

Indigenous Wisdom for Agro-biodiversity, Food Security and Climate Change

Sustainable Rotational Farming in Northern Thailand

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Introduction to IKAP

Indigenous Knowledge and Peoples (IKAP) is a regional network of indigenous community-based organizations, NGOs and GOs working on indigenous knowledge and cultural issues with indigenous staff who partner with indigenous communities in six countries in Mainland Montane Southeast Asia. IKAP's main activities are:

- 1) Intergenerational transmission of IK,
- 2) Capacity building,
- 3) Affirmation of cultures, biodiversity, food security and climate change, and
- 4) Research, documentation and advocacy for recognition of IPs and IK.

Introduction on IPS in Thailand

- Thailand has 77 provinces, covers an area of 513,115 km² and has a total population of 62,418,054 people.
- IPs in Thailand are referred to as “hill tribes”, or sometimes as “highland people/communities”.
- The population of IPs is 925,825 across 21 provinces in the north and west of Thailand.

IPs/Ethnic groups in Thailand

- Only ten ethnic groups are officially recognized as “hill people.” Living in the north and west of the country, they are: the Karen, Hmong, Akha, Lahu, Lisu, Mien, Lua, H’tin, Khmu, and Mlabri.
- There are many ethnic groups not officially recognized yet e.g. Dara-ang, Kachin, Shan etc.
- The Karen are the biggest group, around 411,670, most of whom still strongly depend on rotational farming (RF) cultivation.

Current Situation of IPs in Thailand

- IPs in Thailand have been facing a stereotyping and discrimination policy from the government over the last five decades.
- Until today the IPs of Thailand continue to suffer from this historical stereotyping and discrimination.
- Underlying many laws, policies and programmes is the notion of IPs as drug producers, and a threat to national security and to the environment.

Current Situation e.g.

- Karen people are still being arrested by the government forestry officers every year (e.g. in March, 2008, Mr. Dipaepho (80 years) and Ms. Naw He Mui (35 years) from Mae Omki Village, Mae Wa Luang Tambon, Tha Song Yang District, Taak Province) as they were preparing their fields for planting rice and upland plants.

The charges relate to clearing of land, felling trees, and burning the forest within a national forest, which was considered as degradation of national forest land, damaging a water source and contributing to **climate change**.

**Finced for destroying
the forest!**



Key issues and the challenge

- Most governments in Asia etc. prohibit rotational farming (RF).
- Backward form of agriculture,
- Suspicion of its “nomadic” way of life,
- Discrimination against indigenous peoples creating natural resource competition between those with traditional and those with legal/policy rights.
- Climate change discourse has taken the debate on RF to a global level, reinforcing existing prejudices, laws and programs with little concern for the people affected by them.
- The new belief is that RF is bad because it causes carbon emissions and contributes to climate change.

Common perceptions and images of RF...

The practice is.....

- ‘Primitive’
- Economically unviable
- The cause of deforestation and environmental destruction,
- ... and hence, must be replaced!



A One-Year Cycle of Rotational Farming



The New Year, in February, marks the beginning of the RF cycle when each family performs wrist string tying ceremony.



Preparing the firebreak around the field before burning.



“Sowing the mother rice” ritual, carried out by young people before sowing the rice.



Sowing rice using *mga bo* sticks, carried out by collective labour.



The *mga bo* sticks make a very shallow indent in the soil, into which the rice seeds are sown. The disturbance to the topsoil is kept to the minimum possible.



A week or two after burning the field, young sprouts grow-up quickly from the tree trunks in the field.





Many rituals are performed in the RF field throughout the cultivating season.





The *bgau quv* ritual includes an offering to the spirit-owner of the mountains and rivers, an offering to mother rice, an offering to the spirit-owner of fire, and a ritual to remove bad influences from the field.



Harvest Season



Everyone cooperates to harvest the rice.





A ritual is carried out in the threshing area before threshing the harvested rice.



Rice threshing



The harvest is completed by carrying the rice back to the barn.

The Rotational Farming Fallow System



In the first and second year fallows, we can find plants for 16 kinds of food, 7 kinds wildlife, and 7 kinds of herbs.



The third and fourth year fallows have 10 kinds of plants for various uses, 4 kinds of bamboo, 13 kinds of wildlife. and 12 kinds of poultry.



The fifth and sixth year fallows have 75 kinds of food plants, wood & herbal medicine, 12 kinds of wildlife, and 30 kinds of poultry.



The seven to ten years fallows have 35 kinds of food plants, trees for various kinds of use, herbal medicine, and 19 kinds of poultry.



Several new stems grow up from the same root system around a tree trunk that was cut earlier.

The importance of regenerating fallow forests for Rotational Farming

- Fallows are essential to Rotational farming– without the regenerating fallow forests, productivity in rotational farming cannot be assured.
- Rotational farmers, therefore, *nurture the forests* into their fallows even during the cultivation phase
- Fallow forests are the *backbone* of rotational farming/shifting cultivation

RF Enhances Biodiversity and Food Security

We have found around 207 species in the RF swiddens (Anan et.al, 2004).

It is also possible to define this as ancestor heritage of seeds and plants.



Biodiversity in Rotational Farming



Rotational Farming (RF) enhances biodiversity and food security

- RF is a mother of diverse seeds and plants.
- Created biodiversity through the in-situ process.
- RF does not destroy the forest, but generally improves it.
- Self reliance based on yearly consumption of rice and food security, in different seasons different types of vegetables and other plant foods are available from RF.
- It is extremely healthy food, clean and natural, and better than the 'organic' food that some people search for in the supermarkets.

RF and population

- Increases in population not cause any change in areas of land use. Compared with ten years ago, land used for RF is decreasing.
- During a 10-year period, the ratio of land used land for farming decreased in almost all of the 11 villages studied in the research project.

(Anan et al., 2004)

Soil erosion (not) found in RF

It was found that soil erosion by rain in fallow land decreases as the length of fallow becomes longer. Average soil erosion was less than 0.1 ton/hectare/year and did not impact the quality of water in the ecosystem.

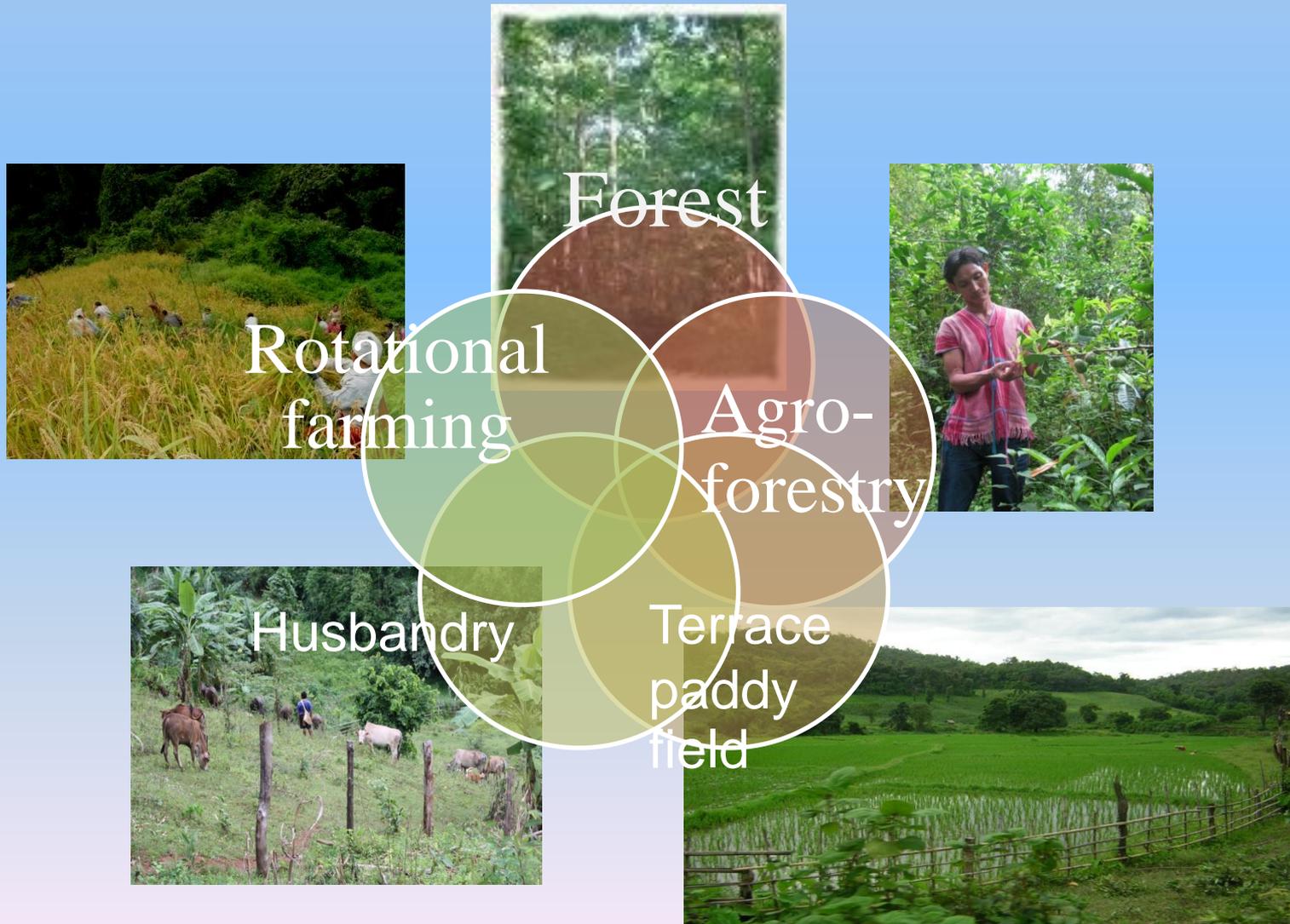
(Anan, et al., 2004)

Finding of Research: Hin Lad Nai Community, Chiang Rai, Northern Thailand.



- Hin Lad Nai Community is a ‘Karen /Pgaz K’Nyau’ community located in Chiang Rai Province, northern Thailand.

Forms of farming



RF and Biodiversity & Food Security

- Regarding food diversity, it was found that there are more than 90 types of food plants and 28 types of animal meats available in the community.



Approximately 54 percent of food plants come from the rotation farming field, while 33 percent from terrace paddy field and the rest is available from the community forest and tea gardening.

(Prayong Doclamyai et al, 2010.)



Terraced paddy fields

A one-year cycle of tea-picking

Old Tea Dec.-
February

Agroforestry

Tea in beginning of year
March-May



Winter tea

Tea 982.5 rai



Oct-November.



Preen Tea
in June

Middle year tea
(raining tea)

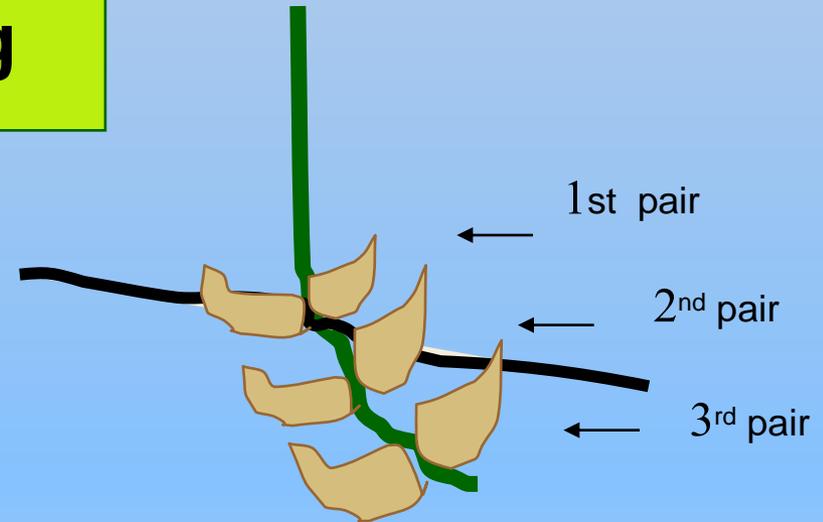
July-Sept.

Average income from Tea (baht/year)	% (income)
254,400	30

Number of products (kgs/year)				
Old tea	Young tea	raining tea	Preen tea	Winter tea
40,000	1,000	30,000	20,000	10,000

Bamboo shoots collecting

Bamboo varieties



Begin collecting in July

Last pair comes out in September

Stop collecting in August

Bauf waf klux



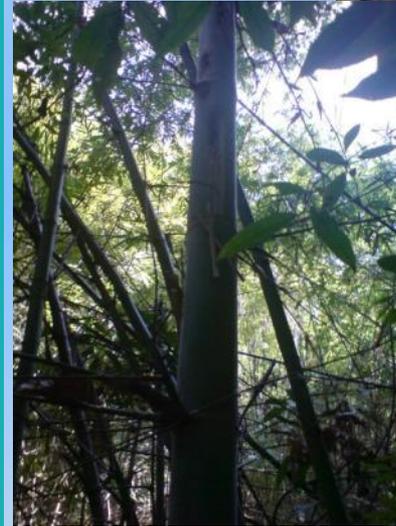
Collecting Honey

- In March-May
- only honey collection
- 20 baht/bottle goes to the collective fund



Average number of bottles / year		
2006	2007	2008
80	150	140

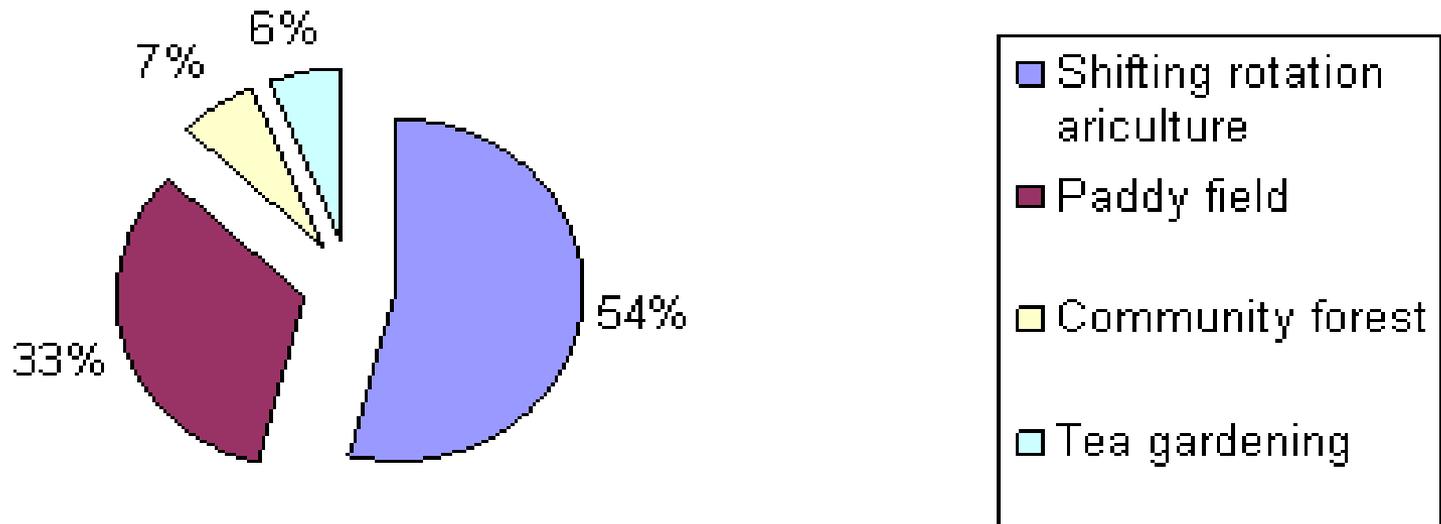
Bamboo caterpillars



Food security in the community

Rotational Farming (54%)	Terraced paddy fields and rivers (33%)	Forest (7%)	Gardens (6%)
<p>8 species of rice, 3 species of sticky rice and 105 species of vegetables.</p>	<p>Wet rice and varieties of vegetables</p>	<p>Bamboo shoots honey, Bamboo capillary, nut, mushroom etc.</p>	<p>Eggs plants, plump lemon, mangoes banana, varieties of flowers, Rattan, papaya, beans, lemon grass, ginger, bitter and etc.</p>
<p>More than 100 species of rice and other food plants in RF fields.</p>	<p>Wet rice species</p>	<p>Natural products</p>	<p>Tea, vegetables and fruits.</p>

Availability of plant food in the community



Rotation farming field is major source of household food (Prayong Doclamyai et al, 2010).

Food from the community



Food from the community



Food bought from outside the community



RF and Climate Change: Carbon storage

Findings:

1. Carbon storage in the community forest at Hin Lad Nai and two nearby communities, which cover 3,120 ha is approximately 661,372 tons.
2. Carbon storage in farming areas (568 ha), rotational fields, paddy fields and tea gardens, is about 59,459 tons.
3. Total carbon storage in the community is around 720,831 tons.

(Prayong Doclamyai et al., 2010)

Capacity for carbon storage

Types of land and forest	rai	hectare	%	Capacity for carbon storage		
				Ton of carbon/ hectare	Total carbon storage (ton)	%
Total forest area	19,498	3,119.68	84.25	212	661,372.16	91.78
Total land use area	3,547	567.52	15.33	-	59,458.84	8.22
terrace area	226	36.16	0.98	25	904.00	0.13
rotational farming	114	18.24	0.49	25	456.00	0.06
Fallow from 1-10 years	1,476	236.16	6.38	-	17,167.00	2.41
Tea garden	982	157.12	4.24	179	28,124.48	3.90
fruit trees	132	21.12	0.57	158	3,336.96	0.46
corn field	585	93.60	2.53	99	9,266.40	1.29
Grass land for Animals	33	5.28	0.14	-	-	-
Settlement	98	15.68	0.42	-	0.00	0.00
Total land	23,143	3,703	100.00	-	720,627.00	100.00

Carbon Storage in RF Swiddens and Fallows

The net carbon storage from fallow fields, covering 236 ha, left to recover for 1-10 years account for 17,348 tons C, while CO₂ emissions from the burning of rotation fields are only 480 tons C.

Fallow land	Unit of land		Carbon storage		Burning area		Carbon emission (80%)	
	rai	hectare	(ton/hectare)	ton	rai	Hectare	(ton/hectare)	ton
Year of farming	114	18.24	25	456	-	-	2.3	-
first year fallow	199	31.84	12	478	-	-	-	-
2 nd years fallow	187	29.92	27	898	-	-	-	-
3 rd years fallow	172	27.52	43	1,238	-	-	0	-
4 th years fallow	153	24.48	59	1,469	-	-	6	-
Fifth years fallow	135	21.6	74	1,620	-	-	11	-
Six years ...	202	32.32	90	2,909	5	0.80	17	14
Seven years ...	93	14.88	106	1,577	69	11.04	22	243
Eight year...	125	20	121	2,420	11	1.76	28	49
Nine years...	101	16.16	137	2,214	14	2.24	34	76
Ten years...	109	17.44	152	2,651	15	2.40	39	94
Total carbon storage				17,643	Total carbon emission			476

Conclusion (1)

- The way of life and farming system of the communities in the mountainous areas are not the cause of climate change.
- Instead, the farming system and ways of life help to maintain the balance of the ecosystem, are of benefit and have the potential to reduce greenhouse gas (GHG) emissions, and are in a position to maintain food security.

Conclusion (2)

- Consumption of the people in the communities is based on sufficiency and uses resources through a system of sustainable management that has diverse dimensions, for example, the belief system, rituals, indigenous knowledge, and regulations or agreements formulated by the people in the communities for the control of their resources.

Conclusion (3)

- The community members place value on the consumption of locally produced food rather than buying from external sources.
- This enhances the maintenance of sustained food security, food sovereignty sustainable use of the local resources, and the local biodiversity.

Conclusion (4)

Three new opportunities for the Karen natural resource management system in Thailand

- 2007 Constitution: Articles 66, 67, 85 support the rights of local communities to manage their own natural resources.
- The Prime Minister's Office has issued a Communal Land Title Regulation that will establish communal land titles 2010.
- Cabinet Resolution on "Recovering the Karen Livelihood in Thailand" August 3, 2010. Recognition for communal land titles and the Karen system of natural resource management and RF.

A Poem (*Hta*) of the Elders

*Pgaz mi le plez maz laux div,
Pgaz pgaj le plez maz lauz div,
Maz laux k'tauz hkuf av hkli,
Maz laux k'tauz nwaij av hkli,
K'tauz mej hsaiv htauf se hsi,
Taj hkav nax kei p't'si.*

The elders still order us,
The elders still tell us,
Order us to conserve the taro seeds,
Tell us to preserve the yam seeds,
To save at least 30 kinds of seeds,
Even in a famine we will not die.

Taj bluv!

Thank you