

Appendix A. Marks for Agro-forestry Systems

Serial no.	Agro-forestry Systems	Durability	Acceptance	Benefits	Total Marks
1	Coffea arabica Linn. with <i>Gmelina arborea</i> Roxb.	2	1	3	6
2	Coffea arabica Linn with <i>Erythrina Subumbras</i>	3	1	3	7
3	Coffea arabica Linn with <i>Acacia Fomosana</i>	3	1	3	7
4	Coffea arabica Linn with <i>Pinus Kesiya</i>	1	1	2	4
5	Coffea arabica Linn, <i>Ricinus communis</i> with <i>Calliandra Callothyrsus</i>	3	1	3	7
6	<i>Camellia Sinensis</i> with Hill Evergreen Forest	3	3	1	7
7	Lemn with <i>Acacia auriculiformis</i>	3	0	2	5
8	<i>Passiflora foetida</i> Linn Plantation with Mixed Deciduous Forest	3	1	2	6
9	<i>Chrysanthemum indicum auriculiformis</i>	0	0	3	3
10	<i>Passiflora foetida</i> Linn with <i>Cassia siamea</i>	0	0	0	0
11	Range management with Dry dipterocarp Forest	2	0	1	3
12	Coffea arabica Linn with Hill Evergreen Forest	3	1	3	7
13	<i>Oryza sativa</i> Linn with <i>Melia azederach</i> Linn.	0	3	0	3
14	Range Management with <i>Pinus Kesiya Royle</i> ex <i>Gord</i> Syn	3	0	1	4
15	Rice, Maize and fencing trees	2	2	2	6
16	Crops interaction on Forest Land	3	2	6	8
17	<i>Ordiza sativa</i> Linn, <i>Ricinus communis</i> Linn with <i>Eucalyptus Camaldulensis</i>	0	2	2	4
18	<i>Glycine Max Merr</i> , <i>Ricinus communis</i> Linn with <i>Pinus Kesiya Royle</i> ex <i>Cordon</i>	0	2	2	4
19	Coffea arabica, <i>Camellia arborea</i> and <i>Bischofia javanica</i>	2	1	3	6
20	<i>Zea mays</i> Linn, <i>Zingiber officinale</i> with	0	3	2	5
21	<i>Eucalyptus camaldulensis</i>	3	2	3	8
22	Swidden Farming System	0	3	0	3
23	<i>Leucaena Leucocephala</i> System	3	3	1	7
24	<i>Brassica oleracea</i> Linn with <i>Pinus Kesiya royle</i> ex <i>Gord</i> Sys	0	3	1	7
25	<i>Zea mays</i> Linn with <i>Leucaena Leucocephala</i>	0	3	2	5
26	Medicinal Plants with Dry Mixed Deciduous Forest	3	2	2	7
27	<i>Oryza sativa</i> , <i>Prunus mume</i> with <i>Eucalyptus Spp.</i> and <i>Erythrina subumbrans</i>	0	2	3	5
28	Coffea Arabica with <i>toonae Ciliata</i>	0	1	3	7
29	Coffea Arabica with <i>Betulaalnides</i>	3	1	3	7

Remarks: Total marks 0-3. This system is not suitable for use with water resources.
 Total marks 4-6. This system needs adjustments.
 Total marks 7-9. This system is suitable for use with water resources.

Appendix B. Standard for giving marks on agro-forestry systems

Status of Agro-forestry system	Marks grading (Marks)			
	0	1	2	3
Durability	1-3 years	4-6 years	7-9 years	More than 10 years
Benefits	0-500 baht/rai/year	501-3,500 baht/rai/year	3,501-6,500 baht/rai/year	6,500 baht/rai/year
Acceptance	Farmers not working	Farmers work upon receipt of financial support	Farmers follow examples, when encouraged	Farmers work on their own initiative

Source: Preechapanya, et al. (1988)

Appendix C. Royal Forest Department Watershed Classification

Land Classification for Highland Zones.	
General Highland Classification	Application to North Thailand
Class A. (Watershed Protection Forest)	Sub-Classes: (i) Forested (ii) Needing Reafforestation
Class B. (Economically Productive Forest)	Sub-Classes: (i) Forested (ii) Needing Reafforestation
Class C. (Farming Land)	Sub-Classes: (i) Arable. (ii) Highland Orchards. (iii) Livestock Grazing

Appendix D. Data on the size of firewood for miang processing & cooking measured from samples of 10 households

Sample No.	Size of Firewood (in meters)							
	Miang Processing				Cooking			
	L	W	Th	(m ³)	L	W	Th	(m ³)
1	1.54	0.15	0.11	0.0254	0.26	0.05	0.05	0.0007
2	1.55	0.15	0.10	0.0233	0.36	0.07	0.04	0.0010
3	1.78	0.14	0.10	0.0249	0.36	0.05	0.04	0.0007
4	1.50	0.16	0.12	0.0288	0.38	0.05	0.04	0.0008
5	1.60	0.15	0.11	0.0264	0.38	0.06	0.04	0.0009
6	1.56	0.17	0.13	0.0345	0.31	0.04	0.04	0.0005
7	1.70	0.17	0.12	0.0347	0.32	0.04	0.04	0.0005
8	1.58	0.16	0.11	0.0278	0.31	0.05	0.03	0.0005
9	1.45	0.14	0.10	0.0203	0.34	0.06	0.04	0.0008
10	1.48	0.15	0.11	0.0244	0.32	0.04	0.04	0.0005
Average	1.57	0.15	0.11	0.0270	0.33	0.05	0.04	0.0007

Note: L - length, W - width, Th - thickness

Appendix E. Sample calculations for Table 28.

From researcher's calculations based on NP/day:

Ave. normal size DBH = 140 cm.
 Length of stem or bole of tree = 10-15 m.
 Ave. length of bole of tree = 13 m.
 One 13-meter bole of a tree = 13 m. * 1.57 m. = 8.28 or 8 sections
 One section = 7 "1.57-meter" pieces (ton) of firewood
 (Note: 1.57 m. = ave. length of miang ton)
 Therefore, one 13-meter bole of a tree = 7 * 8 = 56 ton.
 Volume per 13-meter bole of a tree = 56 ton * 0.0270 = 1.512 m³

Given:

NP/day = from HH head
 0.0270 = ave. m³ of miang ton
 100 days = ave. no. of working days during miang season

Computation:

NP/y = NP/day * 100 days/yr
 NTC/yr = NP/yr/56 ton
 m³/day = NP/day * 0.0270 m³/ton
 m³/yr = m³/day * 100 days/yr
 NTC/yr = m³/yr/1.512 m³/tree

Note:	Miang Season	No. of days
	I	25
	II	30
	III	25
	IV	20
	Total	100

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Appendix F. Sample calculations for Table 29

Given:

0.0007 = ave. m^3 of cooking ton

345 = approximate no. of cooking days per year

(Note: 20 days are given as allowance because the villagers sometimes are invited to eat at their neighbor's house or they go to other villages or to the lowlands for festivities.)

Note: Firewood used for cooking are cut from branches and other parts of trees not used for miang processing.

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Appendix 6. Trees selected for planting in Thailand

No.	Species	Native or exotic tree species	Planting in the form of				
			Indus- trial planta- tions	Farm wood lots	Environ- mental planta- tions	Multi- pur- pose trees	Others
1	<i>Acacia auriculaeformis</i>	E	1	1	1	-	-
2	<i>A. catechu</i>	N	-	1	-	1	-
3	<i>A. mangium</i>	E	1	-	-	-	1
4	<i>A. siamensis</i>	N	-	1	1	-	-
5	<i>Adina cordifolia</i>	N	-	-	-	-	1
6	<i>Azelia xylocarpa</i>	N	-	-	-	-	1
7	<i>Ailanthus triphysa</i>	N	1	-	-	-	-
8	<i>Albizia falcataria</i>	E	1	-	-	-	-
9	<i>A. lebbek</i>	N	-	-	-	-	1
10	<i>A. procera</i>	N	-	-	-	-	1
11	<i>Aleurites montana</i>	N	1	-	-	1	-
12	<i>Alistonia macrophylla</i>	N	1	-	-	-	-
13	<i>Anacardium occidentale</i>	E	-	-	-	1	-
14	<i>Anisoptera costata</i>	N	1	-	-	-	-
15	<i>Anthocephalus chinensis</i>	N	1	-	-	-	-
16	<i>Azadirachta indica</i>	N	1	-	-	1	-
17	<i>Bambusa arundinaceae</i>	N	-	-	-	1	-
18	<i>Bauhinia</i> spp.	N	-	-	-	-	1
19	<i>Bombax insignies</i>	N	1	-	1	1	-
20	<i>Broussonetia papyrifera</i>	N	1	-	-	1	-
21	<i>Butea monosperma</i>	N	-	-	-	-	1
22	<i>Calophyllum inophyllum</i>	N	-	-	-	-	1
23	<i>Calatropis gigantea</i>	N	-	-	-	-	1
24	<i>Cassia bakeriana</i>	E	-	-	1	-	-
25	<i>C. fistula</i>	N	-	-	1	-	1
26	<i>C. siamea</i>	N	-	1	-	1	-
27	<i>Casuarina equisetifolia</i>	E	1	1	1	-	-
28	<i>C. junghuhniana</i>	E	1	1	1	-	-
29	<i>Ceriops decandra</i>	N	1	-	-	1	-
30	<i>Cinchona ledgeriana</i>	E	-	-	-	1	-
31	<i>Chukrasia velutina</i>	N	1	-	-	-	-
32	<i>Corypha umbraculifera</i>	N	-	-	-	1	-
33	<i>Cotylelobium lanceolatum</i>	N	-	-	-	-	1
34	<i>Dalbergia cochinchinensis</i>	N	1	-	1	-	1
35	<i>Delonix regia</i>	E	-	-	-	-	-
36	<i>Dipterocarpus alatus</i>	N	1	-	-	-	-
37	<i>D. obtusifolius</i>	N	1	-	-	-	-
38	<i>D. turbinatus</i>	A	1	-	-	-	-
39	<i>Eucalyptus alba</i>	E	-	-	-	-	1
40	<i>E. camaldulensis</i> †	E	1	1	1	1	-
41	<i>E. citriodora</i>	E	-	-	-	-	1
42	<i>E. deglupta</i>	E	1	1	1	1	-
43	<i>E. tereticornis</i>	E	-	-	-	-	1
44	<i>Fagraea fragrans</i>	N	1	-	-	-	1
45	<i>Garuga pinnata</i>	N	-	-	-	-	1

No.	Species	Native or exotic tree species	Planting in the form of				
			Indus- trial planta- tions	Farm wood lots	Environ- mental planta- tions	Multi- pur- pose trees	Others
46	<u>Gliricidia sepium</u>	N	-	-	-	1	-
47	<u>Gmelina arborea</u>	N	1	-	-	1	-
48	<u>Hevea braziliensis</u>	E	1	-	-	1	-
49	<u>Hopea odorata</u>	N	1	-	-	-	1
50	<u>Homalium damronggianum</u>	N	-	-	-	-	1
51	<u>Hydnocarpus anthelmintica</u>	N	-	-	-	-	1
52	<u>Intsia palembanica</u>	N	1	-	-	-	1
53	<u>Irvingia malayana</u>	N	1	-	-	-	-
54	<u>Jacaranda filicifolia</u>	E	-	-	1	-	-
55	<u>Lagerstroemia calyculata</u>	N	-	-	1	-	-
56	<u>L. macrocarpa</u>	N	-	-	1	-	-
57	<u>L. speciosa</u>	N	-	-	1	-	-
58	<u>L. tomentosa</u>	N	-	-	1	-	-
59	<u>Lannea grandis</u>	N	1	-	1	-	-
60	<u>Leucaena leucocephala</u>	E	1	1	-	1	-
61	<u>Litsea grandis</u>	N	-	-	-	-	1
62	<u>Mangifera indica</u>	N	1	-	-	1	-
63	<u>Melaleuca leucadendra</u>	N	-	-	-	1	-
64	<u>Melia azedarach</u> †	N	1	-	1	1	-
65	<u>M. dubia</u>	N	1	-	-	-	-
66	<u>Mesua ferria</u>	N	-	-	-	-	1
67	<u>Millingtonia hortensis</u>	N	-	-	-	-	1
68	<u>Uchroma lagopus</u>	E	1	-	-	-	-
69	<u>Parkia javanica</u>	N	1	-	-	1	-
70	<u>P. speciosa</u>	N	-	-	-	1	-
71	<u>Parashorea stellata</u>	N	1	-	-	-	-
72	<u>Peltophorum inerme</u>	N	1	1	-	-	-
73	<u>Pinus caribaea</u>	E	1	-	-	1	-
74	<u>P. kesiya</u>	N	1	-	-	-	1
75	<u>P. merkusii</u>	N	1	-	-	1	-
76	<u>P. oocarpa</u>	E	1	-	-	-	-
77	<u>Pterocarpus indicus</u>	E	1	-	-	1	-
78	<u>P. macrocarpus</u>	N	1	-	-	1	-
79	<u>Rattan</u>	N	-	-	-	1	-
80	<u>Rhizophora spp.</u>	N	-	-	1	-	-
81	<u>Samanea saman</u>	E	1	1	-	1	-
82	<u>Sandoricum indicum</u>	N	-	-	-	1	-
83	<u>Seacarpus curtisii</u>	N	-	-	-	-	1
84	<u>Sesbania grandiflora</u>	N	-	-	-	1	-
85	<u>Shorea talura</u>	N	-	-	-	-	1
86	<u>Sindora siamensis</u>	N	-	-	-	-	1
87	<u>Spondias pinnata</u>	N	-	-	-	1	-
88	<u>Sterculia foetida</u>	N	-	-	-	1	-
89	<u>Swietenia macrophylla</u>	E	1	-	-	-	-
90	<u>Tabebuia pentaphylla</u>	E	-	-	1	-	-

Appendix B. (Continued)

No.	Species	Native or exotic tree species	Planting in the form of				
			Indus- trial planta- tions	Farm wood lots	Environ- mental planta- tions	Multi- pur- pose trees	Others
91	<i>Tamarindus indica</i>	N	-	-	-	1	-
92	<i>Tectona grandis</i>	N	1	-	-	-	-
93	<i>Terminalia catappa</i>	N	-	-	1	-	-
94	<i>Tetrameles nudiflora</i>	N	1	-	-	-	-
95	<i>Thyrsotachys siamensis</i>	N	1	-	1	1	-
96	<i>Xylia kerrii</i>	N	1	-	-	-	-
97	<i>Zollingeria donnaiensis</i>	N	-	-	-	-	1

* Tree species chosen for the study
Source: Bhumibhamon, 1986

Appendix H. The choice of tree species recommended by various organizations including Regional Forest Offices (1), District Forest Offices (2), Provincial Forest Companies (3), and State Organizations (4)

Species	Source of recommendation			
	1	2	3	4
<u>Acacia auriculaeformis</u>	+	+	+	+
<u>A. catechu</u>	+	+	-	+
<u>A. mangium</u>	+	-	-	+
<u>Azalia xylocarpa</u>	+	-	+	-
<u>Ailanthus triphysa</u>	+	-	-	-
<u>Albizia procera</u>	+	-	-	-
<u>Alstonia macrophylla</u>	+	+	+	+
<u>Anacardium occidentale</u>	+	+	+	-
<u>Anthocephalus chinensis</u>	-	-	-	+
<u>Azadirachta indica</u>	+	+	-	+
<u>Bombax insignies</u>	+	+	-	-
<u>Bruguiera cylindrica</u>	+	-	-	-
<u>C. fistula</u>	+	+	-	+
<u>C. siamea</u>	+	+	-	-
<u>Casuarina equisetifolia</u>	+	+	+	+
<u>C. junghuhniana</u>	+	+	-	-
<u>Cerriops decandra</u>	+	-	-	-
<u>Chukrasia velutina</u>	+	-	-	+
<u>Dalbergia cochinchinensis</u>	+	+	-	+
<u>Delonix regia</u>	+	+	-	+
<u>Dipterocarpus alatus</u>	+	+	-	+
<u>E. camaldulensis</u> *	+	+	+	+
<u>E. deglupta</u>	-	-	-	+
<u>Fagraea fragrans</u>	+	-	-	-
<u>Gmelina arborea</u>	+	+	+	+
<u>Hevea braziliensis</u>	-	+	-	-
<u>Hopea odorata</u>	+	+	+	+
<u>Intsia palembanica</u>	+	+	-	-
<u>Lagerstroemia calyculata</u>	-	+	-	-
<u>L. macrocarpa</u>	-	+	-	-
<u>L. speciosa</u>	-	+	-	+
<u>L. tomentosa</u>	-	+	-	-
<u>Leucaena leucocephala</u>	+	+	+	+
<u>Litsea grandis</u>	+	-	-	+
<u>Mangifera indica</u>	+	+	-	-
<u>Melaleuca leucadendra</u>	-	+	-	-
<u>Melia azedarach</u> *	+	+	+	+
<u>M. dubia</u>	-	+	-	-
<u>Ochroma lagopus</u>	-	-	-	+
<u>Oryxylum indicum</u>	-	+	-	-
<u>Parkia javanica</u>	+	+	-	+
<u>P. speciosa</u>	+	-	-	+
<u>Peltophorum pterocarpum</u>	+	+	+	+
<u>Pinus kesiya</u>	+	+	+	-
<u>P. merkusii</u>	+	+	-	+

Appendix I. The choice of tree species of 21 Regional Forest Offices in Thailand, by rank

Species	Score
<u>Eucalyptus camaldulensis</u> *	17
<u>Tectona grandis</u>	15
<u>Acacia auriculaeformis</u>	15
<u>Leucaena leucocephala</u>	12
<u>Gmelina arborea</u>	11
<u>Pterocarpus macrocarpus</u>	10
<u>Melia azedarach</u> *	8
<u>Peltophorum inerme</u>	6
<u>Anacardium occidentale</u>	5
<u>Acacia catechu</u>	5
<u>Azadirachta indica</u>	5
<u>Xylia kerrii</u>	4
<u>Afzelia xylocarpa</u>	4
<u>Rhizophora</u> spp.	3
<u>Casuarina equisetifolia</u>	3
<u>Dipterocarpus alatus</u>	3
<u>Parkia javanica</u>	3
<u>Acacia mangium</u>	2
<u>Cassia siamea</u>	2
<u>Bombax</u> spp.	2
<u>Hopea odorata</u>	2
<u>Dalbergia cochinchinensis</u>	2
<u>Swietenia macrophylla</u>	2
<u>Pinus kesiya</u>	2
<u>Chukrasia velutina</u>	2
<u>Parkia speciosa</u>	2
<u>Cassia garrettiana</u>	1
<u>Fagraea fragrans</u>	1
<u>Bruguiera cylindrica</u>	1
<u>Litsea grandis</u>	1
<u>Alstonia macrophylla</u>	1
<u>Ceriops</u> spp.	1
<u>Albizia procera</u>	1
<u>Spondias pinnata</u>	1
<u>Pithecellobium dulce</u>	1
<u>Sindora siamensis</u>	1
<u>Mangifera indica</u>	1
<u>Ailanthus triphyssa</u>	1
<u>Casuarina junghuhniana</u>	1
<u>Pinus merkusii</u>	1
<u>Instia palembanica</u>	1
<u>Calamus caesius</u>	1
<u>Delonix regia</u>	1

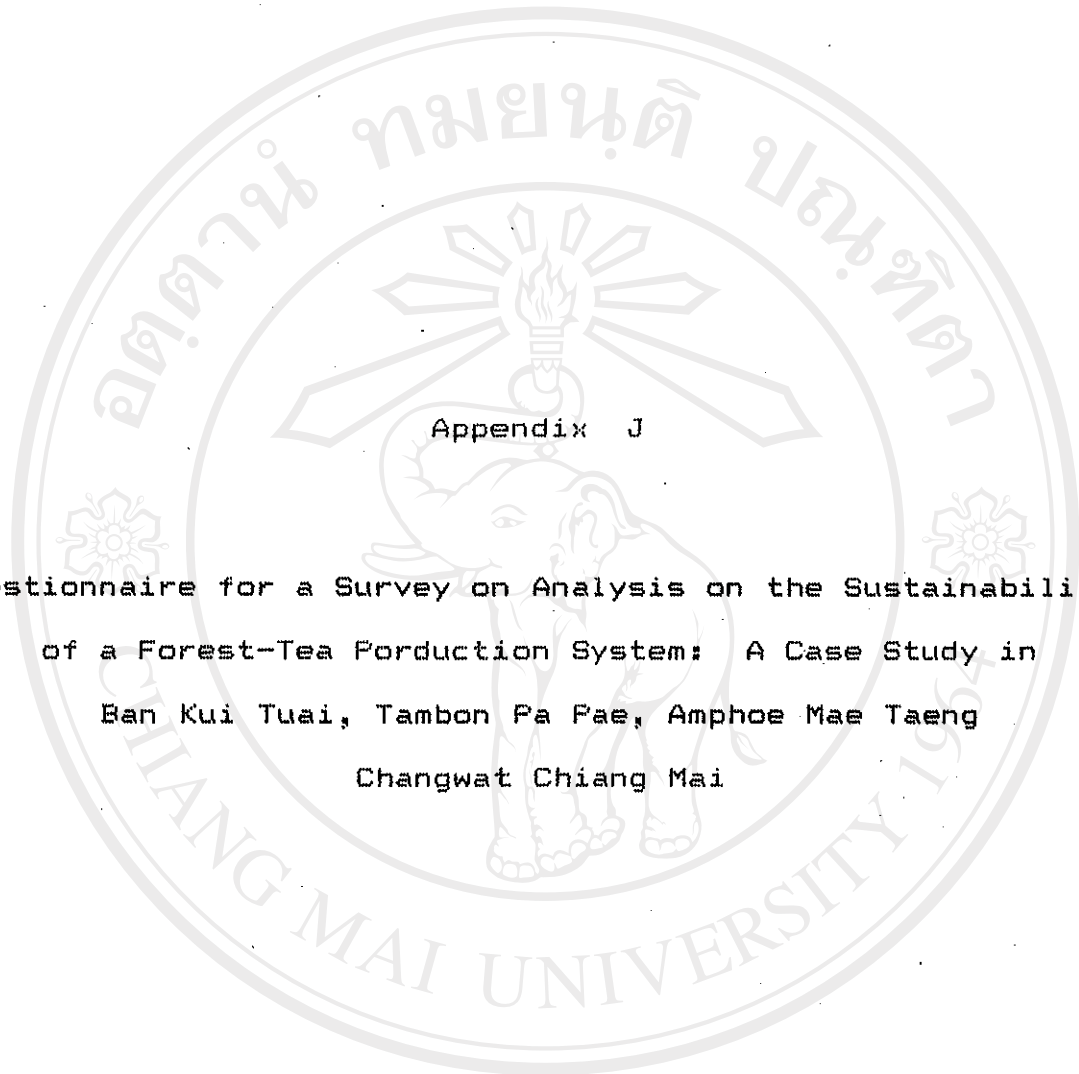
* Tree species chosen for the study

Source: Bhumibhamon, 1986

Table I . (Continued)

Species	Source of recommendation			
	1	2	3	4
<u>Pithecellobium dulce</u>	+	-	-	-
<u>Pterocarpus indicus</u>	+	-	-	+
<u>P. macrocarpus</u>	-	+	+	-
<u>Rhizophora spp.</u>	+	+	-	-
<u>Sandoricum indicum</u>	-	-	+	+
<u>Shorea roxburghii</u>	-	+	-	-
<u>Sindora siamensis</u>	+	-	-	-
<u>Spondias pinnata</u>	+	-	-	-
<u>Swietenia macrophylla</u>	+	+	-	+
<u>Tabebuia pentaphylla</u>	-	+	-	-
<u>Tamarindus indica</u>	-	+	-	-
<u>Tectona grandis</u>	+	+	+	+
<u>Terminalia catappa</u>	-	+	-	-
<u>Tetramales nudiflora</u>	-	+	+	+
<u>Xylia kerrii</u>	+	+	-	-

* Tree species chosen for the study
Source: Bhumibhamon, 1986



Appendix J

Questionnaire for a Survey on Analysis on the Sustainability
of a Forest-Tea Production System: A Case Study in
Ban Kui Tuai, Tambon Pa Pae, Amphoe Mae Taeng
Changwat Chiang Mai

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Questionnaire for a Survey on Analysis on the Sustainability
of a Forest-Tea Production System: A Case Study in
Ban Kui Tuai, Tambon Pa Pae, Mae Taeng District,
Chiang Mai Province

Respondent's Name: _____ Questionnaire No.: _____
 Address: _____ Date: _____
 Age: _____ Sex: _____ Time started/finished: _____
 Information quality from interviewing: _____ Interviewer's name: _____

I. GENERAL INFORMATION

1. What is your civil status?
 single
 married
 separated/widow
 divorced
2. Give the members of your family including yourself.

Name	Relation	Sex	Age
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Occupation

Schooling

II. MIGRATION HISTORY

3. Where were you born?
 in present address/Go to #4
 in different address/Go to #3.1
 State what village, subdistrict, district &
 province. _____

3.1 Change Residence

Previous Residence	Year of Transfer	Reason	How did you migrate?
_____	_____	_____	_____
_____	_____	_____	_____

- | | |
|--|---|
| <ul style="list-style-type: none"> 1) economic oppor-
tunities 2) family decision 3) land availability 4) others (specify) | <ul style="list-style-type: none"> 1) R went ahead of family 2) w/ fam. 3) w/ another fam. 4) w/ several fam. |
|--|---|

Occupation	Income < or > previous residence	Previous landsize holdings	Tenure Status
_____	_____	_____	_____
_____	_____	_____	_____

- | | | |
|---|--|--|
| <ul style="list-style-type: none"> 1) farmer 2) wage laborer 3) others (specify) | <ul style="list-style-type: none"> 1) higher 2) lower 3) same | <ul style="list-style-type: none"> 1) tenant 2) lease 3) owner 4) others (specify) |
|---|--|--|

4. Where were your parents born?

Father: _____

Mother: _____

State what village, subdistrict, district & province.

III. SOURCES OF INCOME

5. What are your family's sources (including off-farm) of income? Enumerate in order.

	Source	Who does it?	Where?	* Payment	
				Type	Amount
1.	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____

5. _____

- * 1) cash
- 2) in kind (specify)
- 3) exchange labor

6. What is/are your present landsize holdings?

Present Landsize Holdings		Tenure Status
Plot #1	_____ rai	_____
Plot #2	_____ rai	_____
Plot #3	_____ rai	_____

- 1) tenant
- 2) lease
- 3) owner
- 4) others (specify)

6.1 How many rai of land are you cultivating? _____
rai

6.1.1 Are these contiguous (nearby) or scattered?

6.2 How did you acquire these lands?

- _____ buy/Go to #6.2.1
- _____ inherit
- _____ clear the land

6.2.1 How much per rai? _____

7. Agricultural Information & Cropping Pattern

Crop	Area (rai)	Date		Inputs		
		Planting	Harvesting	Type	Price	Qty.
1. _____	_____	_____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____	_____	_____
4. _____	_____	_____	_____	_____	_____	_____
5. _____	_____	_____	_____	_____	_____	_____

Labor

Type of Use _____

Number of _____

Persons Days Ave. No. of Hrs.

1. _____
2. _____
3. _____
4. _____
5. _____

7.1 Do you use credits?

_____ Yes/Go to # 7.2.1
 _____ No/Why not? _____

7.2.1 What are your credit sources?

	% Interest Rate/year
_____ rural bank	_____
_____ money lender	_____
_____ landlord	_____
_____ others (specify) _____	_____

7.2.2 Why did you borrow money?

	% of Total Borrowing
_____ purchase	_____
_____ personal inputs	_____
_____ others (specify) _____	_____

8. Do you raise animals?

_____ Yes/Go to #8.1
 _____ No/Why not? _____

8.1

Animals	No.	Use	Price	Inputs		
				Type	Price	Qty.

1. _____
 2. _____
 3. _____
- 1) home consumption
2) for sale

9. What forest products do you gather?

Products	Use	Qty.	Price/u.o.	Amt. Gathered/Yr.
----------	-----	------	------------	-------------------

1. _____
 2. _____
 3. _____
- 1) for home consumption
2) for sale

10. Where do you sell your crops, animals and/or forest products? _____
 (State district & province.)

11. In general, what were the major problems encountered in:

11.1 Crop production _____

Crop marketing _____

Others _____

11.2 Livestock production _____

Livestock marketing _____

11.3 Gathering of forest products _____

Marketing of forest products _____

11.4 Off-farm employment _____

IV. SYSTEMS OF COOPERATION

12. Is there any organization or cooperative in your community?

_____ Yes/Go to #12.1

_____ No/Go to #12.2

12.1 What type?

_____ government

_____ civic

_____ religious

_____ others

12.2 Why not? _____

12.3 Do you want any? _____

12.3.1 Why? _____

12.3.2 What type? _____

13. Are you a member of any community organization?

_____ Yes/Go to #13.1

_____ No/Why not? _____

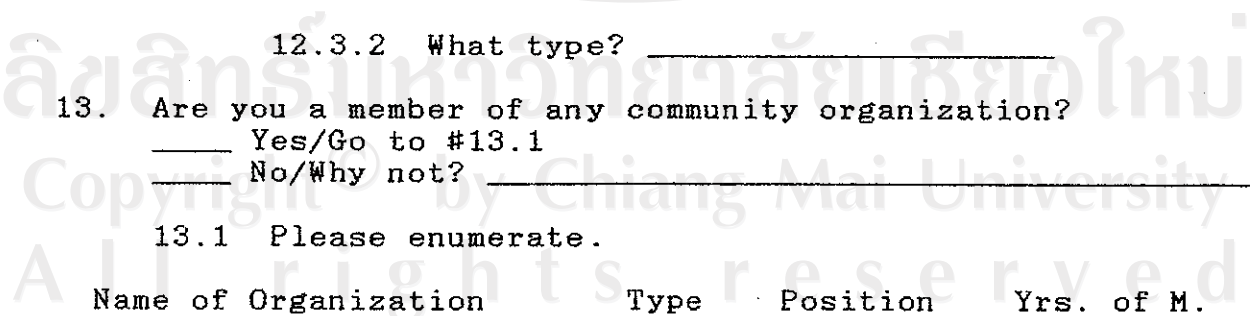
13.1 Please enumerate.

	Name of Organization	Type	Position	Yrs. of M.
--	----------------------	------	----------	------------

1.	_____	_____	_____	_____
----	-------	-------	-------	-------

2.	_____	_____	_____	_____
----	-------	-------	-------	-------

3.	_____	_____	_____	_____
----	-------	-------	-------	-------



- 1) government
- 2) civic
- 3) religious
- 4) others (specify)

14. What government projects or programs that were conducted in your village in the past five years?

14.1 UN/Thai SMHDP? _____

14.2 Chiangmai University (e.g. Fac. of Social Science through RMDP) _____

14.3 Other gov't. agencies _____

14.4 NGOs _____

15. Have you had any disputes (or disagreement) with personnel from the gov't agencies or NGOs mentioned in no. 14?

Yes/Go to #15.1

No

15.1 State agency or organization & reason/s. _____

V. MIANG PRODUCTION

A. General Information about Miang

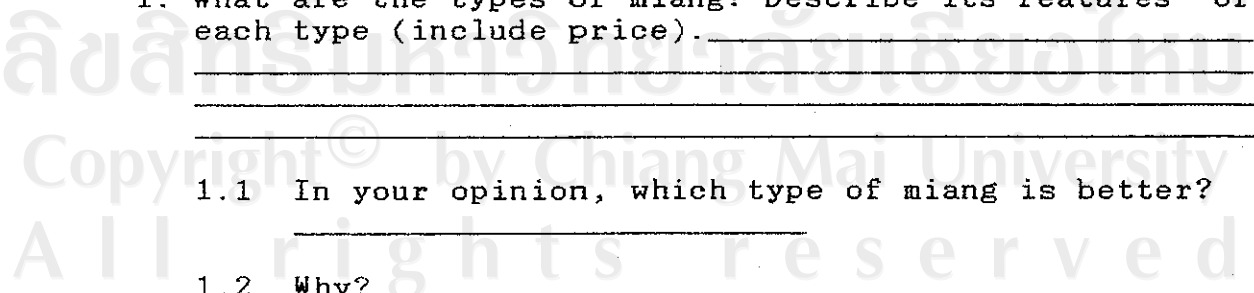
1. What are the types of miang? Describe its features of each type (include price). _____

1.1 In your opinion, which type of miang is better? _____

1.2 Why? _____

1.3 What type/s of miang do you work on? _____

1.4 Why? _____



- 1.5 Do these types differ in terms of the production activities of miang?
 _____ Yes/Go to #1.5.1
 _____ No

1.5.1 What are these activities? Describe how they differ? _____

2. How long have you worked on miang? _____ years

3. Do you intercrop crops and/or fruit trees in between tea trees?
 _____ Yes/Go to #3.1
 _____ No/Why not? _____

3.1 What are these crops and/or fruit trees? _____

3.1.1 Why? _____

3.2 When do you intercrop? _____

3.3 How many fruit trees and/or crops do you intercrop? _____

3.4 Income generated by these crops/fruit trees
 _____ Baht

4. Do you have livestock or cattle?
 _____ Yes/Go to #4.1
 _____ No

4.1 Why? _____

4.2

Types	No.	Age Range	Prod'n. Rate
_____	_____	_____	_____
_____	_____	_____	_____

4.3 What is the average annual income generated by livestock or cattle? _____ Baht

4.4 Where do you graze them? _____

4.5 Why? _____

4.6 In your opinion, do cattle or livestock has a role in maintaining a miang plantation? _____

B. Firewood Collection

1. What are the uses of firewood in the village?
 - _____ boiling miang _____ others (specify)
 - _____ cooking _____
 - _____ house construction _____
2. Do you consider the tree species when choosing firewood to cut?
 - _____ Yes/Go to #2.1
 - _____ No/Why? _____
 - 2.1 What are these tree species? _____
Please state reason.
 - _____ easy to burn _____ allowed by RFD
 - _____ easily available _____ others(specify)
 - 2.2 Can Melia or Eucalyptus be used as firewood?
 - _____ Yes/Why? _____
 - _____ No/Why not? _____
3. Do you have any criteria in cutting the tree?
 - _____ Yes/Go to #3.1
 - _____ No
 - 3.1 How? (e.g. according to diameter, shape, easy to burn, etc.) _____
4. How do you cut the tree?
 - _____ cut whole tree _____ others(specify)
 - _____ cut branches only _____
 - 4.1 What tool do you use? _____
5. Do you collect firewood for miang processing, cooking, house construction, etc. at the same time?
 - _____ Yes
 - _____ No/Go to #5.1
 - 5.1 Name the tree species used for each use for firewood and give the part/s of the tree used.
 - _____
 - _____

6. Tree Cutting Pattern

Activity	M O N T H											
	J	F	M	A	M	J	J	A	S	O	N	D
1. miang processing												
2. cooking												
3. house construction												
4.												
5.												
6.												

	Species	No. of trees	Size	Place	Dist. travelled from vil. to place
1.	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____

	Transportation		Type of Labor		
	Method	Cost	Family (Who)	Hired Source	Exchange (Source)
1.	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____
3.	_____	_____	_____	_____	_____
4.	_____	_____	_____	_____	_____
5.	_____	_____	_____	_____	_____
6.	_____	_____	_____	_____	_____

No. of Hrs. of Labor used

1.	_____
2.	_____
3.	_____
4.	_____
5.	_____
6.	_____

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7. If the method of transportation is pick-up, do you own or hire the pick-up? _____
- 7.1 If hired, how much? _____
8. In your opinion, can you cut trees without doubt or cut freely?
 _____ Yes/Why? _____
 _____ No/Why not? _____
- 8.1 Are you aware of any forest law especially in prohibiting to cut trees?
 _____ Yes
 _____ No/Why not? _____
- 8.2 If you are aware of the forest law, why do you still cut trees? _____

9. How do you know about the impact of tree cutting on your environment, water resource, farming, etc.?

10. How do you plan to cope such problems?

11. Do you have any idea to plant trees to substitute those you have cut?
 _____ Yes
 _____ No/Why not? _____
12. Have you ever planted new trees to substitute the trees you have cut?
 _____ Yes/Go to # 12.1
 _____ No/Why not? _____
- 12.1 If yes, what is the rate of substitution?

- 12.2 Why do you think so? _____

C. Cultivation

1. How long have you worked on miang? _____ years

Sources of Tea trees	Fresh Tea leaves ----- No. kg. Price	Area Planted (rai)
-------------------------	--	-----------------------

Natural forest _____
 Plantation _____

2. Do you plant tea?

_____ Yes/Go to #2.1

_____ No/Why not? _____

2.1 What type/s of miang do you grow? _____

2.2 Why? _____

2.3 How?

_____ use seeds

_____ transplant

2.4 How long have you grown tea? _____ years

2.5 Do you have a pattern in planting tea?

_____ Yes/Go to #2.5.1

_____ No/Why not? _____

2.5.1 Describe. (e.g. spacing, season of planting, caring of seeds, near the shade, rainfall, soil, etc.)

2.5.2 How did you get these ideas?

_____ from UN/Thai SMHDP

_____ from Chiangmai University (specify)

_____ from forefathers

_____ from experience

_____ from others (specify)

2.6 Are there inputs involved in cultivating tea?

_____ Yes/Go to #2.6.1

_____ No/Why not? _____

2.6.1 What are they? (include type of labor, price, qty.) _____

2.7 Do you maintain the cultivation of tea?

_____ Yes/Go to #2.7.1

_____ No/Why not? _____

2.7.1 How? Describe (e.g. weeding, watering, etc.).

2.7 How did you get these ideas?

- from UN/Thai SMHDP
 from Chiangmai University (specify) _____
 from forefathers
 from experience
 from others (specify) _____

3. How many rai and tea trees of miang plantation are you cultivating?

_____ rai _____ trees

3.1 What is your production quantity (kg.) each year from 1988 - 1990? _____

3.2 What is the yield per tea tree? _____

4. Do you own a miang plantation?

- Yes/Go to #4.1
 No/Why not? _____

4.1 How many rai and tea trees?

_____ rai _____ trees

4.2 What is the average number of tea trees per rai? _____

4.3 What is the average production quantity of tea trees per rai and per tea tree (in kg. of fresh tea leaves)? _____/rai _____/tree

4.4 How long have you owned them? _____ years

4.5 How did you acquire the lands?

- buy/Go to #4.5.1 & 4.5.2
 inherit/Go to #4.5.3
 just occupy the land
 others (specify) _____

4.5.1 How much per rai? _____ Baht

4.5.2 From whom?

- Karen
 Local Thai

_____ Others (specify)

4.5.3 From whom? _____

5. Do you plan to extend your miang plantation?
 _____ Yes/Go to # 5.1
 _____ No/Why not? _____

5.1 How many more rai? _____ rai

5.2 Where?
 _____ beside the old miang plantation
 _____ Others (specify)

5.3 How will you acquire it?
 _____ buy/Go to #5.3.1
 _____ inherit/Go to #5.3.2

5.3.1 How much per rai? _____ Baht

5.3.2 From whom? _____

D. Harvesting

1. When do you collect the tea leaves?
 _____ morning _____ whole day
 _____ afternoon
 _____ evening

2. What time? From _____ to _____

3. Why? _____

4. How many mandays are used to harvest tea leaves per rai? _____

5. What type of labor do you use in harvesting tea leaves?

	Mandays	Wage/day	Expenditure
_____ family	_____	_____	_____
_____ hired	_____	_____	_____
_____ exchange	_____	_____	_____

6. Distribution of amount of tea leaves harvested

M O N T H

 J F M A M J J A S O N D

Fresh tea leaves (kg.)

E. Miang Processing

1. Do you have a miang processor(stove) in your house?
 - Yes/Go to #1.1
 - No/Go to #2
 - 1.1 How many? _____
 - 1.2 How old is it? _____ years
 - 1.3 What type of stove do you have? _____
 - 1.4 How did you acquire such stove?
 - buy/Go to #1.4.1
 - make by yourself
 - others (specify) _____
 - 1.4.1 Where did you buy it? _____
 - 1.4.2 How much? _____ Baht
 - 1.5 How often do you change your stove? _____
 - 1.5.1 How long does a stove last? _____
 - 1.6 How big is your stove? _____
 - 1.7 Where in the house is the stove located? _____
 - 1.8 Do you have your stove rent by others?
 - Yes/Go to #1.8.1
 - No
 - 1.8.1 Who rent your stove?
 - co-villagers
 - persons from other villages
 - both
 - others (specify) _____
 - 1.8.2 How much is your rent? _____ Baht
per _____
 - 1.8.3 Do some villagers pay in kind?
 - Yes/Go to #1.8.3.1
 - No
 - 1.8.3.1 What? _____ per _____
2. Where in the village do you process your miang leaves? _____

- 2.1 How do you pay for rent in processing miang?
 ___ by cash/Go to #2.1.1
 ___ by giving a share of miang leaves/Go to #2.1.2
 ___ by labor/Go to #2.1.3
 ___ others (specify) _____
- 2.1.1 How much? _____ Baht per _____
- 2.1.2 How many? _____ kam per _____
- 2.1.3 How is it done? _____
3. How do you use firewood? Describe. _____

4. Do you put out the fire after processing miang?
 ___ Yes
 ___ No/Go to #4.1
 4.1 Why not? _____
5. How many times do you boil miang per day/night?
 _____ times
 5.1 How much of miang do you have per boil? _____
 5.2 How long does it take per boil? _____ minutes
6. What is the volume of firewood used per boil?

 6.1 How long does it take per boil? _____
7. How many pieces of firewood do you use per boil?

8. What is the size of the firewood? _____
9. How often do you change the sets of firewood per boil?
 ___ once _____ thrice
 ___ twice
10. What part of the day do you process miang?
 ___ morning _____ evening
 ___ afternoon
- 10.1 What time? _____

10.2 Why? _____

F. Packing

1. How do you prepare the miang after processing. Describe.

2. When is the packing process? _____

3. Where is it done? _____

4. What type of labor is used?

	Mandays	Expenditure
____ family	_____	_____
____ hired/Go to #4.1	_____	_____
____ exchange	_____	_____

4.1 Wage rate _____ Baht per _____

5. How many packs are done by one manday of

family labor _____ exchange labor _____
 hired labor _____

G. Marketing

1. Where do you sell tea?

____ in your village
 ____ neighboring villages in Mae Taeng District (Give name/s) _____

____ at the market in (Go to # 1.2)

____ Chiangmai

____ Lampang

____ Lamphun

____ others (specify) _____

1.1 How far is it from the village? _____ km.

1.2 Do you have tea stalls in the market?

____ Yes/Why? _____
 ____ No/Why not? _____

2. How often do you sell tea in the market?

- everyday
- once a week
- twice a week
- thrice a week
- depends on the availability of miang and transportation
- others (specify) _____

2.1 Why? _____

2.2 What is the price of tea in the market? (for tea owner)
last year _____ per _____

2.3 Distribution of amount of tea sold (sale vol.)

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

3. Do merchants/middlemen come also to buy tea from you?

Yes/Go to # 3.1

No/Why not?

3.1 Who? _____

3.2 How many? _____

3.3 From where? _____

3.4 How often does he buy from you?

everyday

weekly

others (specify) _____

3.5 How much does he pay per deal? _____ Baht

3.6 How many kam or tang of miang per deal? _____
_____ Baht

4. Has there been any change in the price of miang for the past five years?

Yes/Go to # 4.1

No/Go to # 4.2

4.1 What are these changes? (Try to recall past

prices up to present.)

Year	Price	Sales Vol.
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

4.2 What is the price level? _____

H. Transporting (From village to market)

1. How do you transport miang?

- by taxi (silo)
 by cow
 pick-up truck
 others (specify)

2. Do you have your own vehicle to transport miang?

- Yes
 No/Go to # 2.1

2.1 Do you hire one?

- Yes/Go to # 2.1.1
 No

2.1.1 How much? (according to tang or per trip) _____

3. How many times a week do you send the miang to the market?

- once
 twice
 thrice
 others (specify)

I. Consumption

1. Do you like miang? (Applies to all household members)

Household Members	Yes	No	Any
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____

1.1 Why? (e.g. taste, presence of other substitutes like gums, etc.)

1. _____

- 2. _____
- 3. _____
- 4. _____
- 5. _____

2. Which type of miang is more sold in the market?

3. Why do you think so?

4. Based from your experience, what is the trend for the demand for miang nowadays?

- _____ increasing/Go to # 4.1
- _____ decreasing/Go to # 4.1
- _____ stable/no change

4.1 Why?

5. Who consumes miang the most?

- _____ adults
- _____ children

6. How is the supply of miang leaves?

- _____ increasing/Go to # 6.1
- _____ decreasing/Go to # 6.1
- _____ stable

6.1 Why?

7. What is your opinion about the prospect of miang market (by types and overall)?

J. Other Demand for Firewood

1. Do you use the same tree species in miang processing to other uses such as cooking, household construction, etc.?

- _____ Yes/Go to # 1.1
- _____ No/Why not?

1.1 What are these uses?

Uses	Species	No. of pcs. /day	Size
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

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2. Do you also sell wood? _____

____ Yes/Go to # 2.1

____ No/Why not? _____

2.1 To whom? _____

2.2 Price? _____ Baht

2.3 Total sale volume/year _____

3. Do you cut trees for others? _____

____ Yes/Go to # 3.1

____ No

3.1 For whom? _____

3.2 Price? _____ Baht

3.3 Volume of trees cut/year _____

K. Chinese Tea

1. Do you collect leaves for Chinese tea? _____

____ Yes/Go to # 1.1

____ No/Why not? _____

1.1 Where do you sell them? _____

1.2 How much do you get? _____ Baht

Volume _____

1.3 When do you collect them? _____

VI. Fast-Growing Species as Sources of Firewood

1. Have you ever heard of fast-growing trees? _____

____ Yes/Go to # 1.1

____ No

1.1 What trees do you know? _____

1.2 What do you think are their benefits? _____

1.3 Are you willing to plant fast-growing species as substitutes for other sources of firewood? _____

____ Yes/Why? _____

____ No/Go to #1.3.1

1.3.1 Why not? _____

1.4 Is there any land available for planting fast-growing species in your area?
____ Yes/Go to #1.4.1
____ No

1.4.1 How large? _____ rai

1.4.2 Distance from house/village _____

THANK YOU!!!

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