

# Capitalizing on local livelihood diversity:

Enhancing resilience building of small highland farms



With support from IDRC and CGIAR global research program Climate Change, Agriculture, and Food Security (CAAFS), 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.






Hakha is the capital city of Chin State and it is located in the north-east in Chin State above more than 1,800 meters (6,000 feet) above sea level, set on a small highland plateau. Although it is a relatively small inland area, it is the largest city of the whole State and its plateau is significantly larger than that of other towns in Chin State. Chin is one of the least developed areas of Myanmar. It has the highest poverty rate in all of the States and Regions.







Most of the agricultural lands in Sakta village are rainfed uplands. Shifting cultivation is widely practiced. Rotation of plots is undertaken in response to lowering of yields as result of declining fertility and increased weed infestation. Stabilization of farming in these areas can be undertaken through agroforestry.





Rotation periods differ depending on crops grown: upland rice crops are rotated annually; maize growing plots are rotated after five years. The main reason for food insecurity in Chin is the reduction in the yields of crops due to land degradation, reduced soil fertility and weed infestation. There is no absolute shortage of land area (only 3 percent its land area is used for agriculture).





Meanwhile, Chin farmers are doing their best to manage their resources practicing rotation which allows land to regain its fertility. Farms appear as mosaics in the landscapes with some parts in fallow (to allow for fertility restoration) and some farms in active cultivation.





In a few areas however, the degradation of the uplands is also increasingly noted. Climate change is expected to worsen this land degradation as organic matter diminishes under high temperatures. Free grazing in summer further degrades farms. Agriculture is undertaken in sandy (loam) easily erodable soils (under heavy rains).





In recent years, temperature increases are noted. The hot summers are followed by minus zero temperatures at night during winter season. Heavier and erratic rain, stronger winds, and the rising incidence of landslides is observed.






Drier summers and irregular rainfall affects the germination rate of the crops especially corn and millet. Irregular and unpredictable rainfall is observed during harvesting time (November). Unseasonal rains seriously damage the quality of products affecting selling prices.







Given this unpredictability of rainfall and temperatures would imply that farmers would have to maintain their current diversification of crops (corn, upland rice, beans and millets) while improving incomes from trees, livestock, and vegetables.



However there is also a role for introducing new varieties from research stations or from other parts of the country (with similar conditions).







In the Sakta climate smart village, new corn and upland rice varieties (including traditional and modern varieties) from Aungban Research Station were tested and found promising.





Simple management practices such as drill sowing at wide spaces (25 to 30 cms) have produced 30 percent higher yields from improved rice varieties.





**Corn is an important food crop for humans and concentrate for small livestock. Short duration corn varieties from Aungban have allowed farmers to grow two crops a year instead of only one. For example, short duration varieties of (in bred) corn varieties would allow farmers to grow two crops of corn where only one is currently grown. What's best is that they can save seeds for the next 3-4 croppings.**






Improving yields are an important way for farmers to achieve food security using climate smart varieties that perform well under low external input conditions.







**Polyculture in traditional farming reduces the need for chemical pesticides. Such systems prevent insect build up and encourage predators and parasites. Farms that have vegetation on their boundaries serve as host for beneficial insects. Pest densities are reduced. Reduced external inputs mean smaller carbon footprints.**






Shifting cultivation over the long run can be destructive. When combined with free grazing vegetation is destroyed. Frequent burning also increases the green house gas contributions of farming. Agroforestry is a CSA option that can help shifting cultivators to stabilize their farms.







Agroforestry is a very important component of CSA for shifting cultivation communities. *Alnus Nepalensis* is one such tree which can be used to stabilize farms. *Alnus* is fast growing and its leaves help fertilize the soils. It can also reduce the need to shift or rotate plots.





**Chin State farmers value livestock. Grazing land is available. The Mithun bull is used for ceremonial events (weddings), cattle are used for tillage and pigs are raised as regular income sources. The promotion of small livestock systems (with a reduced reliance on external feeds) is a promising CSA option for women. Because native pig breeds tolerate weather extremes better than exotic breeds these emerge as a priority for local people.**





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 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 study).







**Millets (finger millet, fox tail millet and proso millet) are important crops in Chin State. Millets are known to be nutritionally important. They contain fibre, protein, iron, calcium and magnesium. They tolerate drought and can be considered a climate smart crop. Millets also have a cultural value. Khaunga alcoholic beverage is made from “red” millet grown primarily for that purpose.**





Every homestead usually has an area for growing vegetables. These often include reservoirs of rain water for supplemental irrigation. The potential for domestication of wild food sources in these homestead can also help to conserve vanishing food species (yam and beans).





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, 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 if the purpose is to re-introduce diversity.**



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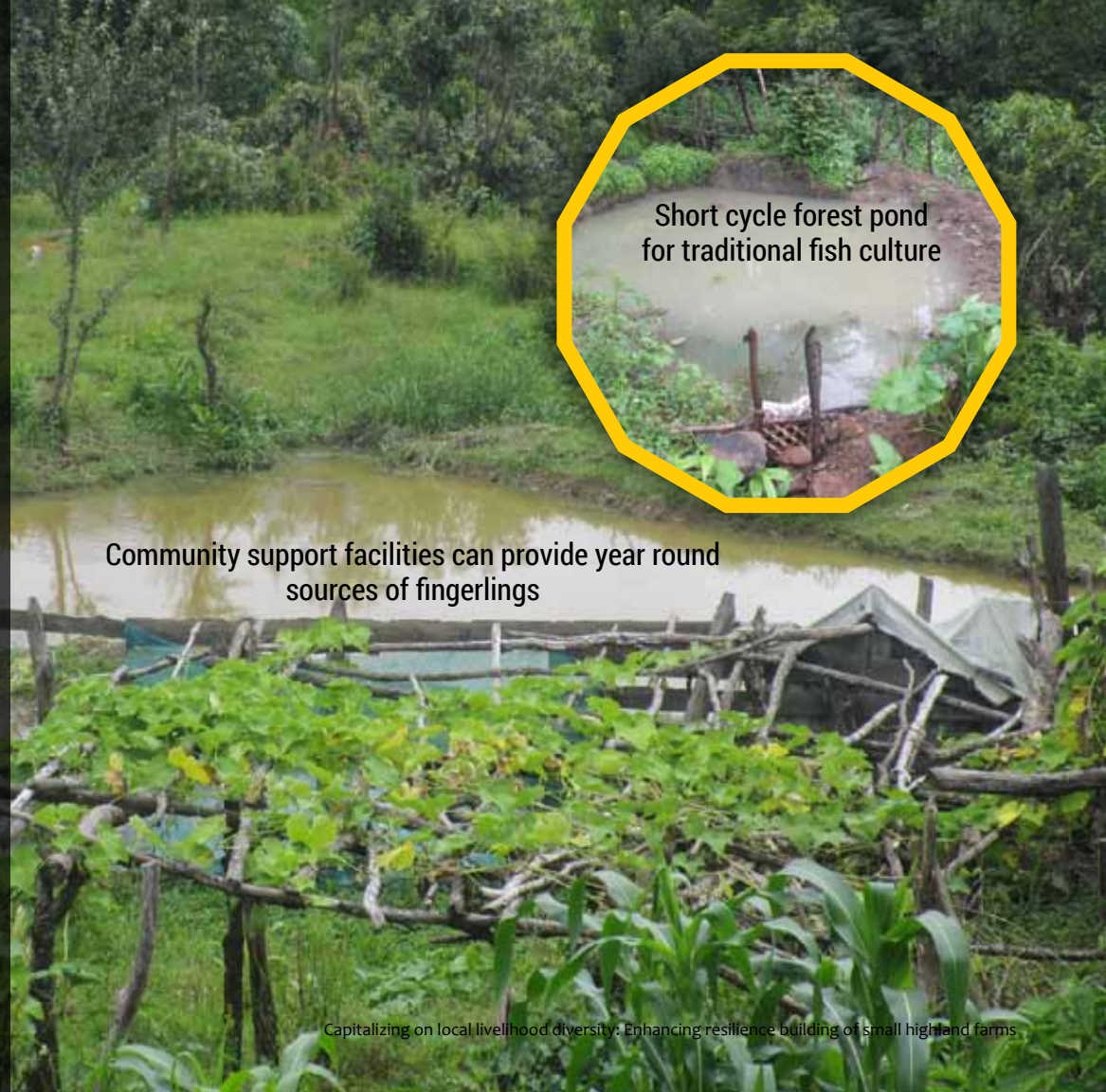


An unusual traditional practice is the use of forest ponds to raise fish species. Rohu a type of carp is preferred. However sources of fingerlings are scarce. Here community support systems in the form of community propagation facilities can help.



Short cycle forest pond for traditional fish culture

Community support facilities can provide year round sources of fingerlings





Highland farmers have the benefit of cooler climate (assuming these are not extremes) allowing for the growing of a wider range of crops, with reduced need for external pest control. Mixed farming systems are feasible because land is not very limited (as in other parts of Myanmar). There are many opportunities for CSA based on intensified and diversified systems (crops, trees, livestock).





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