergency feed sources.



**Livestock is an important asset building approach for Myanmar small farmers. These are important coping mechanisms in case of crop failure. Pigs and cattle are economic assets which enhance resilience building and are sold for cash in difficult times (IIRR baseline study).**



Livestock are raised for meat. Most of the meat consumed by households is farm grown (ie., not purchased). Similarly eggs and poultry though consumed on fairly regular basis, is rarely purchased from outside. (IIRR baseline studies)



**In ThaungKhamauk village every household has experience in raising native pigs and cows that serves as their economic assets. Sound CSA practices such as keeping livestock manure need to be conserved. Improved animal husbandry, animal health care, and fodder elements can help improve productivity.**



Homesteads are currently effectively used to grow beans for commercial and home use. The higher elevation conditions provide farmers with opportunities to grow sub-tropical vegetables. Beans provide micro nutrients and protein. This is a nutrition sensitive form of gardening.



**Green leafy vegetables, roots and tubers, and legumes are eaten fairly regularly. These are farm grown or collected from the wild. Cereals grains, oil, fish, and exotic vegetables are purchased from the markets. Overall farm households surprisingly have a moderate level of dietary diversity (IIRR baseline studies). These are good practices that should be conserved.**





CSA program should consider distributing diversity kits of planting materials (intra species, varietal diversity of beans, green leafy vegetables, roots and tubers, and millets) as part of an effort to restore or strengthen local agro biodiversity. Planting materials can even be sourced from markets.



**Reforestation and agroforestry is an important pathway for the restoration of landscapes and their associated ecosystem services. The Department of Forestry in Thaung Khamauk supports community forestry and distributes tree seedlings for farm forestation. Trees have a multi-functional, role providing fertilizer, fodder and fuel wood. They are an important element in any CSV program.**



Trees sequester carbon effectively. Leaves that drop to the floor help to store carbon in soils in the form of organic matter. Bringing fruit trees into homesteads and farms helps in sequestering carbon while also providing products of nutritional and livelihood importance.



**To support community-based adaptation, local capacities need to be strengthened through action research, orientation, and training groups. Whether formal or informal, they serve as effective platforms for learning what works and what does not. Farmers can also serve as experts providing informal and continuing education. Social processes are just as important as technologies.**



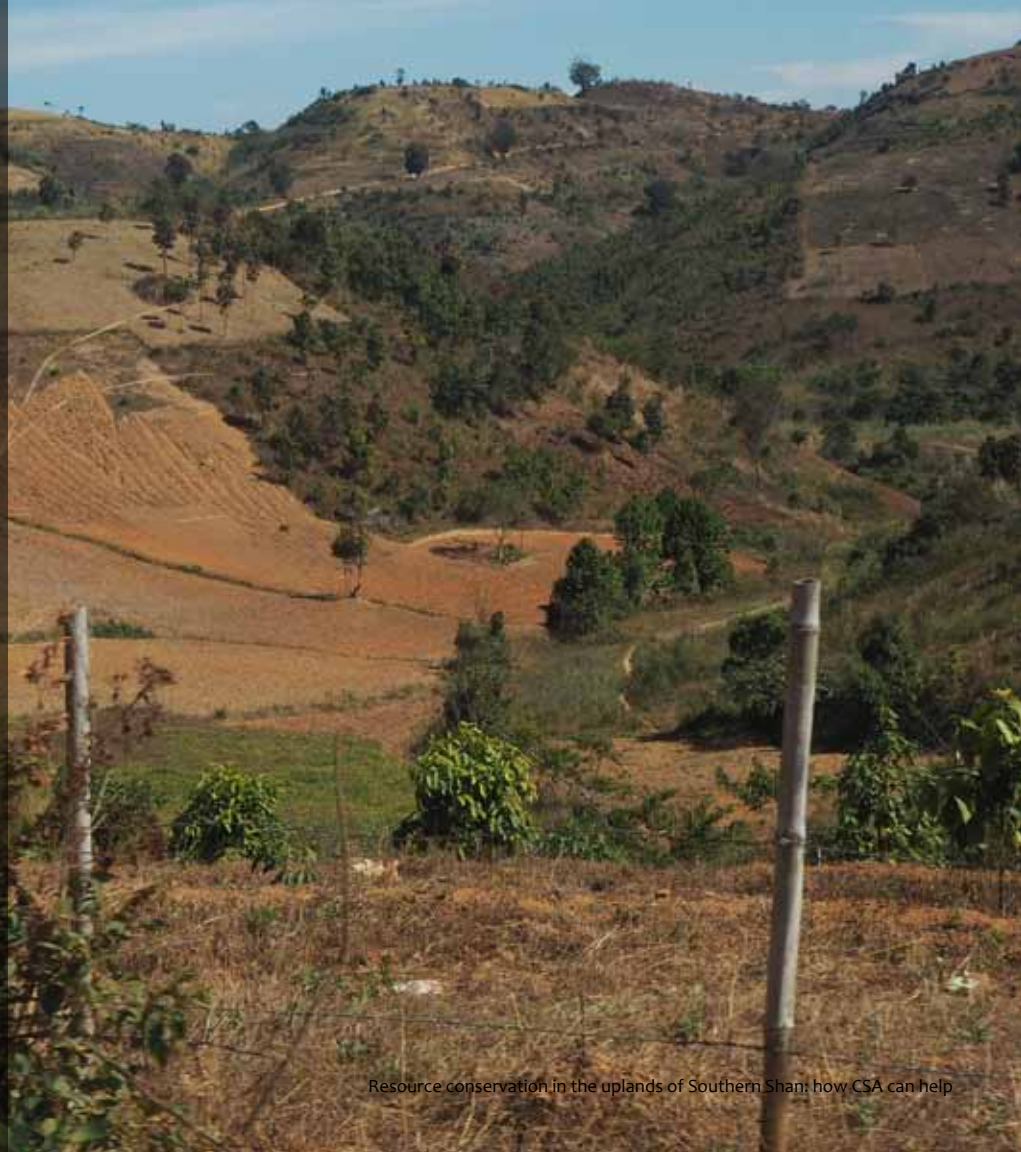
Adaptation is an incremental process. Local communities start small and learn along the way. Action research is an important part of the process to find out what works locally. Exchanging experiences through farmer field days and learning groups are effective mechanisms.



**Community level conservation of seeds and “clean” seed systems and seed banking are important where commodities such as corn, peanut, upland rice and millets are grown. These can include buffer seed stocks that serve as source of seeds in case of crop failure.**



**With landscapes enriched by vegetation (trees, shrubs) better soil and water management, and resilient proven crop varieties, CSA can deliver on multiple benefits. CSA can provide communities with a portfolio that meet the unique preferences of individual households while generating ecosystem services for the community.**



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## Publication Design/ Layout

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