

International Symposium

Alternative Approaches to Enhancing Small-Scale Livelihoods and Natural Resource Management in Marginal Area —

Experience in Monsoon Asia.

Agrodiversity Lessons: Examples from the highlands of northern Thailand

29-30 October 2003, Elizabeth Rose Conference Hall

UNU House, Tokyo, Japan

Outline of Presentation

- **Background**
- **PLEC Work in N. Thailand**
- **Agrodiversity lessons**
- **Conclusions**

Harold Brookfield: PLEC Scientific Coordinator
first visited to Chiang Mai in October 1993.



LAND FORMS IN NORTHERN THAILAND:

Area 170,000 sq.km

Upper part 89,500 sq.km

- Lowlands 11.0 %
- Uplands 39.2
- Highlands 49.8

Population (persons)

- Highlands 772,465
- Lowlands 6.2 million

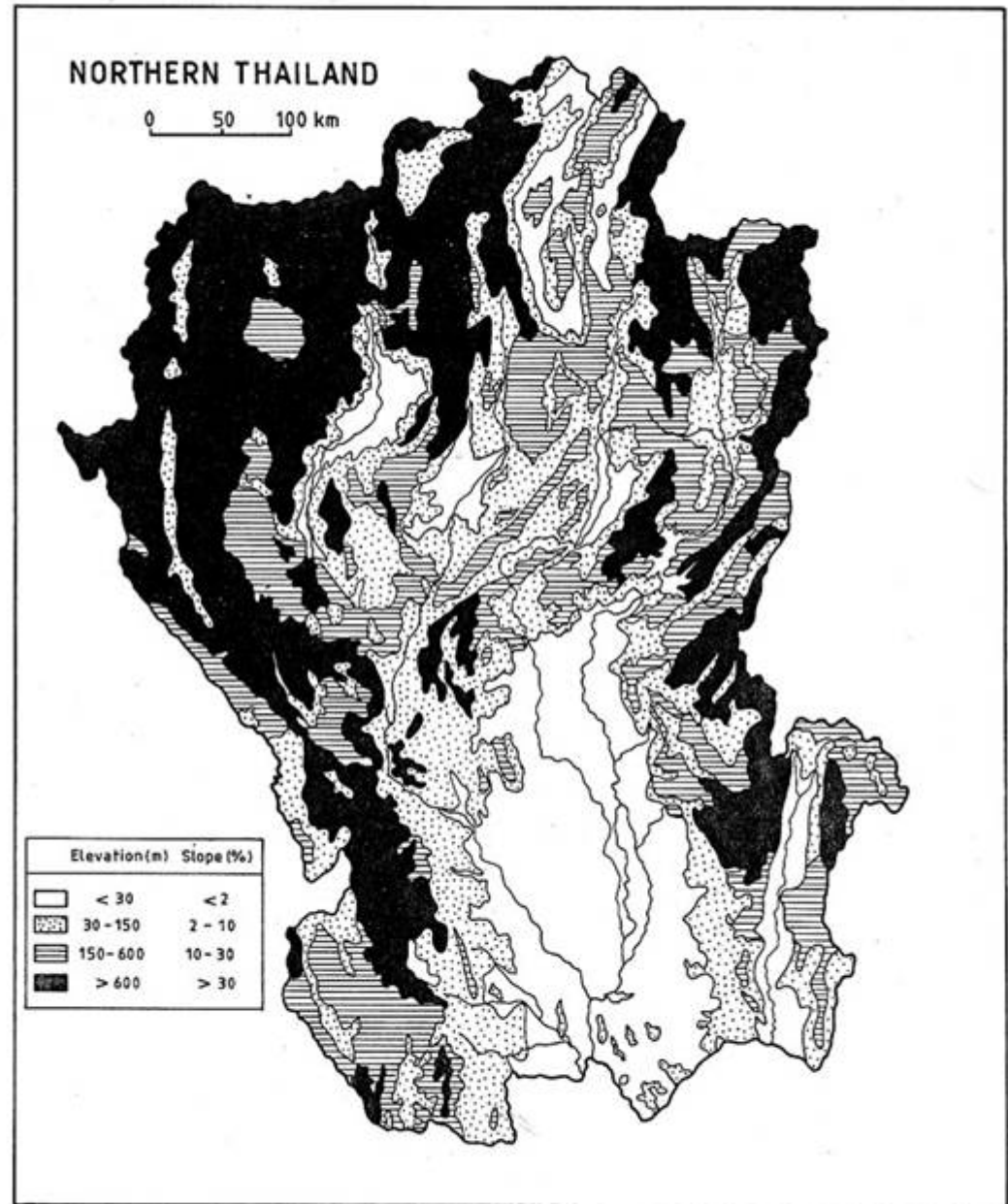


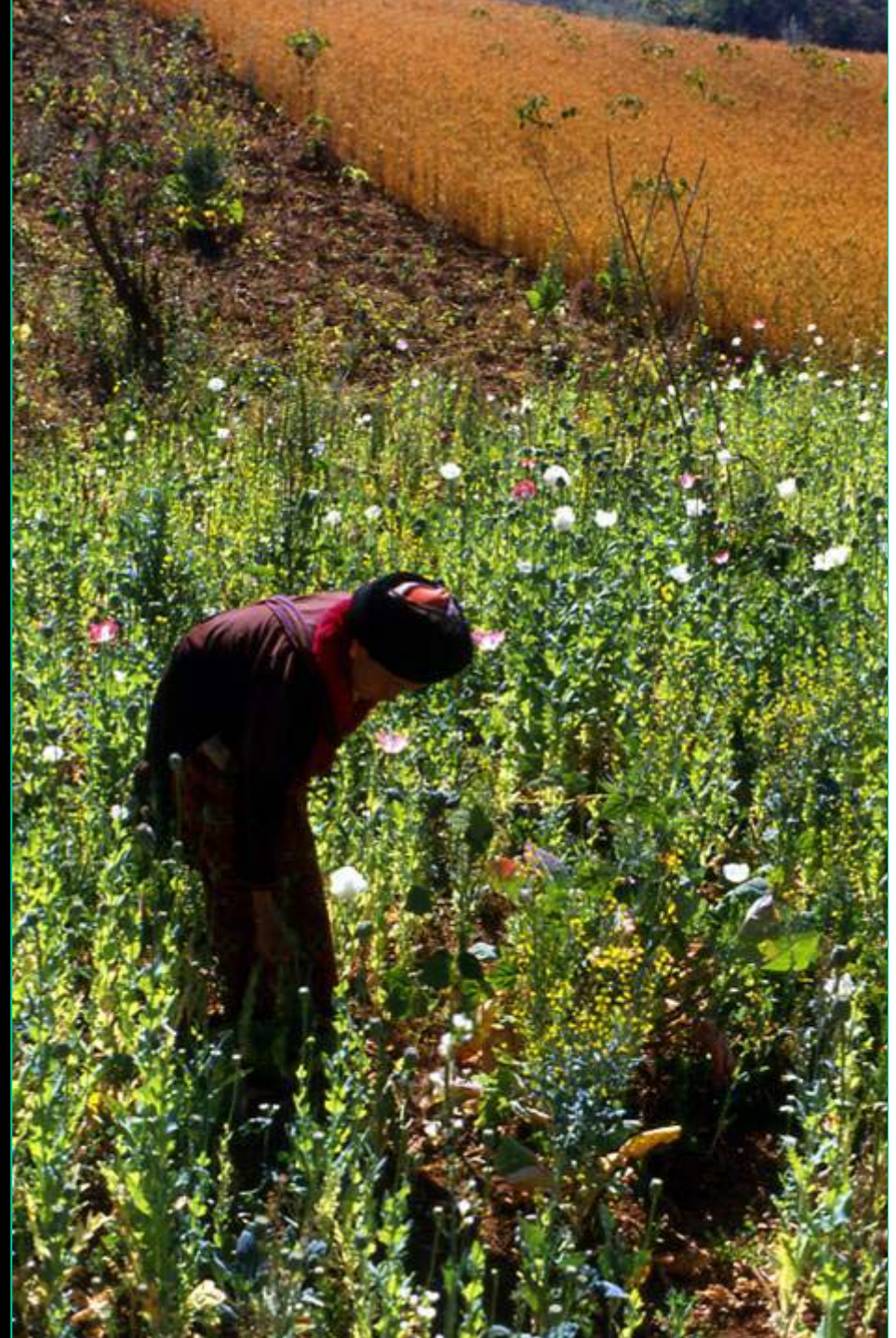
FIGURE Map of topography.

System in transition: Fragmentation of shifting cultivation



Traditional Shifting Cultivation

- Illicit opium poppy cultivation
- Government policy to eradicate the illicit cultivation of opium
- Promotion of alternative (cash) crops to replace opium
- Permanent settlement and fixed field cultivation of cash crops



PLEC Sites in Northern Thailand

4 sites selected in 1994

- Loh Pah Krai (*Lahu*)
- Pah Poo Chom (*Hmong Njua*)
- Mae Rid Pagae (*Skaw Karen*)
- Tee Cha (*Pwo Karen*)

2 sites in 1999-02

- Pah Poo Chom (Full demonstration)
- Tee Cha (Research)

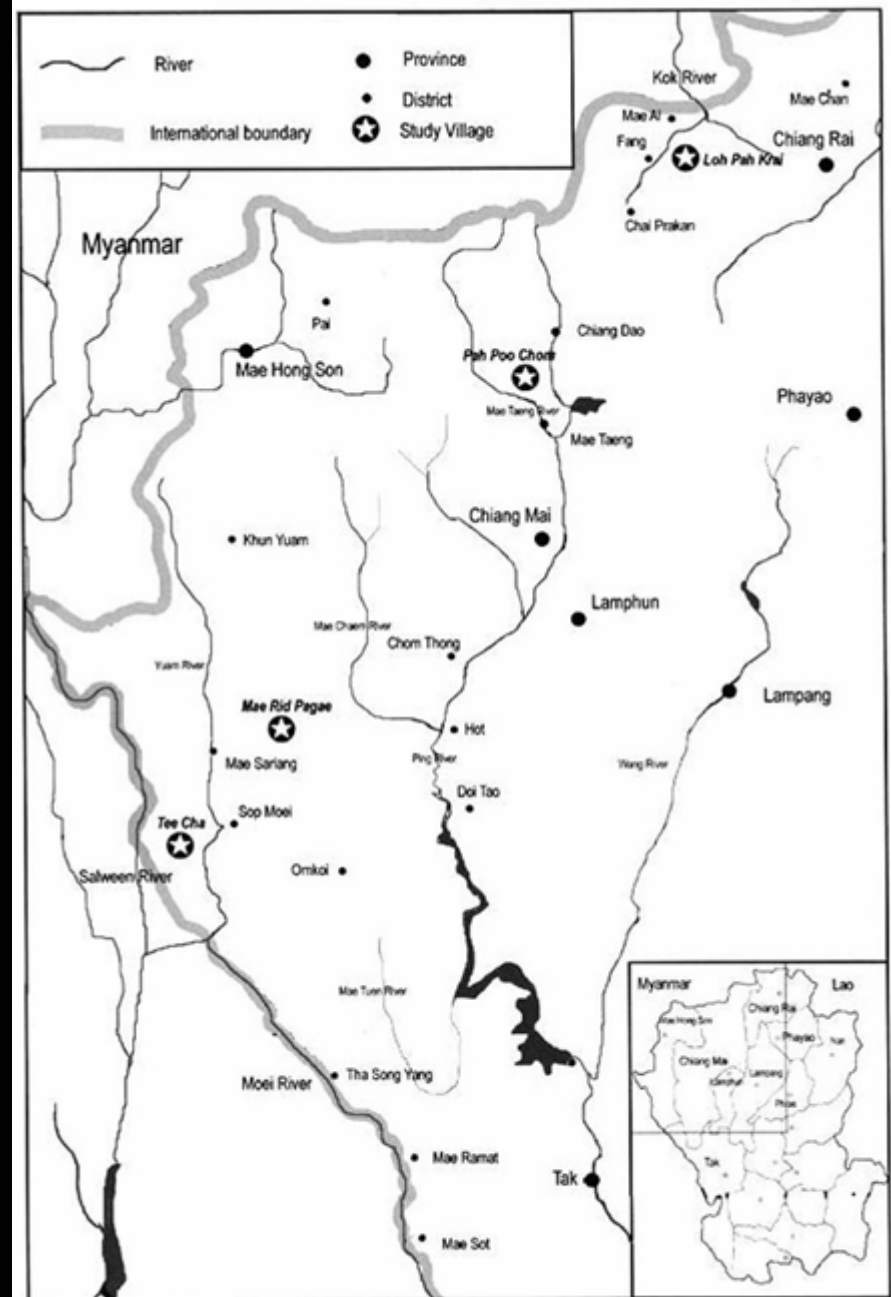
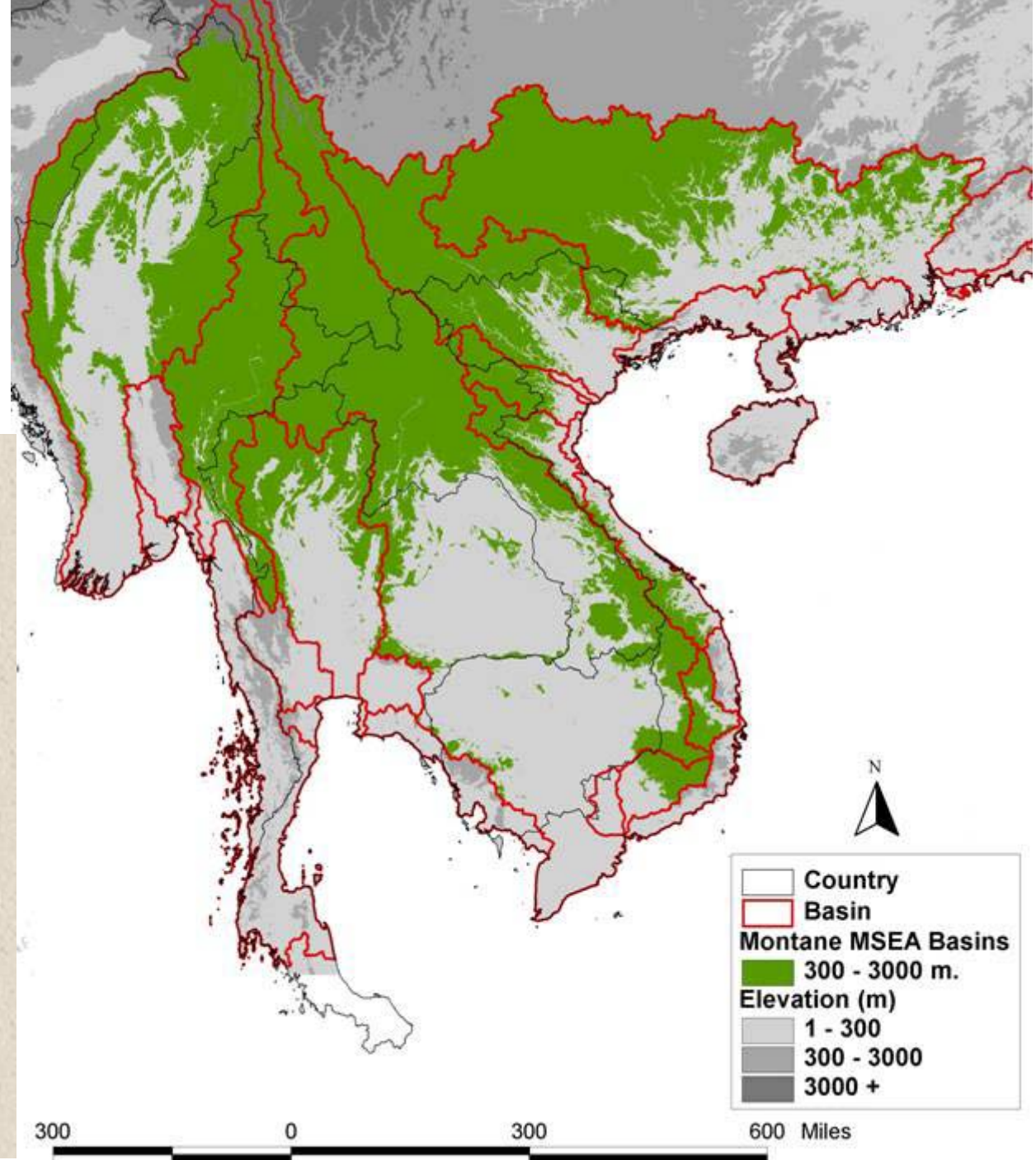


Figure 1. Map of four case study villages : Pah Poo Chom, Mae Rid Pagae, Loh Pah Krai and Tee Cha.

MMSEA: Sub-regional linkage between N. Thailand and neighbouring countries

- Southwestern China
- Northern Myanmar
- Northern Thailand
- Northern Laos
- Vietnam

(Modified from Thomas 2000)



MMSEA –

People and Land Use

- **Ethnic minority populations**
- **Last remaining forests in the region**
 - **Diversity in natural species and ecosystems**
- **Shifting cultivation**
 - **Diversity in agricultural species and land use types (over space and time)**
- **Tradition/history of opium production among some groups**

MMSEA

- Pressures on the land

- **Population growth, migration, encroachment from lowlands**
- **Arrival of market, promotion of cash cropping to replace opium**
- **Conservation policies: drastic reduction of area available for agriculture (shorter rotation cycle)**

Land Use Changes

1970 - Shifting cultivation (pioneer, rotational with 10-20 years rotation cycles); some wetland rice; largely subsistence (except for opium)

2000 - Sedentary (no more pioneer); shorter rotation; more permanent cropping (tree crops; vegetables); increasing market integration; opium poppy replacement; wetland rice development where possible

Agricultural Landscape for Permanent Cash Crop Production in Lancang and Menglian, China



Cabbage: alternative crop for former pioneer shifting cultivators in northern Thailand



PLEC Site in Gaoligongshan, China



PLEC Work in Northern Thailand, 1999-2002

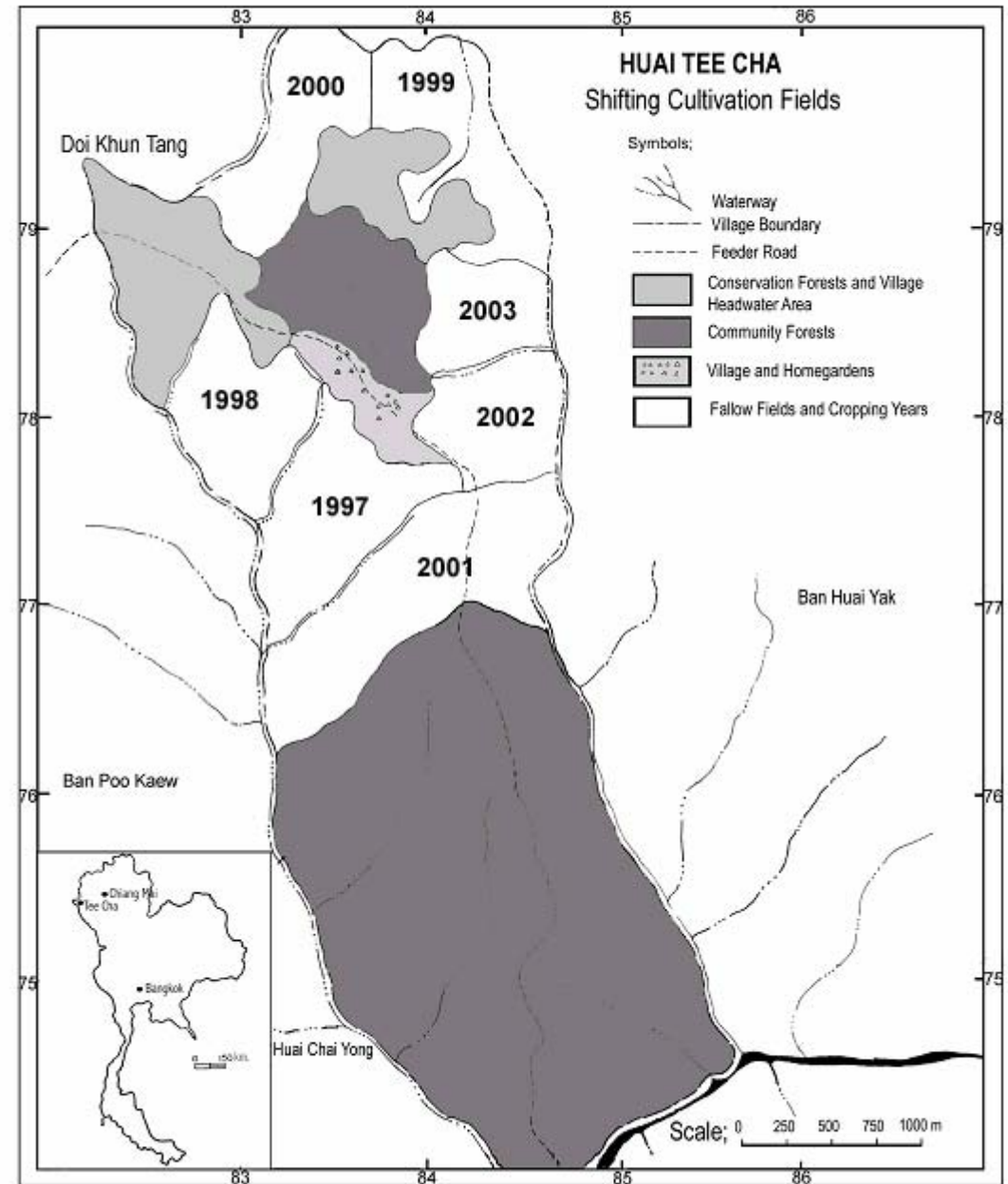
PLEC focuses on agrodiversity management and conservation of biodiversity of

- 1. Domesticated and semi-
domesticated species**
- 2. Wild species**

Tee Cha

Traditional shifting cultivation with 7 years rotational cycle

- 6 years in fallow, and
- 1 year in upland rice



Narit Yimyam et. al. (2003)



Pi-I-Bor



Ble-Kler



Bue-Kah-Wa



Bue Polo 1



Bue Polo 2



Bue Yo Haw



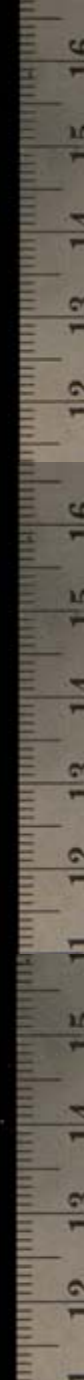
Bue Law Pae



Bue Chomee



Bue Wor





**Twenty plus kinds of crops sown with upland rice;
others are planted before or after rice sowing**



Macaranga denticulata, a fallow enriching tree for acidic (pH 4) and infertile soil

Upland rice yield with *M. denticulata* at different densities and rotation cycles

Pada density* (trees/10 m ²)	4	1	4
Rotation (years)	7	7	4
Grain (t/ha)	2.57a	0.83b	0.74b
Straw (t/ha)	2.35a	0.97b	0.72c

*Before slash and burn

Narit Ymyam et. al. 2003

Diversity of arbuscular mycorrhizal fungi in the rhizosphere of *M. denticulata*

Genus	Number of species found
<i>Acaulospora</i>	6
<i>Archaeospora</i>	1
<i>Gigaspora</i>	2
<i>Glomus</i>	18
<i>Paraglomus</i>	1
<i>Scutellospora</i>	2



A. laevis

G. multicaule



Pah Poo Chom the Demonstration site in 1960-80

- Poverty
- Opium dependent
- High population of addicts
- Severe rice deficit



Picture 2. Huai Menao — Deforested Hill in Background is Site of Village's Previous Location

RESOURCE SCARCITY AND THE HMONG RESPONSE



Picture 10. A U.N. project — Putting the Finishing Touches to the U.N. "Rice bank" in Pha Nok Kok



Picture 4. A Karen "nowhere man" Receives his Wages in Opium



**Working with community
on participatory land use
planning to resolve conflict
and encourage biodiversity
conservation**



Working with households to conserve crop genetic resources



Agrodiversity Lesson 1:

- **Edges are locally innovative sites for *in situ* conservation of wild, semi-domesticated and domesticated plant species but they are insignificant land use, say in comparison to cash crops. Establishing the importance of the edges, collecting relevant data and information for community sharing could lead to the implication for biodiversity conservation on a wider scale.**

Agroforest Edges: the biodiverse systems for multiple functions (production, conservation and social service)





- Highest species richness (114) vs. other edges (38)
- Highest utility (firewood, food, construction material and making tools)
- Conservation of headwater for production of cash crops



**A complex AF edge
managed by Mr.
Saophang Saetao of
Pah Poo Chom**

**Reintroducing bambo for making *Hmong* pipe in AF edge,
managed by Saophang Saetao of *Pah Poo Chom* village**



Edges: systems for management and conservation of crops from



**Harvesting local
vegetables from the
edge for cooking
and sale to outside
markets**

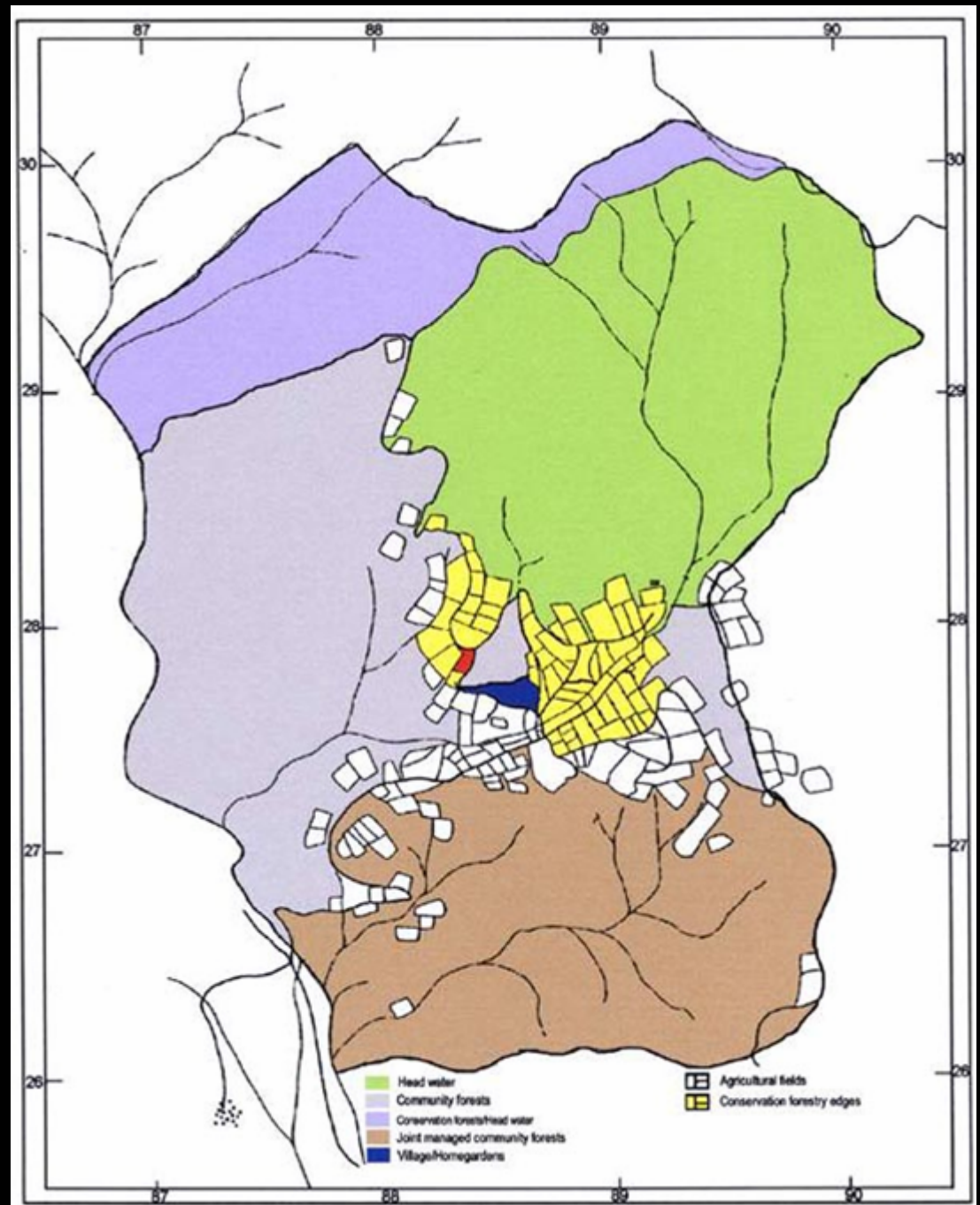


Agrodiversity Lesson 2:

- **Dynamisms of PLEC demonstration are recognized and used to facilitate and motivate local community and relevant development workers in the demonstration site.**

Pah Poo Chom: Survey of Land Use and Monitor the Change

- Permanent plots for cash crops;
- Village headwater
- Community forests





**Community Conflicts in
Land Use: community forest
encroachment for cash crop
production**



**Conducted Survey
of Agrodiversity
Management and
Field Measurement
of Biodiversity in
Different Land Use
and Field Types**



**Management of *Mimosa
invisa* for building**

Strategies for Local Capacity Building and Community Organisation for Management and Conservation of Biodiversity

- **Exchange of idea and information**
- **Evaluation of demonstration plots**
- **Training and cross visits to other communities**
- **Empowering expert farmers**
- **Field workshops and village meetings**

Major Outcome: Village Committee for Forest Protection and Biodiversity Conservation

Agrodiversity Lesson 3:

- **Mainstreaming the idea of PLEC, i. e., agrodiversity, involves active participation of local community and partners' institutions**

Revision of Village Land Use

Information inputs from PLEC demonstration activities

- Short series of field workshops and village meeting
 - Negotiation
 - Consensus and agreements
- Proposal development for local authorities, e.g., TAO, District Office, Local Forest Offices
 - Drafting village plan
 - Formal submission
- Concrete outputs
 - RFD funding for reforestation
 - Pilot site for national program on Farmers' Field School
 - Development support from TAO

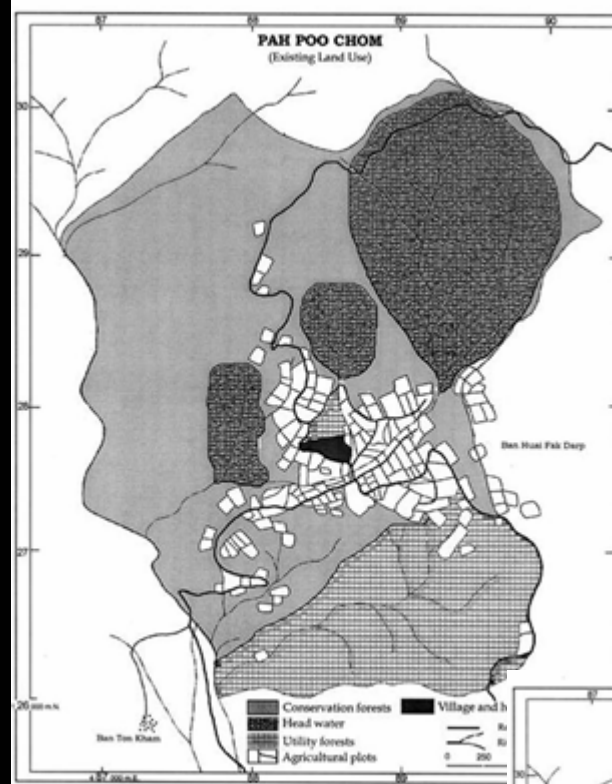


Figure 1. Map of existing land use in Pah Poo Chom demonstration village in 1999.

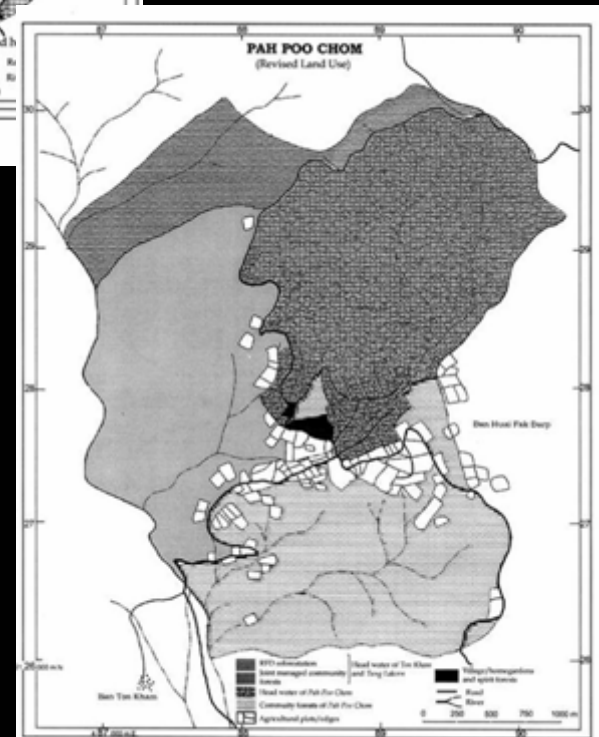


Figure 2. Map of revised land use based on community agreement of Pah Poo Chom village in 2002.

Conclusions

1. Appreciating, awaring and building on

- **Farmers' innovations** (including farmers' knowledge of spatial and temporal diversity of their biophysical environment and limitations, hybrid agroecosystems and others)
- **Community capacity in management and conservation of biodiversity**
- **Dynamisms of agricultural landscape**
- **Social and economic conditions for biodiversity conservation**

Conclusions (continue)

2. Approaching the demonstration and capacity building with

- The whole and significant parts of the demonstration site** (village ecosystem in this case)
- The idea of interface between different land use types and stages in relation to agrodiversity management**
- Active participation at all levels**

Thank You

