Resource conservation in the uplands of Southern Shan:

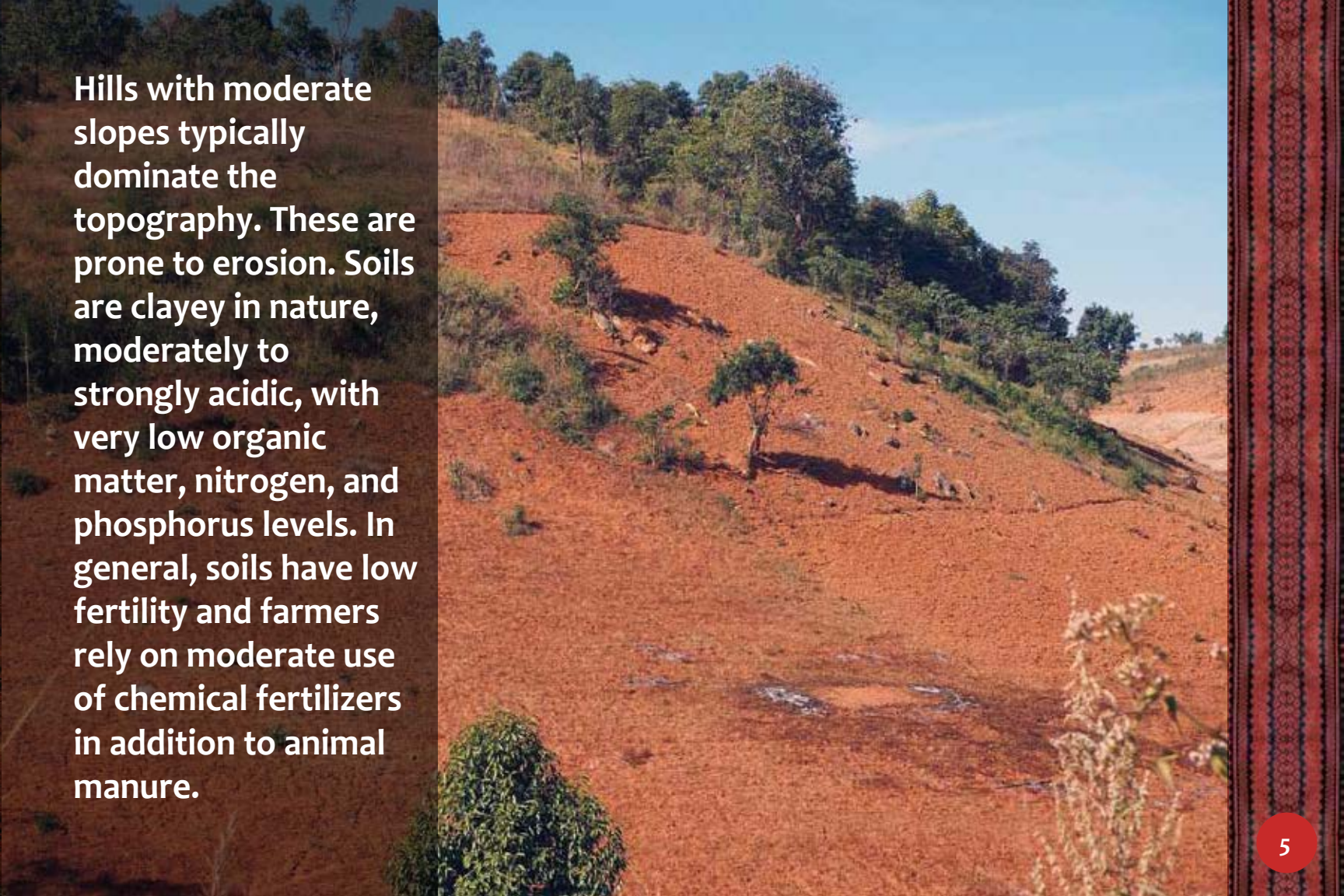
How climate-smart agriculture can help

With support from the International Development Research Centre (IDRC) and the CGIAR Research Program on Climate Change, Agriculture, and Food Security (CCAFS), the International Institute of Rural Reconstruction (IIRR) and its local NGO partners are implementing Climate-Smart Villages (CSVs) to demonstrate community-based adaptation in agriculture in different agroecological zones in Myanmar.

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

Nyaungshwe Township in the Shan State of Myanmar is the site for demonstrating the value of Climate-Smart Villages (CSVs) as platform for building adaptive capacities and 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 signifcant deforestration, local communities now farm in these areas. Majority of the farmers (70 %) have access to less than two hectares of land.

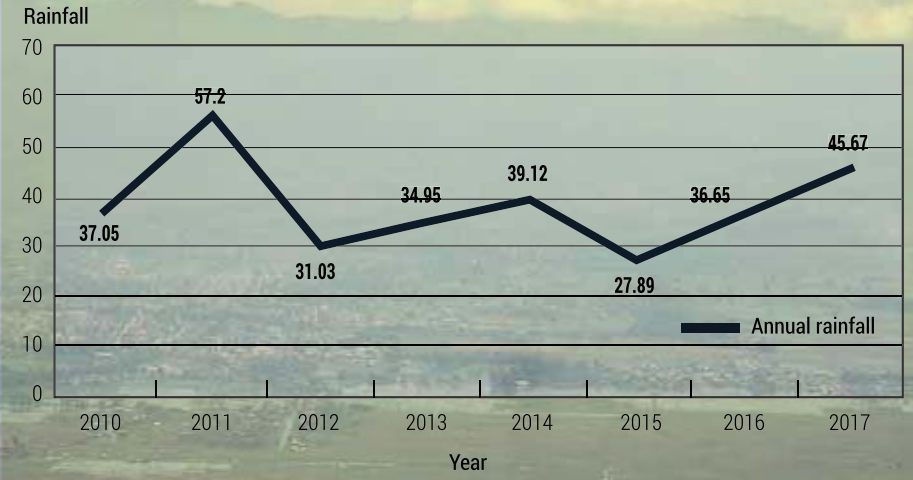


Hills with moderate slopes typically dominate the topography. These are prone to erosion. Soils are clayey in nature, moderately to strongly acidic, with very low organic matter, nitrogen, and phosphorus levels. In general, soils have low fertility and farmers rely on moderate use of chemical fertilizers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

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

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

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

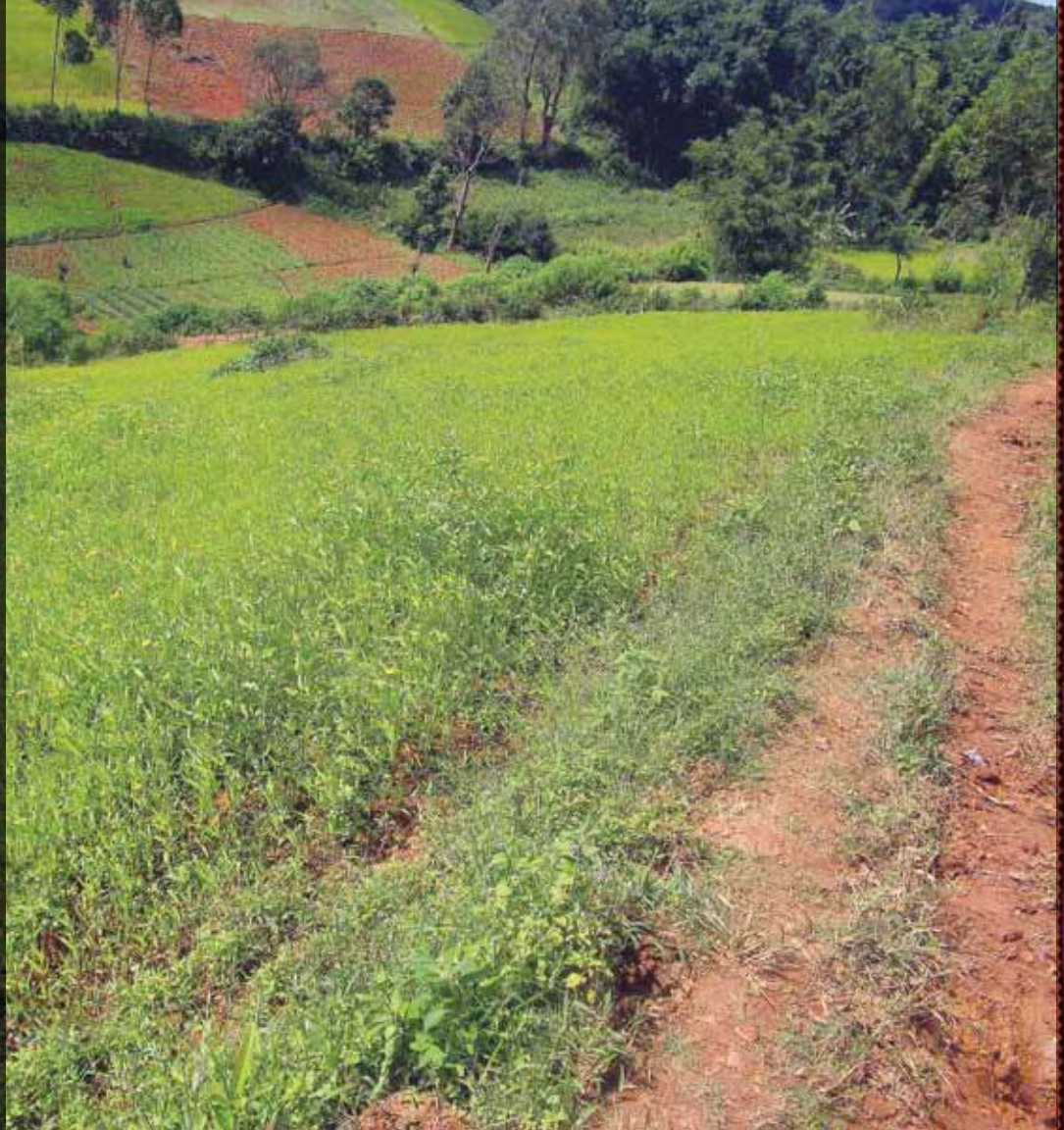


Annual rainfall of Nyuangshwe Township

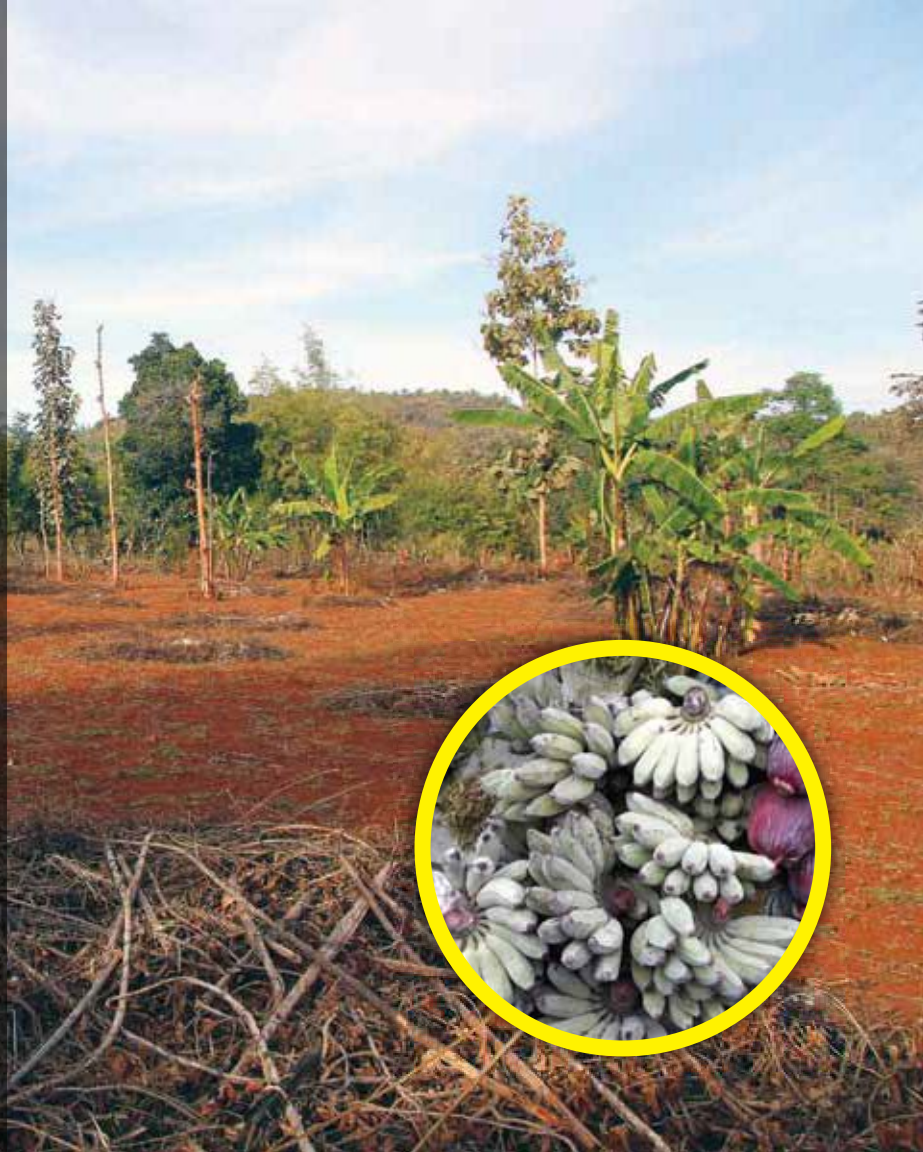
Source: Department of Agriculture, Nyaungshwe Township.

Water scarcity is noted in summers, which affect both humans and livestock. The villagers rely heavily on large livestock (like cattle and buffaloes). Water impoundment is an important CSA option.

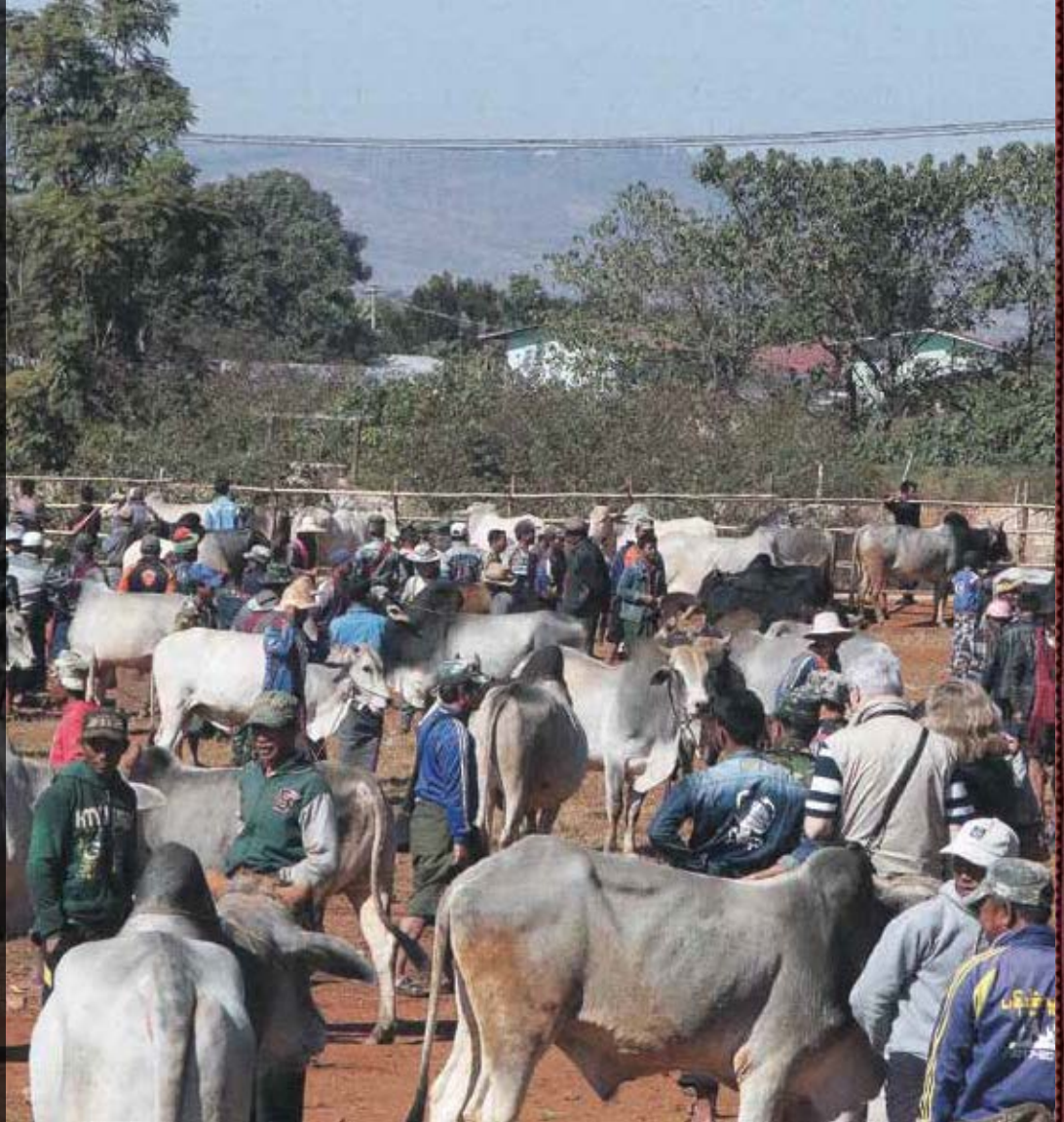
Farmers rely on upland rice, which they grow mainly for food. Following upland rice, ginger is planted. The ginger crop keeps the soil covered for six months thus reducing soil erosion and land degradation. Weed control in upland rice is achieved by spraying water with common salt.



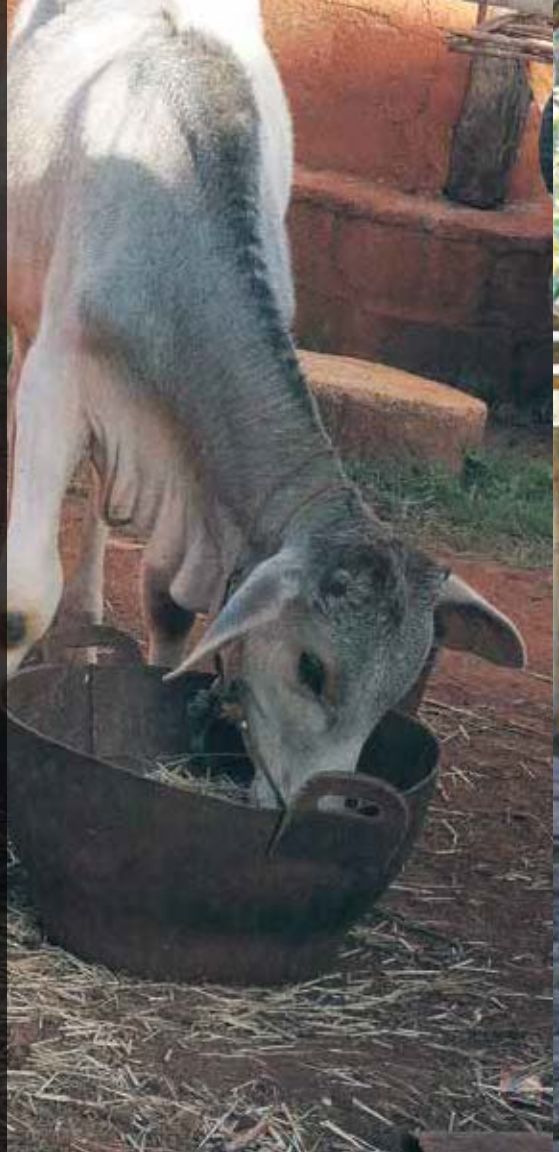
Corn, millets, and pigeon pea are also grown. In Thaung Khamuk village, every home grows as many as five varieties of bananas. Simple management practices like micro dosing of chemical fertilizers used in conjunction with animal manure and better residue management can help increase the productivity 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 is an important asset building approach for small farmers in Myanmar. 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 during difficult times (IIRR baseline study) .



Nowadays, however, shortage of water and fodder during summers 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.



Farmers in Myanmar raise livestock for meat. Most of the meat consumed by households are farm grown (ie., not purchased). Similarly eggs and poultry, though consumed on a fairly regular basis, are rarely purchased from outside (IIRR baseline studies).

In Thaung Khamauk village, every household has experience in raising native pigs and cows, which serve 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.

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

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.

Reforestration and agroforestry are important pathways 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. These are important elements in any CSV program.

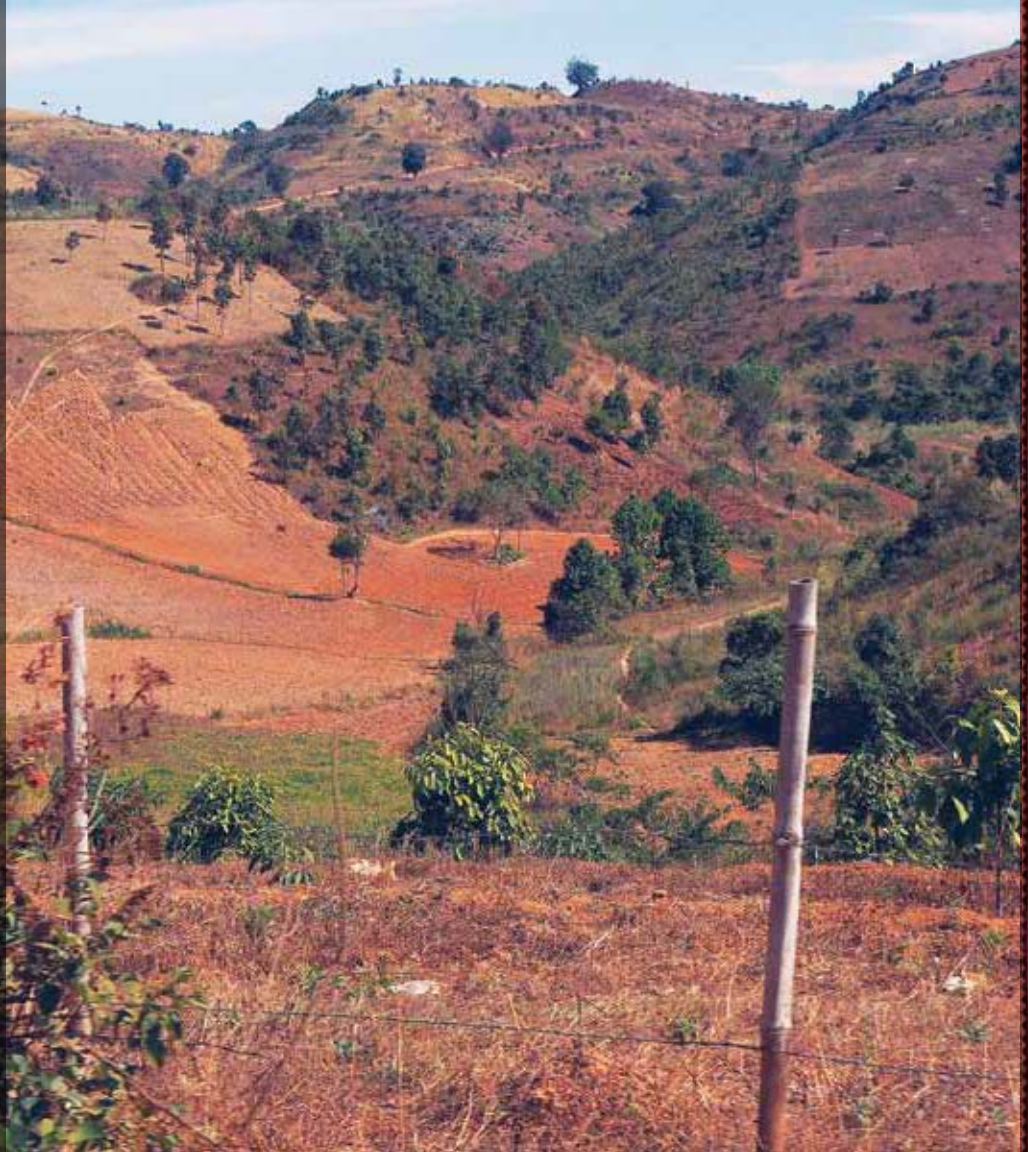
Trees sequester carbon effectively. Leaves that fall on the ground help store carbon in soils in the form of organic matter. Bringing fruit trees into homesteads and farms help sequester carbon while also providing products of nutritional and livelihood importance.

To support community-based adaptation, local capacities need to be strengthened through action research, orientation, and training groups. Whether formal or informal, these 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 enrichened by vegetation (trees, shrubs), better soil and water management, and resilient-proven crop varieties, CSA can deliver 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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