

People, Land Management and Environmental Change ¹

Thailand sub-cluster

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1. Background on PLEC

PLEC is global project funded by the Global Environment Facility (GEF), executed by the United Nations University (UNU). Participating countries include those that have ratified the Convention on Biological Diversity (CBD), namely Brazil (28/2/1994), China (5/1/93), Ghana (29/8/94), Guinea (17/5/93) Kenya (26/7/94), Papua New Guinea (16/3/93), Tanzania (8/3/96) and Uganda (8/9/93).

1.1 PLEC Objectives

The overarching goal of the project is to develop sustainable and participatory approaches to biodiversity conservation within agricultural systems. The method is to do this through over 20 "demonstration sites" where sustainable and conservationist resource-use strategies are worked out and implemented in participation with stakeholders, and specifically with the farmers themselves. The project engages local villages and scientists in establishing demonstration sites in diverse types of ecosystems and areas of globally significant biodiversity, such as forest, mountain, semi-arid, fresh water, and wetlands in major regions in Africa, Asia and the Pacific, and the Americas. The aim is to obtain "immediate results" capable of replication in other ecosystems, as well as forming the basis for policy development and implementation. Behind this is the wider objective of achieving world food security while protecting global biodiversity, and providing strategic advice toward this end to policy-makers.

Specific objectives of the project are as follows. The first three are set out in the order which they are expected to be achieved; the fourth will be achieved throughout:

- I. to establish historical and baseline comparative information on agrodiversity and biodiversity at the landscape level in representative diverse region;
- II. to develop participatory and sustainable models of biodiversity management based on farmers' technologies and knowledge within agricultural systems at the community and landscape levels; and
- III. to recommend approaches and policies for sustainable agrodiversity management to key government decision makers, farmers, and field practitioners.
- IV. To establish national and regional networks for capacity strengthening within participating institutions.

¹ PLEC

1.2 Project activities

The principal project activities are as follows:

- 1) Establish demonstration sites and engage in primary data gathering by villagers and scientists working together, assembling social data and identifying successful resource-management patterns, and surveying agro-biodiversity, in the following representative countries: Ghana, Guinea, Kenya, Tanzania, Uganda, China, Papua New Guinea, Brazil.
- 2) Jointly with farmers, carry out on-farm experiments and monitoring to analyze, measure and compare resource management methods and technologies, and seek improvements.
- 3) Hold outreach and awareness workshops on *in-situ* agrobiodiversity conservation.
- 4) Integrate scientific and community social information, and analyse findings presented at village, national, and cross-country workshops, involving decision-makers.
- 5) Organize, support and participate in the training of farmers, extension workers, local officials and students, creating client and stakeholder involvement which will ensure the sustainability of PLEC action.

2. THE THAILAND SUB-CLUSTER AND PLEC

The agroecology group at CMU has been actively involved with PLEC since its initial stages. We represent the Thailand sub-cluster, which together with the China sub-cluster, form the MMSEA (Montane Mainland Southeast Asia) cluster. We hosted the first general meeting of PLEC members in Chiang Mai and Mae Sariang in 1994. Unfortunately national ratification of the CBD is a primary condition for GEF funding. Since Thailand has still to ratify the CBD, Thailand sub-cluster has been excluded from PLEC proper, which is funded by GEF. The work of the Thailand sub-cluster has been able to proceed along the line of PLEC with funding from UNU.

3. RESEARCH PLAN AND ACTIVITIES

In this first phase we have chosen one pilot village for the demonstration site, with the following objectives:

- 1) to carry out an intensive survey on agrodiversity and identify successful management practices , and
- 2) to measure and monitor biodiversity of the diverse land use patterns of the pilot village
- 3) upscale relevant information of the present demonstration site to cover neighbouring villages within more or less a unified boundary, e.g., local watershed, target development zone or administrative sub-district

3.1 Background of the demonstration villages

Two villages selected for 1999 activities are Pah Poo Chom and Tee Cha/Huai Kong Moon

Pah Poo Chom is made up of a community of Hmong, who formerly practised pioneer shifting cultivation for both subsistent and cash crops. The villagers have almost completely shifted to intensive cultivation with more or less permanent form of agriculture. The current agricultural system is dominated by various kinds of vegetables as the cash crops and fruit trees with supplementary irrigation from a natural spring in low-lying fields. In the process of land use change, some areas have been allocated for headwater forests, which are kept strictly for conservation by the community. There are also a few patches of utilisation forests for local community where bamboo shoots from natural stands are harvested for external markets. These are developing to become so-call community forests. Pah Poo Chom is one of the villages in Mae Taman area of the Thai-Australia Highland Agricultural and Social Development Project. At present, this village is under support from the Department of Public Welfare of the Royal Thai Government.

Tee Cha/Huai Kong Moon is the second demonstration site. It is located in Sop Moei district of Mae Hong Son province. The province is one the border with Myanmar and represents the lower part of the Salween river basin, one of the major international riverbasin in the region (Paoletto and Uitto 1996). The people belong to the *Pwo* Karen ethnic group, which is the dominant ethnic group in the area. A much larger population of *Pwo* Karen actually resides on the Myanmar side of the border.

Mode of production is dominated by rotational shifting cultivation, which is one of the sustainable form of land use. At present, this form of traditional management can no longer be sustained due to both internal and external forces. A recent scandal involving illegal logging in the Salween National Park, where the village is located, has led to strict enforcement of forest conservation laws. This has resulted in traditional usage such gathering of forest products and swiddening activities (i.e. slash and burning) becoming very much curtailed. The rapidly increasing population, both by natural growth and in-migration, means that the very low mainland ratio required to sustain the rotational shifting cultivation has become a luxury very few villages can afford. Recent economic crisis, rising expectation and demand for cash income all add to the growing pressure.

We have found that farmers and their agriculture are, however, not necessarily standing still or going into a decline under all these pressures. Our preliminary studies have discovered a native species of small trees known locally as *Pada* (*Tong Tao* in Northern Thai, and *Mallotus barbatus* to modern botanists) that has traditionally been known as a fallow enriching species. *Pada* now appears to have become the “new technology” that has enabled the rotation cycle to be shortened to only four or five years instead of the traditional nine to ten years.

Further sources of innovations have also come from outside the village, but successful adoption has been found to be almost always preceded some form of local adaptation and modification. Agroforestry, vegetative strips for soil and water conservation on sloping land, and paddy construction in the low lying fields are replacing traditional practise of rotational shifting cultivation. For example, agroforestry, which is relatively new in the village, now appears to be a widely popular production system. Teecha’s agroforestry, however, has some very local characteristics. It has incorporated valuable wild species that are now becoming harder to find in the forest such as bamboo (*Bambosa sp.*, *Dendrocalamus strictus* or *Thyrsostachys siamensis*), rattan (*Calamus sp.*) and other wild vegetables, medicinal herbs and roots.

At one level, the use of these species may be seen as a process of semi-domestication of wild species or intensification of former shifting cultivation fields, but they can equally be seen as management of agrodiversity at many levels from individual household to various patterns of field types and land use stages.

3.2 Field Activities and Methods

Major field activities for 1999 focus on biodiversity assessment and agrodiversity survey.

Biodiversity plots are being selected and located on the basis of dominant agricultural systems across the landscape of the village boundary. This agricultural system unit is based on existing land use and cropping practices in different land types. Apart from standard biodiversity inventory and measurements, the agroecosystem analysis (AEA) and participatory rural appraisal (PRA) are being applied as field methods. In Pah Poo Chom where intensity of the present land use is fairly high, the number of biodiversity plots is expected to be in the order of 8-10 plots across the village landscape which include 1 plot for conservation forests, 1-2 for community forests, 2-3 plots for dominant lychee tree, 4-5 plots for annual crops and vegetables on different slopes and management practices.

The agrodiversity survey is being carried out at village level in order to identify and evaluate the variability of local resource management patterns and conservation practices. The participatory field observations and household survey on socio-economic, biophysical and management diversity are conducted to collect information on various aspects of agrodiversity and evaluate possible impacts. These include the impact on biodiversity and land degradation. Simple field observation and measurements of soil erosion will be adopted in consultation with scientific co-ordinators of PLEC to quantify and evaluate the extent of degradation due to the present land use and agricultural management systems. Soil and plant samples have begun to be taken for laboratory analysis in determining nutritional problems and soil fertility status.

In 2000, a number of demonstration plots will be established to illustrate the “*successful*” agrodiversity management of upland farming systems in the PLEC demonstration sites.

The demonstration plots will be targeted to work in collaboration with innovation farmers with respect to the idea of agrodiversity management. In Pah Poo Chom potential demonstration plots have now been identified at recent field workshop. These are upland fields with intensive production of subsistence and commercial crops. Agrodiversity survey and field observation on cropping system practices are now (main growing season of 1999) underway. These will help to identify specific agrodiversity management practices, type of cropping or farming practices, plot location and at the same time the collaborative farmers or farming households. These, together with further consultation with the farmer, will also provide the basis for the design of the treatments in demonstration plot. Similar process in field workshop and participatory field survey for site selection and setting up of demonstration plot is expected to be conducted in the second PLEC demonstration site with Karen community of Tee Cha village in Mae Hong Son province next year.

For the demonstration plot, a year-round field observation and plot monitoring will be conducted to evaluate the local work and farmer methods. Seasonal crop

productivity, soil fertility status, extent of erosion and percentage of ground cover will be measured. Uses of specific ground cover species including natural weeds and land management practices as well as household income will be recorded. At the end of growing season, farmers from different villages around the demonstration sites and appropriate local development or extension workers will be invited to evaluate the DEMONSTRATION plots. This exercise is expected to provide the extension of the idea of agrodiversity management on marginal uplands and a possibility of further idea to be tested in their own villages.

Biodiversity Assessment

This activity involves the measurement and assessment of biodiversity in the diverse field types of the PLEC demonstration sites in Pah Poo Chom and Tee Cha villages. The agrobiodiversity plots for measuring and monitoring biodiversity are currently being set up. Standard species inventory and measurement are also undertaking and will have to be continued in the year 2000. Certain specific field types with potential for local conservation practise such as headwater area, community forests, traditional utilisation forests and recently developed agroforestry systems will be identified and studied in more detail.

Upscaling Demonstration Sites

At present, the demonstration sites have been selected on the basis of natural village of the two major ethnic groups in northern Thailand with contrasting historical background and traditional practises with respect to the use and conservation of land and biodiversity resources. It is proposed to upscale the existing demonstration sites to cover other villages around the sites which may be defined within local watershed or development zone of local administration systems. There will be the extension of 3-5 additional villages in each site. Major activities include baseline survey of the new villages, mapping of general land use or land type, transect survey of agrodiversity and biodiversity.

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