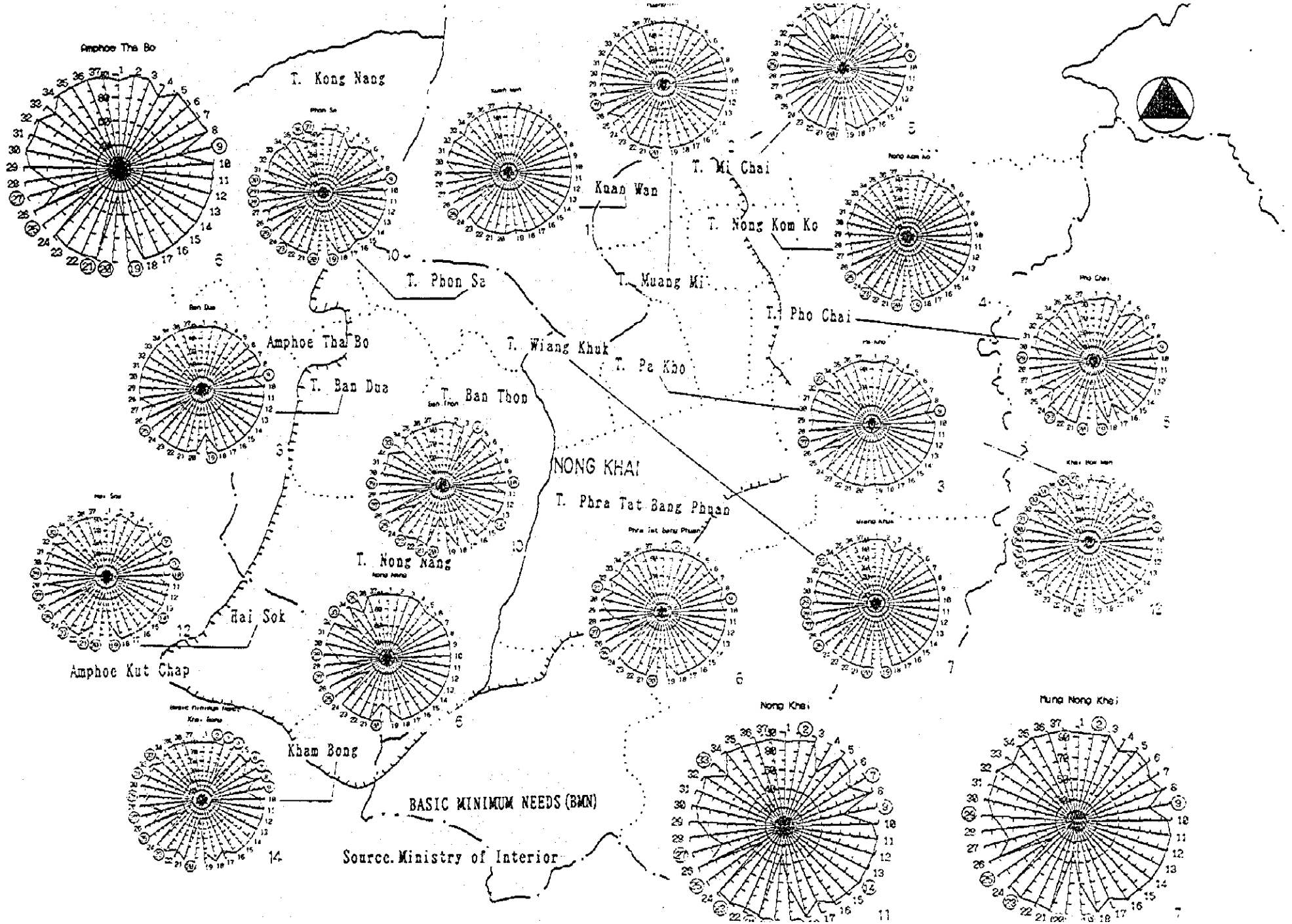
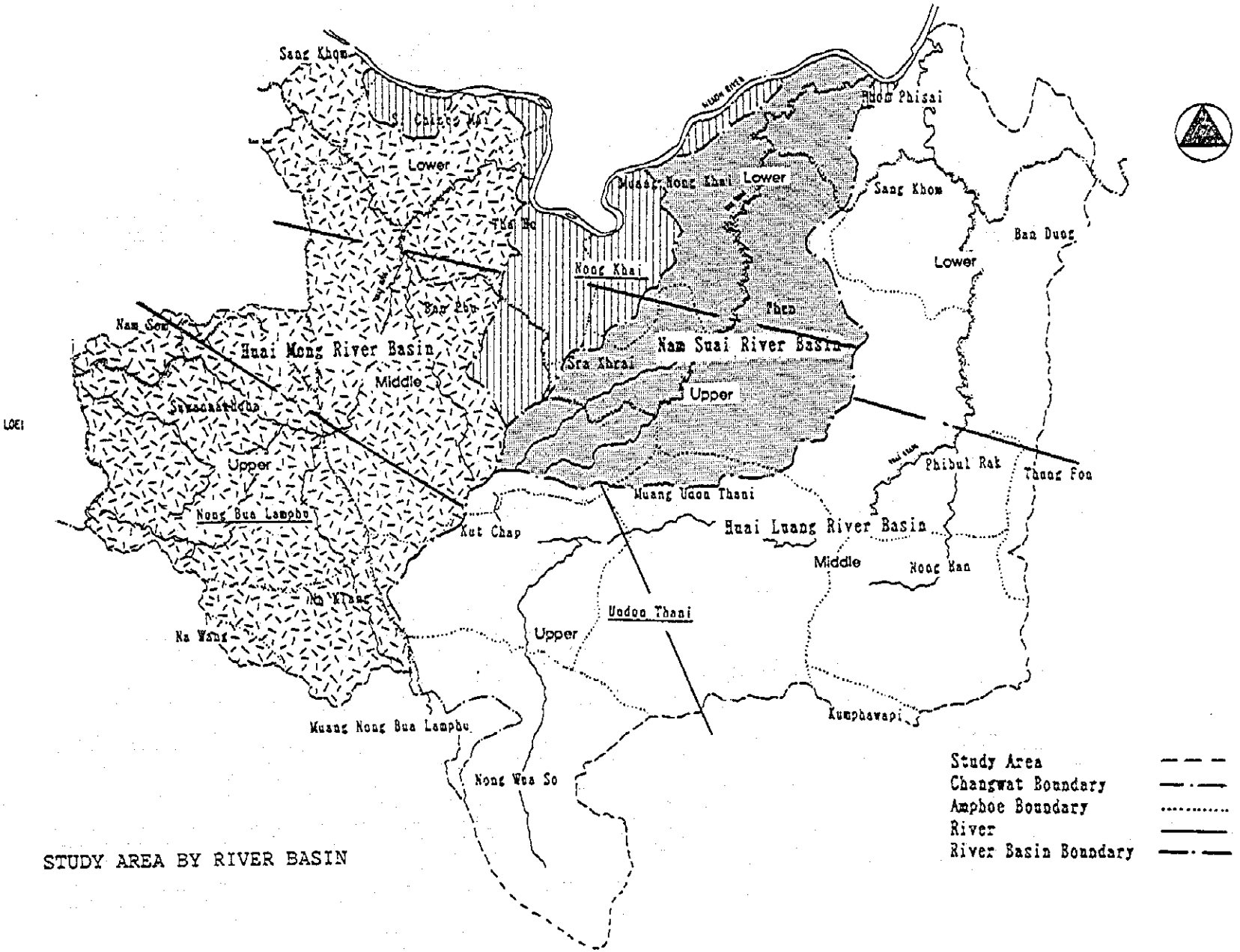

T. Kong Nang
T. Mi Chai
T. Khuan Wan
T. Nong Kom Ko
T. Muang Mi
T. Phon Sa
T. Pho Chai
T. Wiang Khuk
T. Pa Kho
Amphoe Tha Bo
T. Ban Dua
T. Ban Thon
NONG KHAI
T. Phra Tat Bang Phuan
T. Nong Nang
Hai Sok
Amphoe Kut Chap
Kham Bong
BASIC MINIMUM NEEDS (BMN)
Source. Ministry of Interior

PART-5 AGRO-ECONOMIC CHARACTERISTIC OF THE RIVER BASINS

CONTENTS

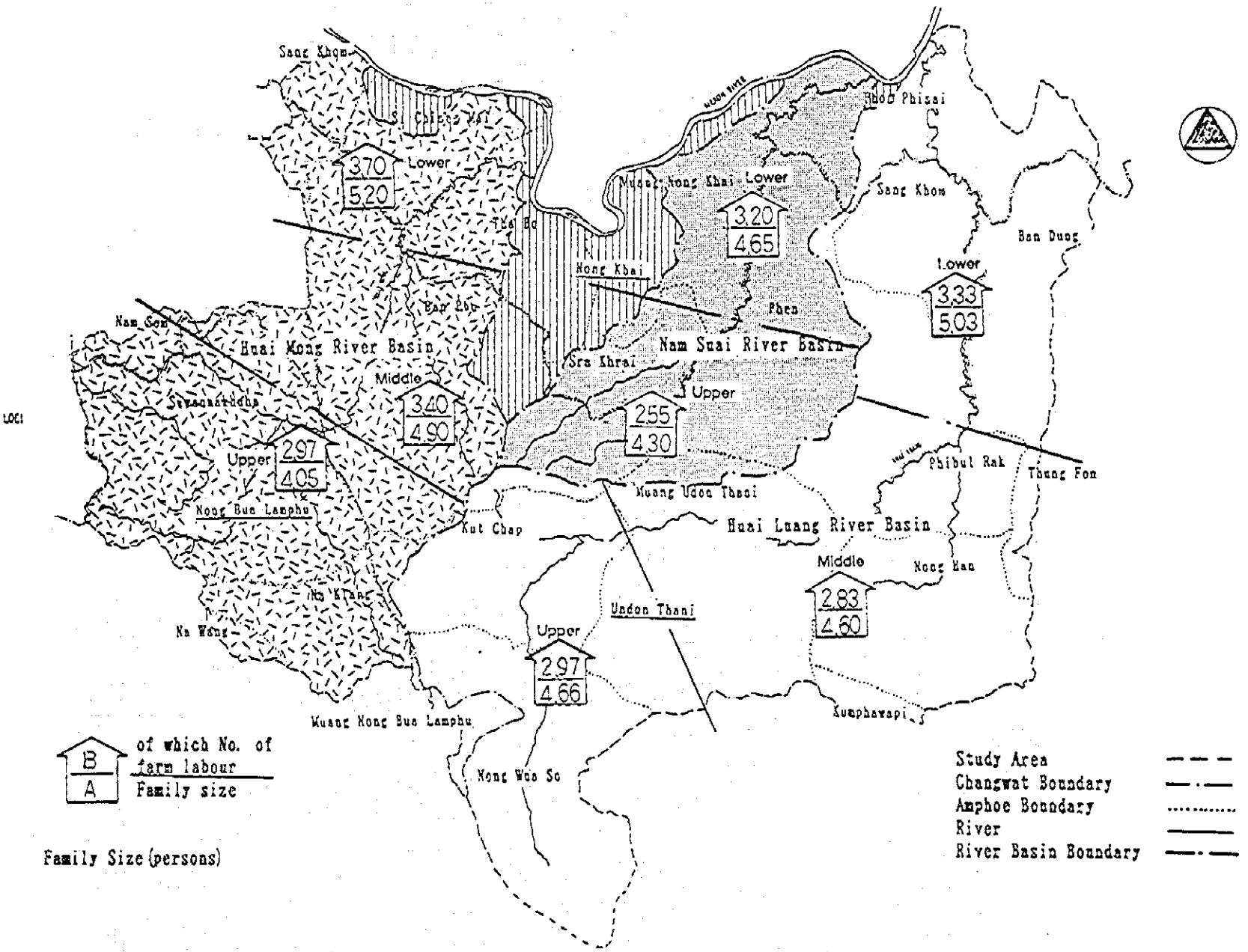


STUDY AREA BY RIVER BASIN

Characteristic of the River Basins

	Huai Luang Basin			Huai Mong Basin			Nam Suai Basin	
	Upstream	Middlestream	Downstream	Upstream	Middlestream	Downstream	Upstream	Downstream
1. Family Size (persons)	4.66	4.60	5.03	4.05	4.90	5.20	4.30	4.65
2. Farm Labour Status (persons)	2.97	2.83	3.33	2.97	3.40	3.70	2.55	3.20
3. Farm Size (ha)	4.32	4.83	3.04	4.27	4.67	4.91	3.37	2.95
4. Educational Status of Farm Family.	Primary (%) 86.9	Primary (%) 93.1	Primary (%) 87.7	Primary (%) 89.4	Primary (%) 86.7	Primary (%) 84.8	Primary (%) 90.3	Primary (%) 98.5
5. Land Use (paddy %)	81.8	79.6	69.8	65.0	79.5	68.8	87.9	90.1
6. Irrigated Area (%)	7.3	3.3	27.2	3.7	9.9	0	0	18.7
7. Fallow Land (%)	10.5	8.1	3.2	4.5	2.4	14.2	3.8	1.4
8. Estimated Cropping Intensity (%)	84.2	82.1	100.2	94.4	96.0	82.4	91.2	99.4
9. Migrant Workers (%)	28.6	40.6	20.0	30.0	20.0	20.0	30.0	50.0
10. Family Income (B/year)								
Net Farm Income	11,896	16,573	24,193	26,232	44,582	38,158	10,545	22,835
Off-Farm Income	73,286	32,634	59,397	33,230	25,320	41,622	40,955	24,333
Total	85,182	49,207	83,590	59,462	69,902	79,780	51,500	47,168
11. Condition of Basic Minimum Needs (BMN)	8-11/37	7-8/37	9-11/37	8-14/37	6-11/37	9-15/37	10-13/37	7-14/37
12. Intention to Integrated Farming (Yes %)	54.3	60.0	53.3	30.0	40.0	30.0	20.0	15.0
13. Projects to be Implemented with Priority	Irrigation	Irrigation	Irrigation	Irrigation	Irrigation	Irrigation	Irrigation	Irrigation
(1st Priority %)	60.0	57.1	53.3	60.0	75.0	60.0	75.0	75.0

Source. Farm Economic Survey, December 1995
Note. Figures of item 11 means the number of categories which are not met in comparison of the Target.

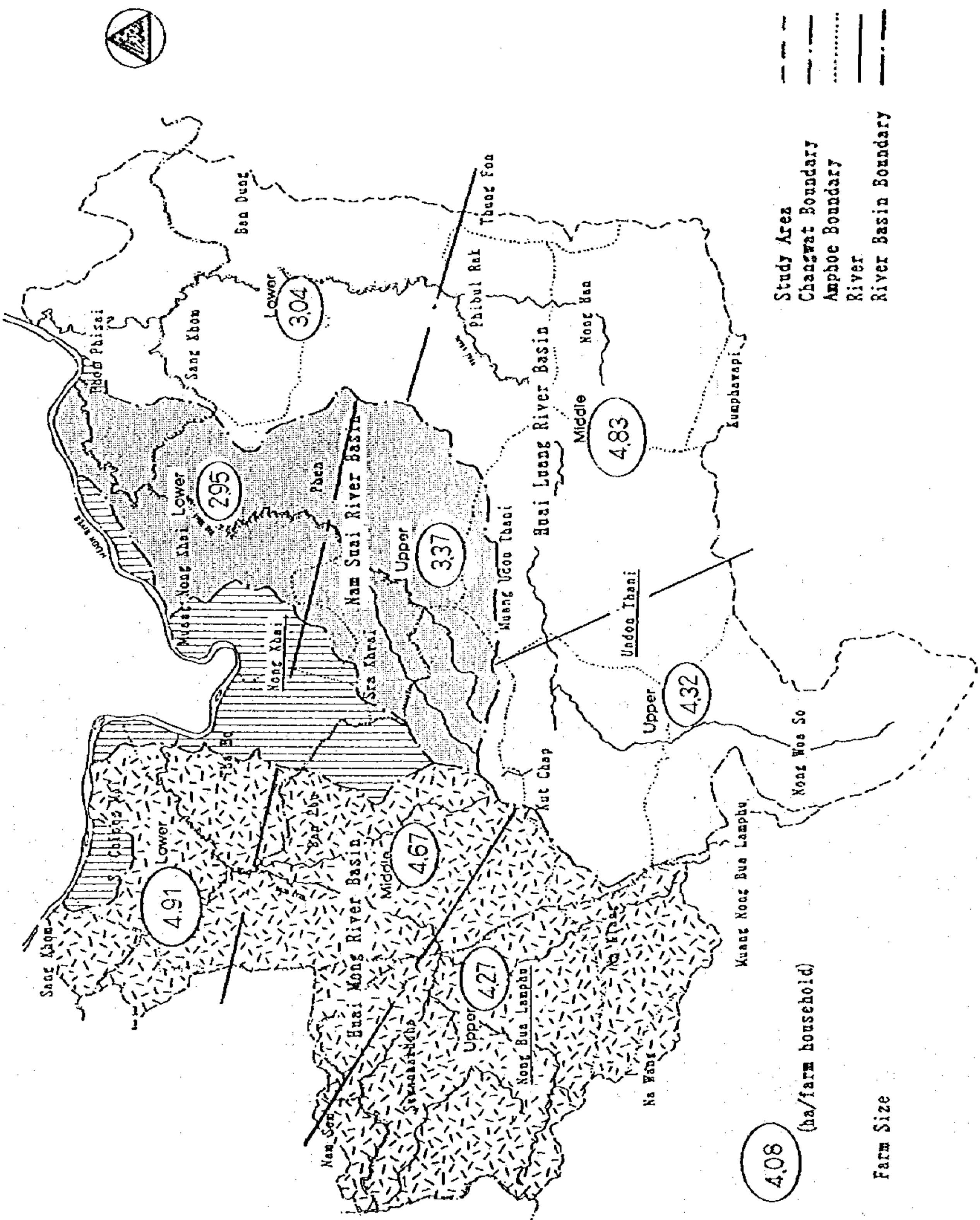

Sang Khom
Lower
370
520
Lower
3.20
4.65
Muang Nong Khai
Nong Khai
Tha Bo
Pho Phisai
Sang Khom
Ban Dung
Lower
3.33
5.03
Pha
Nam Suai River Basin
Nam Gom
Huai Mong River Basin
Sra Khrai
Middle
340
490
Upper
255
430
Upper
297
405
Nong Bua Lamphu
Kut Chap
Muang Udon Thani
Phibul Rak
Thung Fon
Huai Luang River Basin
Middle
2.83
4.60
Nong Han
Udon Thani
Upper
2.97
4.66
Na Wang
Muang Nong Bua Lamphu
Nong Wua So
Kuaphawapi
B
A
of which No. of farm labour
Family size
Family Size (persons)
Study Area
Changwat Boundary
Amphoe Boundary
River
River Basin Boundary

Labour Requirement for Crops

(Unit:Man. day)

	Huai Luang				Huai Mong				Nam Suai				Average	
	per Rai		per ha		per Rai		per ha		per Rai		per ha		per ha	
	Family	Hired	Family	Hired	Family	Hired	Family	Hired	Family	Hired	Family	Hired	Family	Hired
Rainfed														
Paddy (TP)	7.92	2.17	49.50	13.56	7.31	3.15	45.69	19.69	8.07	2.19	50.44	13.69	48.54	15.65
Paddy (BC)	5.16	0.66	32.25	4.13	5.19	1.41	32.44	8.81	4.72	2.69	29.50	16.81	31.40	9.92
Upland Paddy-wet	7.45	0.00	46.56	0.00	-	-	-	-	9.02	0	56.38	0.00	51.47	0.00
Maize	-	-	-	-	1.75	1.50	10.94	9.38	-	-	-	-	10.94	9.38
Cassava	7.41	2.82	46.31	17.63	7.64	3.56	47.75	22.25	-	-	-	-	47.03	19.94
Sweet corn	7.25	0.00	45.31	0.00	-	-	-	-	-	-	-	-	45.31	0.00
Sugarcane	-	-	-	-	1.82	11.72	11.38	73.25	-	-	-	-	11.38	73.25
Groundnut-dry	17.50	0.00	109.38	0.00	18.00	5.00	112.50	31.25	-	-	-	-	110.94	15.63
Mango	6.60	0.00	41.25	-0.00	-	-	-	-	-	-	-	-	41.25	0.00
Irrigated														
Paddy (TP)	9.31	2.98	58.19	18.63	8.07	3.57	50.44	22.31	6.69	3.02	41.81	18.88	50.15	19.94
Paddy (BC)	9.79	0.86	61.19	5.38	-	-	-	-	-	-	-	-	61.19	5.38
Soybean	-		-	-	10.75	0.00	67.19	0.00	-	-	-	-	67.19	0.00
Sweet corn	8.67	0.33	54.19	2.06	-	-	-	-	-	-	-	-	54.19	2.06
Groundnut-dry	20.50	0.00	128.13	0.00	-	-	-	-	-	-	-	-	128.13	0.00
Yambean	51.00	0.00	318.75	0.00	-	-	-	-	-	-	-	-	318.75	0.00
Cucumber	35.50	0.00	221.88	0.00	-	-	-	-	-	-	-	-	221.88	0.00
Stringbean	41.83	0.00	261.44	0.00	-	-	-	-	30.25	0	189.06	0.00	225.25	0.00
Tomato	52.00	0.00	325.00	0.00	30.30	1.20	189.38	7.50	17.37	0	108.56	0.00	207.55	2.50
Tomato (second)	-		-	-	32.54	4.38	203.38	27.38	-	-	-	-	203.38	27.38
Pumpkin	-		-	-	-	-	-	-	21.76	0	136.00	0.00	136.00	0.00
Maligold	207.50	0.00	1,296.88	0.00	-	-	-	-	-	-	-	-	1,296.88	0.00
Chrysanthemum	50.29	0.00	314.31	0.00	-	-	-	-	-	-	-	-	314.31	0.00

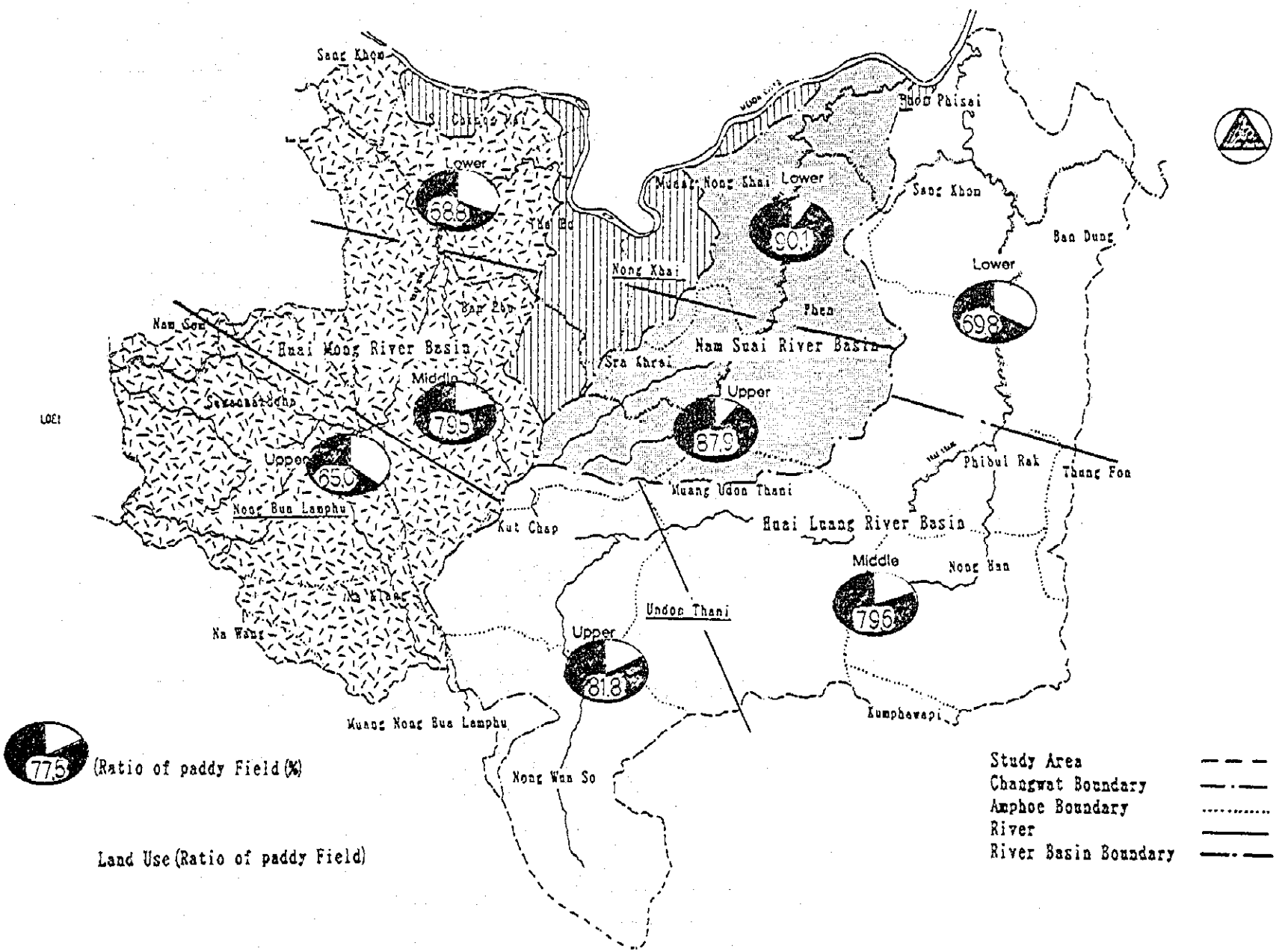
Source. Farm Economic Survey Nov. 1995

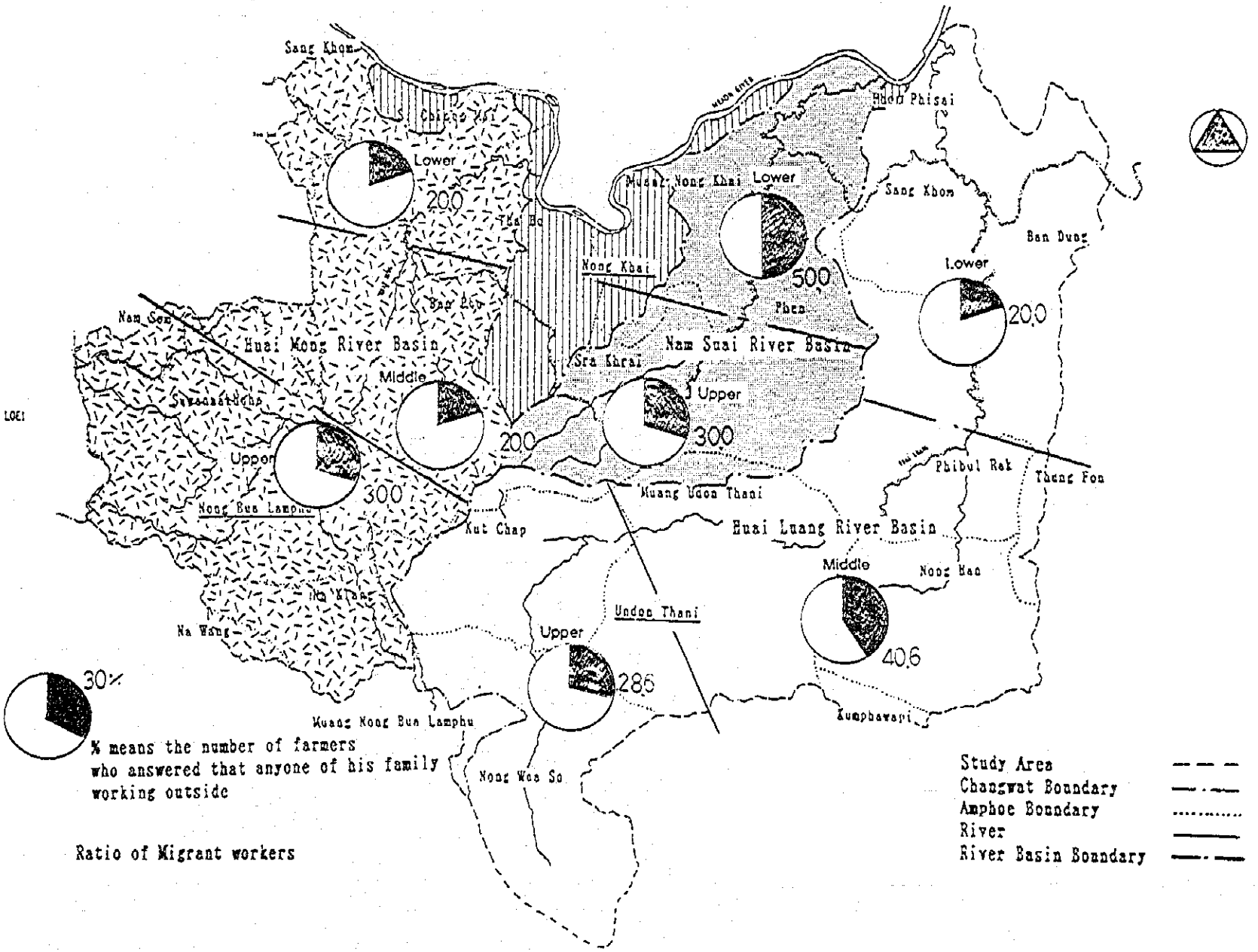


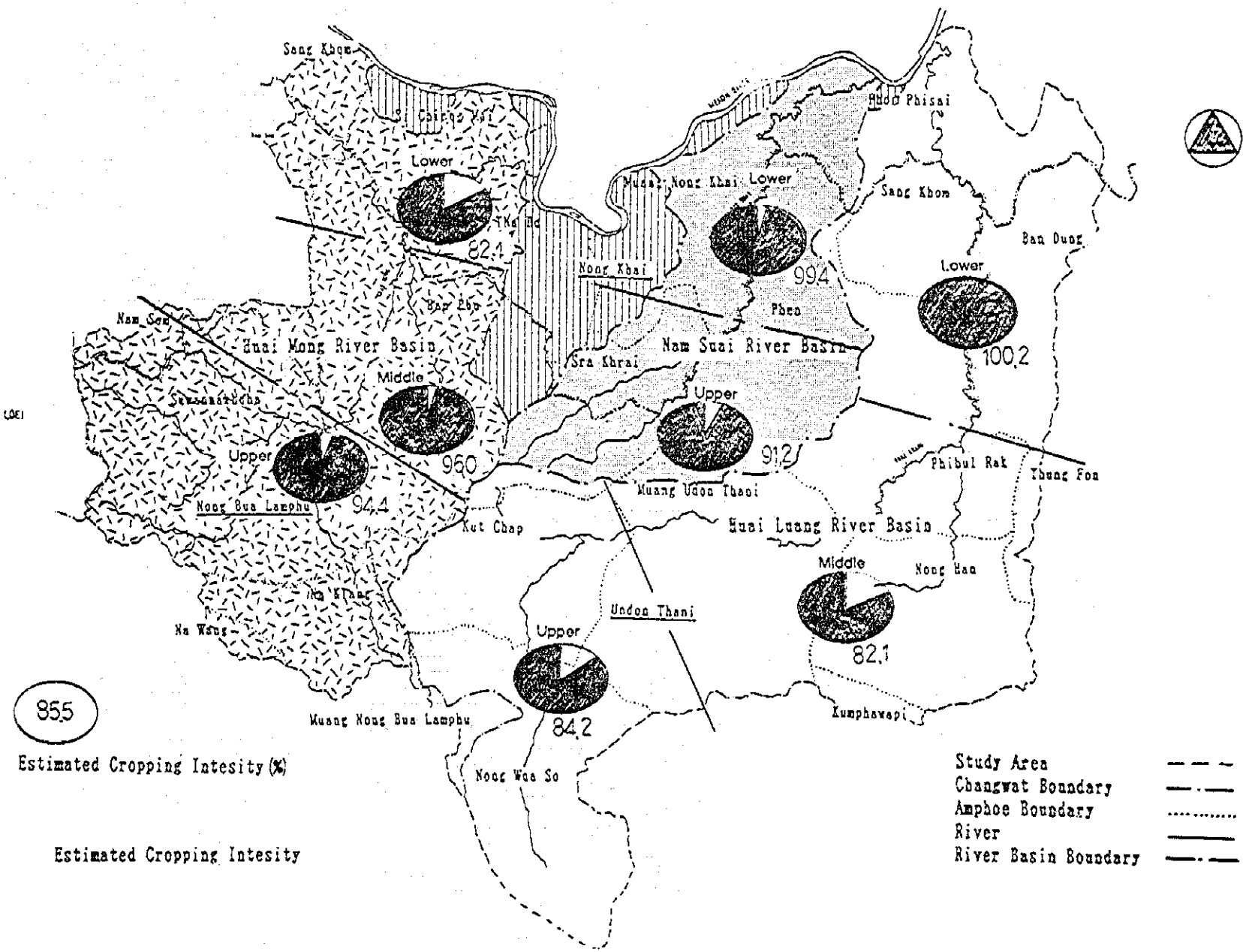
Study Area
Changwat Boundary
Amphoe Boundary
River
River Basin Boundary
4.08
(ha/farm household)
Farm Size
Nam Suai River Basin
Huai Luang River Basin
Huai Mong River Basin
Lower
3.04
Lower
2.95
Upper
3.37
Middle
4.83
Upper
4.32
Lower
4.91
Middle
4.67
Upper
4.27
Ban Dung
Thung Fon
Phibul Rak
Nong Han
Kumphawapi
Sang Khom
Muang Udon Thani
Udon Thani
Nong Wua So
Kut Chap
Muang Nong Bua Lamphu
Nong Bua Lamphu
Na Wang
Muang Nong Khai
Nong Khai
Sra Khrai
Phen
Nam Som
LOEI

Study Area
Changwat Boundary
Amphoe Boundary
River
River Basin Boundary
Educational Status of Farm Families
(graduated from primary School %)
894
Educational Status of Farm Families
Lower
877
Middle
931
Upper
869
Lower
985
Middle
867
Upper
903
Lower
847
Upper
894
Nam Suai River Basin
Huai Luang River Basin
Ban Dung
Sakon Nakhon
Nong Khai
Udon Thani
Loei
Phetchabun
Khon Kaen
Roi Et
Maha Sarakham
Kalasin
Nakhon Phanom
Mukdahan
Sakon Nakhon
Nong Khai
Udon Thani
Loei
Phetchabun
Khon Kaen
Roi Et
Maha Sarakham
Kalasin
Nakhon Phanom
Mukdahan

Study Area
Changwat Boundary
Amphoe Boundary
River
River Basin Boundary
Ratio of Irrigated Area (%)
Ratio of Irrigated Area
Lower
27.2
Middle
33
Upper
7.3
Lower
18.7
Middle
9.9
Upper
37
Upper
0
Lower
0
Nam Suai River Basin
Huai Luang River Basin
Huai Kong River Basin
Ban Dung
Thasi Pha
Sang Khom
Phibul Rat
Nong Hao
Lumphaphi
Nong Khai
Udon Thani
Nong Bua Lamphu
Nong Wua So
Muang Nong Bua Lamphu
Sang Khom


Saeng Khon
Lower
68.6
Mukdahan
Nong Khai
Lower
90.1
Phon Phisai
Saeng Khon
Ban Dung
Lower
59.8
Nong Khai
Phen
Nam Suai River Basin
Nam Song
Huai Mong River Basin
Sra Khrai
Middle
79.5
Upper
87.9
Upper
65.0
Phibul Rak
Thung Fon
Muang Udon Thani
Nong Bua Lamphu
Kut Chap
Huai Luang River Basin
Middle
79.5
Nong Han
Udon Thani
Upper
81.8
Na Wang
Kumphawapi
Muang Nong Bua Lamphu
Nong Wua So
77.5
(Ratio of paddy Field (%)
Land Use (Ratio of paddy Field)
Study Area
Changwat Boundary
Amphoe Boundary
River
River Basin Boundary


Sang Khom
Lower
20.0
Muang Nong Khai
Lower
500
Nong Khai
Phon
Nam Suai River Basin
Sra Khrai
Upper
300
Middle
20.0
Huai Mong River Basin
Upper
300
Nong Bua Lamphu
Muang Udon Thani
Kut Chap
Huai Luang River Basin
Middle
40.6
Udon Thani
Upper
28.6
Muang Nong Bua Lamphu
Nong Wua So
Kumphawapi
Sang Khom
Ban Dung
Lower
20.0
Phibul Rak
Thung Fon
30%
% means the number of farmers
who answered that anyone of his family
working outside
Ratio of Migrant workers
Study Area
Changwat Boundary
Amphoe Boundary
River
River Basin Boundary


Sang Khom
Lower
82.4
Nong Khai
Muang Nong Khai
Lower
99.4
Sang Khom
Ban Dung
Lower
100.2
Nam Suai River Basin
Middle
96.0
Upper
91.2
Upper
94.4
Nong Bua Lamphu
Muang Udon Thani
Phibul Rak
Thung Fon
Huai Luang River Basin
Middle
82.1
Nong Han
Udon Thani
Upper
84.2
Muang Nong Bua Lamphu
Kumphawapi
Nong Wae So
855
Estimated Cropping Intesity (%)
Estimated Cropping Intesity
Study Area
Changwat Boundary
Amphoe Boundary
River
River Basin Boundary

Estimated Cropping Intensity

		rai		rai		%
Huai Luang	Upper	780	÷	926.15	=	84.2
	Middle	847.0	÷	1032.2	=	82.06
	Lower	541.5	÷	540.6	=	100.17
	Total	2168.5	÷	2498.95	=	86.78
Huai Mong	Upper	490.5	÷	519.4	=	94.44
	Middle	545.5	÷	568.4	=	95.95
	Lower	491.75	÷	596.6	=	82.43
	Total	1527.75	÷	1684.4	=	90.70
Nam Suai	Upper	371.0	÷	407.0	=	91.15
	Lower	348.0	÷	350.0	=	99.43
	Total	719.0	÷	757.0	=	94.98
Grand Total		4415.25	÷	4940.35	=	89.37%

Crops Planted by River Basin — Huai Luang

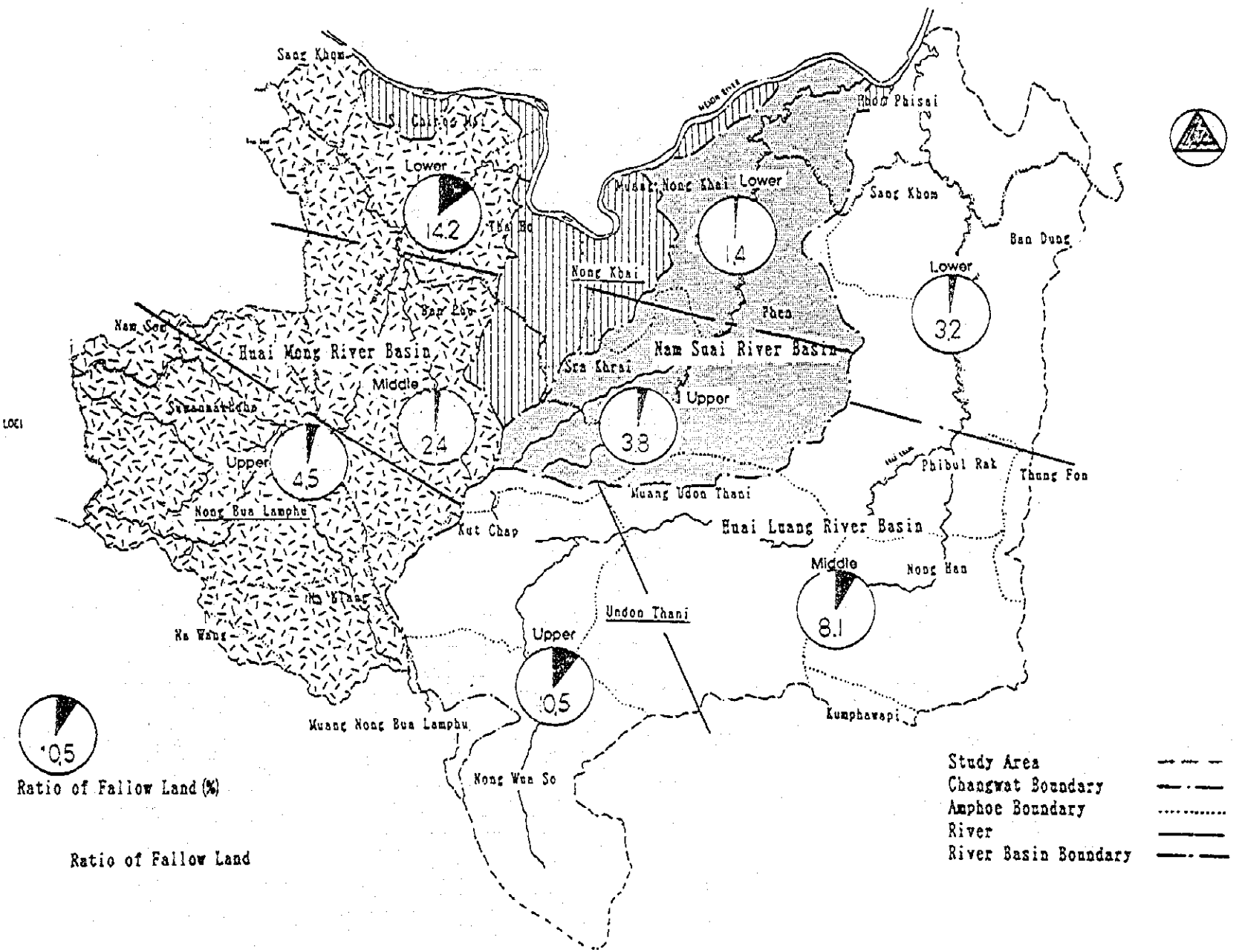
Crops		Upper Area (rai)	Upper Farms Reported	Middle Area (rai)	Middle Farms Reported	Lower Area (rai)	Lower Farms Reported
Huai Luang							
Non-glutinous rice (TP)							
	wet season	141.50	16	213.00	16	22.00	3
	dry season	10.00	1	0.00	0	0.00	0
Glutinous rice (TP)							
	wet season	556.50	33	583.00	35	302.50	27
	dry season	19.00	2	0.00	0	0.00	0
Non-glutinous rice (BC)							
	wet season	22.00	1	24.00	2	24.00	2
	dry season	0.00	0	0.00	0	0.00	0
Glutinous rice (BC)							
	wet season	10.00	1	15.00	1	49.00	2
	dry season	0.00	0	0.00	0	0.00	0
Upland/Glutinous							
	wet season	14.00	1	6.00	1	0.00	0
	dry season	0.00	0	0.00	0	0.00	0
Maize	wet season	0.00	0	0.00	0	0.00	0
	dry season	0.00	0	0.00	0	0.00	0
Sweet Corn	wet season	3.00	1	6.00	1	0.00	0
	dry season	0.00	0	0.00	0	3.00	1
Cassava	wet season	0.00	0	0.00	0	107.00	9
	dry season	0.00	0	0.00	0	0.00	0
Groundnut	wet season	0.00	0	0.00	0	0.00	0
	dry season	0.00	0	0.00	0	1.50	2
Soybeans	wet season	0.00	0	0.00	0	0.00	0
	dry season	0.00	0	0.00	0	0.00	0
Sugarcane	wet season	0.00	0	0.00	0	0.00	0
	dry season	0.00	0	0.00	0	0.00	0
Tomatoes	wet season	0.00	0	0.00	0	0.00	0
	dry season	0.00	0	0.00	0	2.00	1
Cucumber	wet season	0.00	0	0.00	0	0.00	0
	dry season	2.00	1	0.00	0	0.00	0
Stringbeans	wet season	0.00	0	0.00	0	1.50	1
	dry season	0.00	0	0.00	0	0.00	0
Yambeans	wet season	0.00	0	0.00	0	0.00	0
	dry season	0.00	0	0.00	0	2.00	1
Pumpkin	wet season	0.00	0	0.00	0	0.00	0
	dry season	0.00	0	0.00	0	0.00	0
Crysanthemum	wet season (3 times)	0.00	0	0.00	0	14.00	7
	dry season (3 times)	0.00	0	0.00	0	8.00	5
Jasmine	wet season	0.00	0	0.00	0	2.00	1
	dry season	0.00	0	0.00	0	0.00	0
Mango		2.00	1	0.00	0	3.00	1

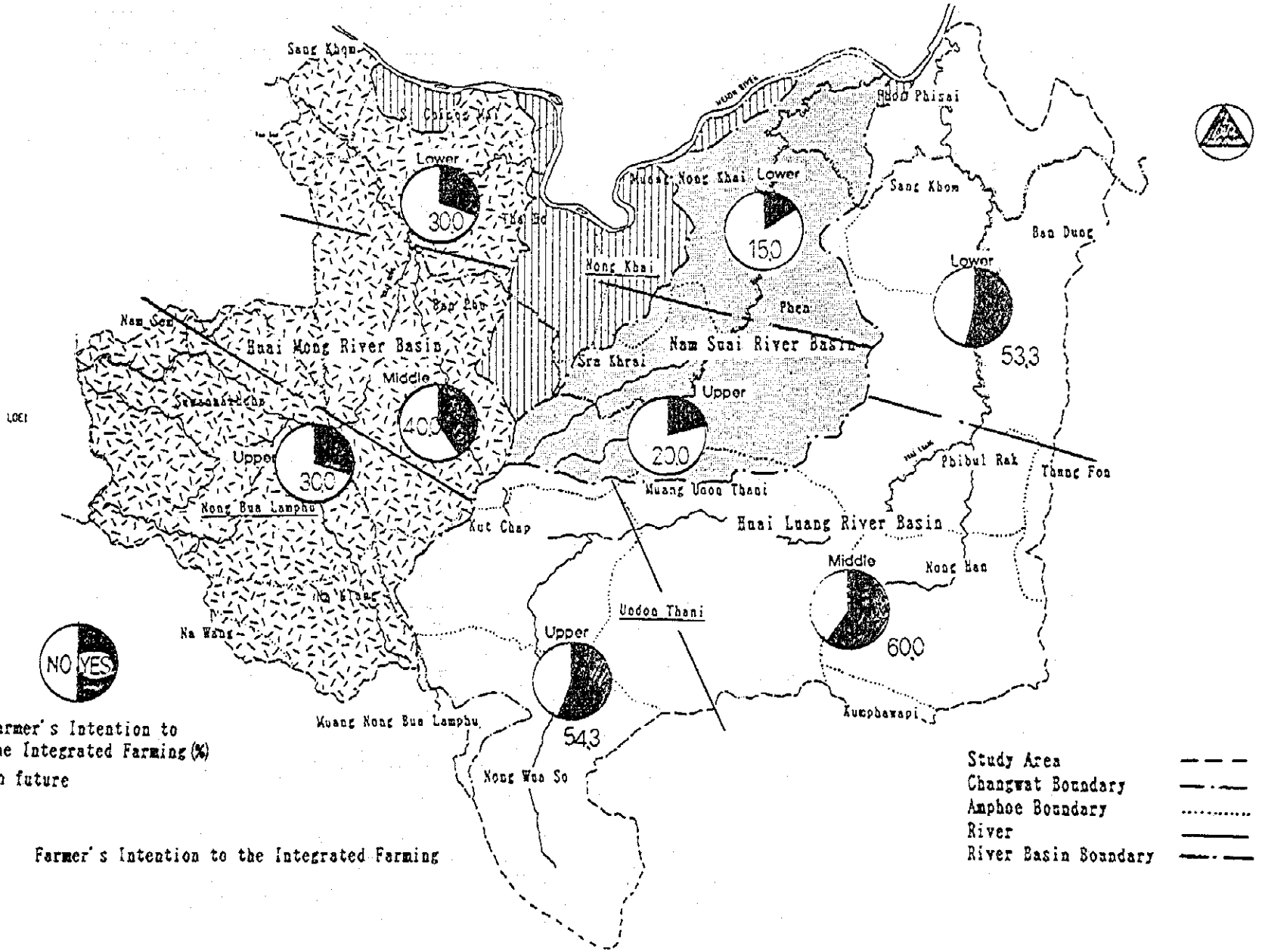
Crops Planted by River Basin Huai Mong

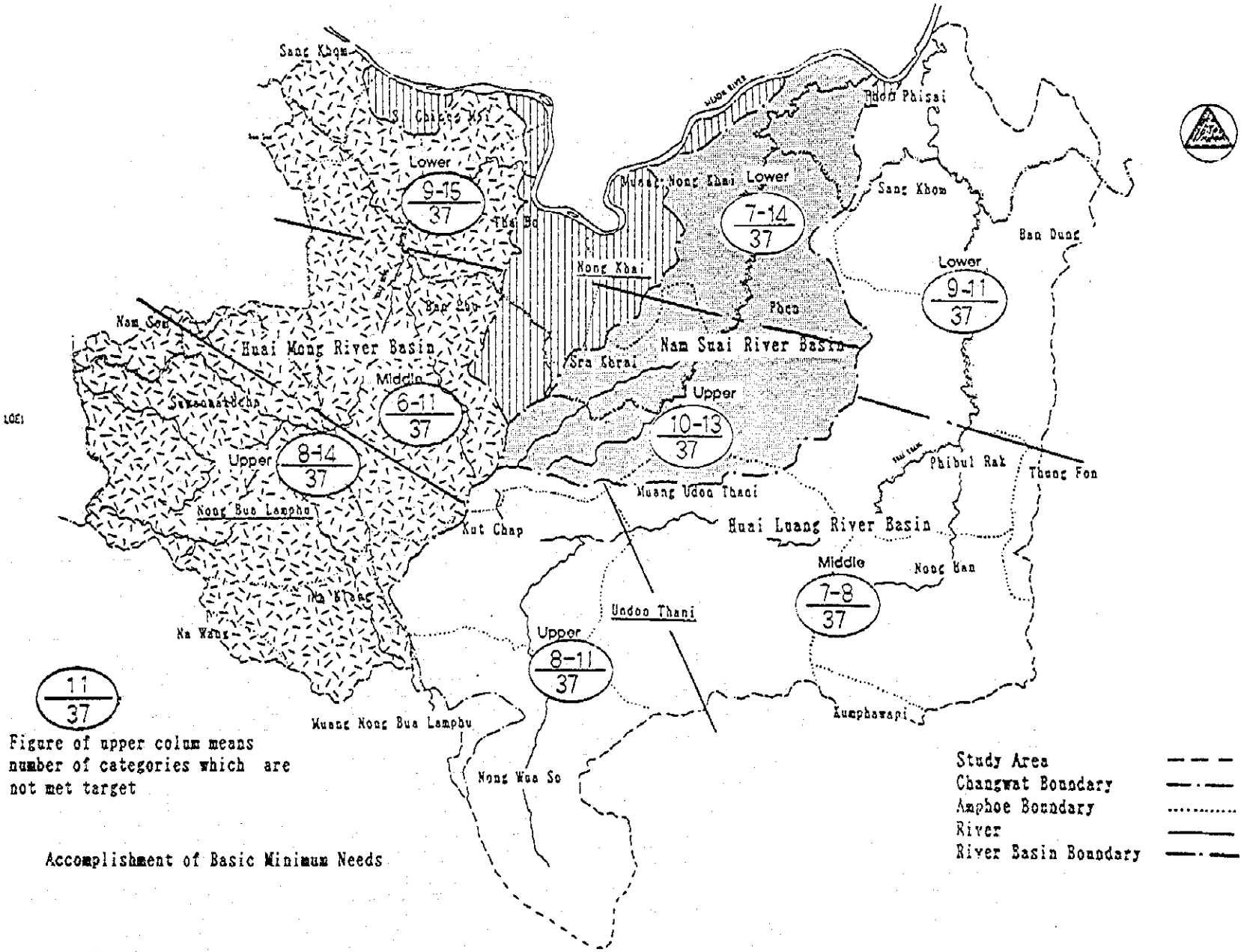
Crops	Upper		Middle		Lower	
	Area (rai)	Farms Reported	Area (rai)	Farms Reported	Area (rai)	Farms Reported
Huai Mong						
Non-glutinous rice (TP)						
wet season	77.00	10	68.00	4	36.50	2
dry season	0.00	0	396.00	20	0.00	0
Glutinous rice (TP)						
wet season	243.00	15	0.00	0	313.75	16
dry season	0.00	0	0.00	0	0.00	0
Non-glutinous rice (BC)						
wet season	0.00	0	0.00	0	0.00	0
dry season	0.00	0	0.00	0	0.00	0
Glutinous rice (BC)						
wet season	27.00	2	0.00	0	72.50	5
dry season	0.00	0	0.00	0	0.00	0
Upland/Glutinous						
wet season	0.00	0	0.00	0	0.00	0
dry season	0.00	0	0.00	0	0.00	0
Maize wet season	0.00	0	0.00	0	20.00	1
dry season	0.00	0	0.00	0	0.00	0
Sweet Corn wet season	0.00	0	0.00	0	0.00	0
dry season	0.00	0	0.00	0	0.00	0
Cassava wet season	129.00	6	0.00	0	49.00	3
dry season	0.00	0	0.00	0	0.00	0
Groundnut wet season	0	0	0.00	0	0.00	0
dry season	2.00	1	0.00	0	0.00	0
Soybeans wet season	0.00	0	0.00	0	0.00	0
dry season	0.00	0	6.00	1	0.00	0
Sugarcane wet season	0.00	0	71.00	4	0.00	0
dry season	0.00	0	0.00	0	0.00	0
Tomatoes wet season	2.50	1	0.00	0	0.00	0
dry season	10.00	4	4.00	1	0.00	0
Cucumber wet season	0.00	0	0.00	0	0.00	0
dry season	0.00	0	0.00	0	0.00	0
Stringbeans wet season	0.00	0	0.00	0	0.00	0
dry season	0.00	0	0.00	0	0.00	0
Yambeans wet season	0.00	0	0.00	0	0.00	0
dry season	0.00	0	0.00	0	0.00	0
Pumpkin wet season	0.00	0	0.00	0	0.00	0
dry season	0.00	0	0.00	0	0.00	0
Chrysanthemum wet season (3 t	0.00	0	0.00	0	0.00	0
dry season (3 t	0.00	0	0.00	0	0.00	0
Jasmine wet season	0.00	0	0.00	0	0.00	0
dry season	0.00	0	0.00	0	0.00	0
Mango	0.00	0	0.00	0	0.00	0

Crops Planted by River Basin Nam Suai

Crops		Upper Area (rai)	Upper Farms Reported	Lower Area (rai)	Lower Farms Reported
Nam Suai					
Non-glutinous rice (TP)					
	wet season	84.50	9	24.00	4
	dry season	0.00	0	0.00	0
Glutinous rice (TP)					
	wet season	250.50	18	300.00	20
	dry season	0.00	0	0.00	0
Non-glutinous rice (BC)					
	wet season	8.00	1	0.00	0
	dry season	0.00	0	0.00	0
Glutinous rice (BC)					
	wet season	28.00	2	0.00	0
	dry season	0.00	0	0.00	0
Upland/Glutinous					
	wet season	0.00	0	8.00	1
	dry season	0.00	0	0.00	0
Maize	wet season	0.00	0	0.00	0
	dry season	0.00	0	0.00	0
Sweet Corn	wet season	0.00	0	0.00	0
	dry season	0.00	0	0.00	0
Cassava	wet season	0.00	0	0.00	0
	dry season	0.00	0	0.00	0
Groundnut	wet season	0.00	0	0.00	0
	dry season	0.00	0	0.00	0
Soybeans	wet season	0.00	0	0.00	0
	dry season	0.00	0	0.00	0
Sugarcane	wet season	0.00	0	0.00	0
	dry season	0.00	0	0.00	0
Tomatoes	wet season	0.00	0	0.00	0
	dry season	0.00	0	12.00	3
Cucumber	wet season	0.00	0	0.00	0
	dry season	0.00	0	0.00	0
Stringbeans	dry season 1	0.00	0	1.00	1
	dry season 2	0.00	0	1.00	1
Yambeans	wet season	0.00	0	0.00	0
	dry season	0.00	0	0.00	0
Pumpkin	wet season	0.00	0	0.00	0
	dry season	0.00	0	2.00	1
Crysanthemum	wet season (3 times)	0.00	0	0.00	0
	dry season (3 times)	0.00	0	0.00	0
Jasmine	wet season	0.00	0	0.00	0
	dry season	0.00	0	0.00	0
Mango		0.00	0	0.00	0


Sang Khom
Lower
14.2
Nong Khai Lower
1.4
Sang Khom
Ban Dung
Lower
3.2
Nong Khai
Nam Suai River Basin
Middle
2.4
Upper
3.8
Upper
4.5
Phibul Rak
Thung Fon
Muang Udon Thani
Nong Bua Lamphu
Kut Chap
Huai Luang River Basin
Middle
Nong Han
8.1
Undon Thani
Upper
0.5
Kumphawapi
Muang Nong Bua Lamphu
Nong Wua So
0.5
Ratio of Fallow Land (%)
Ratio of Fallow Land
Study Area
Changwat Boundary
Amphoe Boundary
River
River Basin Boundary


Sang Khom
Lower
300
Nong Khai
Lower
150
Sang Khom
Ban Dung
Lower
53.3
Nong Khai
Phon
Nam Suai River Basin
Huai Mong River Basin
Middle
400
Upper
200
Upper
300
Nong Bua Lamphu
Muang Udon Thani
Phibul Rak
Thong Fon
Huai Luang River Basin
Middle
Nong Han
60.0
Udon Thani
Upper
54.3
Muang Nong Bua Lamphu
Nong Wua So
Kumphawapi
NO
YES
Farmer's Intention to
the Integrated Farming (%)
in future
Farmer's Intention to the Integrated Farming
Study Area
Changwat Boundary
Amphoe Boundary
River
River Basin Boundary



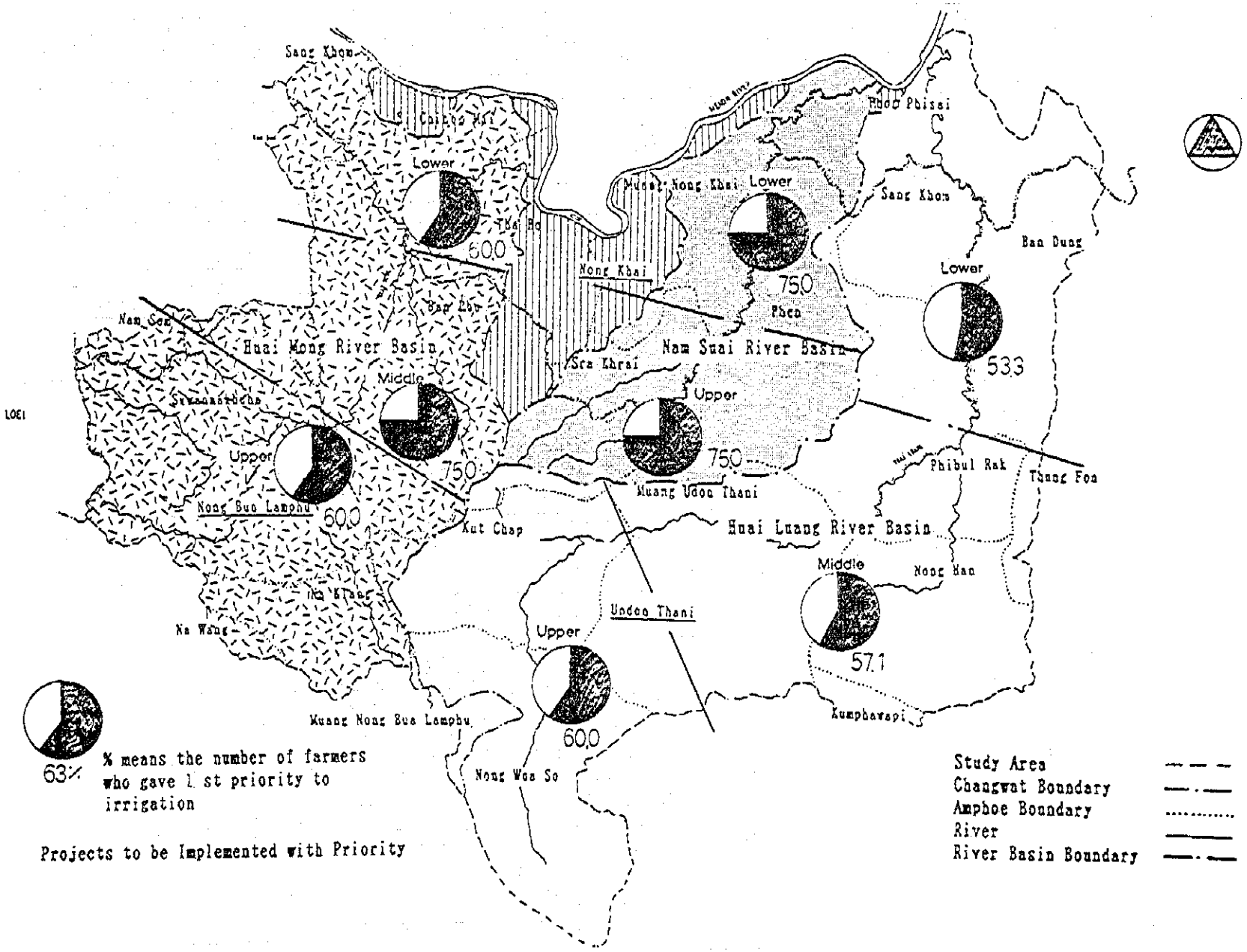
Accomplishment of Basic Minimum Needs

Rural Quality of Life

	Target of BMN for 1996-2000 (%)
Group 1: Consume Sufficient Nutrient and Safe Food	
1. Infant birth weight is more than 3,000 grams	70
2. Infants and children from birth to 5 years,	Not over level 3
2.1 Malnutrition level 1	
2.2 Malnutrition level 2	
2.3 Malnutrition level 3	
3. Children from to 14 years recieve all necesary nutrients	93
4. People in the family do not eat raw food or uncooked food	60
5. People in the family eat food which has level from Public Health Office	75
Group 2: Lives in Appropriate Shelter	
6. Houses are made of materials no less than 5 years durability	90
7. Houses are kept clean	90
8. Family uses sanitary latrine	95
9. People in the family have safe drinking water	95
10. Surrounded with good environment	80
Group 3: People have access to basic health services	
11. Pregnant women are vaccinated for tetanus before giving birth	75
12. Recieve birthing services and check up after giving birth	80
13. Children under 1 year recieve vaccination	95
14. Primary school children recieve vaccination	99
15. Family have knowlege of AIDS	80
16. Family know how to protect against AIDS	80
17. Children between 3 to 6 years recieve adequate care	60
18. Children and youth recieve compulsory education	99
19. Children finish complete compulsory education and attend secondary school	73
20. Children who do not attend secondary school recieve occupation training	80
21. People between 14 to 50 years are literate	99
22. People have adequate information	85
Group 4: People have Security of Life	
23. People are safe from harm and theft	100
24. People are safe from accident	60
Group 5: Income	
25. People have income no less than 15,000 Bahts per year	70
Group 6: Families are able to plan the spacing and number of children	
26. Couples have family planning	77

	Target of BMN for 1996-2000 (%)
27. Couples have no more than 2 children and are able to choose birth control	75
Group 7: Participate in the Development of Their Own Community and Way of Life	
28. People are memeber of development groups	60
29. People use their right to vote	90
30. People participate in keeping public property	80
Group 8: People Uphold Spiritual Values	
31. People participate in religious activities	90
32. Absence of addiction to alcohol	90
33. Absence of addiction cigarette	90
34. There is moderation in organozing ceremonies	90
35. Old people have recieve take care	90
Group 9: Conserve Environment	
36. People conserve and develop natural resources	90
37. People protect and control environment	90
Number of items being not met target	

Source. Department of Rural Community Development, Ministry of Interior
Note. Square means less than targeted figures


Sang Khom
Chiang Khan
Lower
60.0
Tha Bo
Nong Khai
Bung Kan
Nam Som
Huai Mong River Basin
Middle
Sangkhaburi
Upper
60.0
Nong Bua Lamphu
Na Wang
Muang Nong Bua Lamphu
63%
% means the number of farmers who gave 1 st priority to irrigation
Projects to be Implemented with Priority
Loei
Nong Khai
Lower
75.0
Phon
Sra Khrai
Nam Suai River Basin
Upper
75.0
Muang Udon Thani
Kut Chap
Udon Thani
Upper
60.0
Nong Wua So
Rhon Phisai
Sang Khom
Ban Dung
Lower
53.3
Phibul Rak
Thung Fon
Huai Luang River Basin
Middle
57.1
Nong Han
Kumphawapi
Study Area
Changwat Boundary
Amphoe Boundary
River
River Basin Boundary

PART-6 ECONOMIC EVALUATION OF SELECTED 17 PROJECTS

In order to evaluate the proposed sites for water resource development, economic evaluation was preliminarily conducted under the conditions as shown below:

1)Cropping pattern:

without project:

wet season - paddy

dry season - no crop

with project

wet season - paddy

dry season(case-1) - selected crops (soybean, mungbean, tomato)

dry season(case-2) - tomato

2)Crop yields:based on the farm economic survey

3)Cropping intensity:based on the water balance study

4)Project life:50 years

5)Attainment of the full benefit:5 years

As to cropping pattern, dry season crops in the case-1 study were selected based on the result of the farm economic survey and tomato in the case-2 study was preliminarily selected because of its profitability.

Economic internal rate of return(EIRR) and B/C ratio were calculated for the case-1 and case-2. Following table shows the result of the preliminary economic evaluation of the 17 projects:

Result of the Economic Evaluation for the Selected 17 Projects

Site	EIRR (%)		B/C Ratio					
	Case-1	Case-2	Case-1			Case-2		
	Wet paddy + selected crops	Wet paddy + Tomato	Discount rate			Discount rate		
			12%	10%	8%	12%	10%	8%
Huai Mong								
1. H. Kholo	-4.4	0.2	0.07	0.08	0.10	0.22	0.26	0.31
2. H. Mong	4.8	19.6	0.50	0.58	0.69	1.47	-	-
3. H. Yap	-4.7	-0.2	0.06	0.07	0.09	0.19	0.22	0.27
4. H. Khanan	0.2	0.2	0.21	0.24	0.30	0.21	0.24	0.30
5. H. Han	-2.4	1.8	0.12	0.14	0.17	0.29	0.34	0.41
6. H. Ngao	-0.4	5.8	0.17	0.2	0.25	0.52	0.61	0.75
7. H. Ma	0.1	4.2	0.23	0.26	0.32	0.45	0.52	0.63
Nam Suai								
1. H. Thong	6.5	6.5	0.60	0.70	0.85	0.60	0.70	0.85
Huai Luang								
1. H. Hin Lat	-0.4	3.4	0.18	0.22	0.26	0.38	0.44	0.54
2. H. Sai-1	-4.6	-1.7	0.06	0.08	0.09	0.13	0.15	0.19
3. H. Takrai	-6.4	-3.5	0.04	0.05	0.06	0.09	0.10	0.12
4. H. Pla Dap	-4.3	-1.2	0.08	0.09	0.11	0.16	0.19	0.22
5. H. Limi	-3.9	-0.9	0.08	0.10	0.12	0.17	0.20	0.24
6. H. Mek	-0.6	3.0	0.17	0.21	0.25	0.35	0.41	0.50
7. H. Chiang	-3.0	0.2	0.11	0.13	0.15	0.21	0.25	0.30
8. H. Dan	-2.9	4.6	0.10	0.12	0.14	0.45	0.54	0.65
Mekong River Basin								
1. H. Khuk	10.5	10.5	0.87	1.03	1.25	0.87	1.03	1.25

Preliminary Economic Evaluation for the Selected 17 Projects

Case-1 (wet season paddy+selected crops)

Site	Irrigable Area (ha)	Cropping Intensity (%) without	Cropping Intensity (%) with	Crops without Wet	Crops without Dry	Crops with Wet	Crops with Dry	Yield (ton/ha) without Wet	Yield (ton/ha) without Dry	Yield (ton/ha) with Wet	Yield (ton/ha) with Dry
Nuai Mong											
1. N. Kholo	800	91	140	Paddy	-	Paddy	Soybean	Paddy (1.91)	-	Paddy (3.00)	Soybean (1.70)
2. N. Mong	1,000	91	140	Paddy	-	Paddy	Soybean	Paddy (1.91)	-	Paddy (3.00)	Soybean (1.70)
3. N. Yap	160	91	140	Paddy	-	Paddy	Soybean	Paddy (1.91)	-	Paddy (3.00)	Soybean (1.70)
4. N. Khanan	400	91	130	Paddy	-	Paddy	Soybean	Paddy (1.91)	-	Paddy (3.00)	Soybean (1.70)
5. N. Nan	130	91	120	Paddy	-	Paddy	Soybean	Paddy (1.91)	-	Paddy (3.00)	Soybean (1.70)
6. N. Ngao	800	91	140	Paddy	-	Paddy	Soybean	Paddy (1.91)	-	Paddy (3.00)	Soybean (1.70)
7. N. Ma	1,000	91	110	Paddy	-	Paddy	Soybean	Paddy (1.91)	-	Paddy (3.00)	Soybean (1.70)
Nam Suai											
1. N. Thong	1,920	95	130	Paddy	-	Paddy	Tomato	Paddy (1.91)	-	Paddy (3.00)	Tomato (18.30)
Nuai Luang											
1. N. Nin Lat	1,100	87	110	Paddy	-	Paddy	Mungbean	Paddy (1.63)	-	Paddy (3.00)	Mungbean (1.18)
2. N. Sai-1	200	87	110	Paddy	-	Paddy	Mungbean	Paddy (1.63)	-	Paddy (3.00)	Mungbean (1.18)
3. N. Takrai	120	87	110	Paddy	-	Paddy	Mungbean	Paddy (1.63)	-	Paddy (3.00)	Mungbean (1.18)
4. N. Pla Dap	230	87	110	Paddy	-	Paddy	Mungbean	Paddy (1.63)	-	Paddy (3.00)	Mungbean (1.18)
5. N. Limi	500	87	110	Paddy	-	Paddy	Mungbean	Paddy (1.63)	-	Paddy (3.00)	Mungbean (1.18)
6. N. Met	580	87	110	Paddy	-	Paddy	Mungbean	Paddy (1.63)	-	Paddy (3.00)	Mungbean (1.18)
7. N. Chiang	480	87	110	Paddy	-	Paddy	Mungbean	Paddy (1.63)	-	Paddy (3.00)	Mungbean (1.18)
8. N. Dan	600	87	140	Paddy	-	Paddy	Mungbean	Paddy (1.56)	-	Paddy (3.00)	Mungbean (1.18)
Mekong River Basin											
1. N. Khuk	990	95	140	Paddy	-	Paddy	Tomato	Paddy (1.91)	-	Paddy (3.00)	Tomato (18.30)

Note. Cropping intensities in case of without project were decided based on the farm economic survey.
Cropping intensities in case of with project were decided based on the result of water balance study
Dry season crops in case of with project in each basin were selected based on the farm economic survey.
Present crop yields were also based on the normal yield in the farm economic survey.

Case-2 (wet season paddy+dry season Tomato)

Site	Irrigable Area (ha)	Cropping Intensity (%) without	Cropping Intensity (%) with	Crops without Wet	Crops without Dry	Crops with Wet	Crops with Dry	Yield (ton/ha) without Wet	Yield (ton/ha) without Dry	Yield (ton/ha) with Wet	Yield (ton/ha) with Dry
Nuai Mong											
1. N. Kholo	800	91	140	Paddy	-	Paddy	Tomato	Paddy (1.91)	-	Paddy (3.00)	Tomato (18.30)
2. N. Mong	1,000	91	140	Paddy	-	Paddy	Tomato	Paddy (1.91)	-	Paddy (3.00)	Tomato (18.30)
3. N. Yap	160	91	140	Paddy	-	Paddy	Tomato	Paddy (1.91)	-	Paddy (3.00)	Tomato (18.30)
4. N. Khanan	400	91	130	Paddy	-	Paddy	Tomato	Paddy (1.91)	-	Paddy (3.00)	Tomato (18.30)
5. N. Nan	130	91	120	Paddy	-	Paddy	Tomato	Paddy (1.91)	-	Paddy (3.00)	Tomato (18.30)
6. N. Ngao	800	91	140	Paddy	-	Paddy	Tomato	Paddy (1.91)	-	Paddy (3.00)	Tomato (18.30)
7. N. Ma	1,000	91	110	Paddy	-	Paddy	Tomato	Paddy (1.91)	-	Paddy (3.00)	Tomato (18.30)
Nam Suai											
1. N. Thong	1,920	95	130	Paddy	-	Paddy	Tomato	Paddy (1.91)	-	Paddy (3.00)	Tomato (18.30)
Nuai Luang											
1. N. Nin Lat	1,100	87	110	Paddy	-	Paddy	Tomato	Paddy (1.63)	-	Paddy (3.00)	Tomato (18.30)
2. N. Sai-1	200	87	110	Paddy	-	Paddy	Tomato	Paddy (1.63)	-	Paddy (3.00)	Tomato (18.30)
3. N. Takrai	120	87	110	Paddy	-	Paddy	Tomato	Paddy (1.63)	-	Paddy (3.00)	Tomato (18.30)
4. N. Pla Dap	230	87	110	Paddy	-	Paddy	Tomato	Paddy (1.63)	-	Paddy (3.00)	Tomato (18.30)
5. N. Limi	500	87	110	Paddy	-	Paddy	Tomato	Paddy (1.63)	-	Paddy (3.00)	Tomato (18.30)
6. N. Met	580	87	110	Paddy	-	Paddy	Tomato	Paddy (1.63)	-	Paddy (3.00)	Tomato (18.30)
7. N. Chiang	480	87	110	Paddy	-	Paddy	Tomato	Paddy (1.63)	-	Paddy (3.00)	Tomato (18.30)
8. N. Dan	600	87	140	Paddy	-	Paddy	Tomato	Paddy (1.63)	-	Paddy (3.00)	Tomato (18.30)
Mekong River Basin											
1. N. Khuk	990	95	140	Paddy	-	Paddy	Tomato	Paddy (1.91)	-	Paddy (3.00)	Tomato (18.30)

Crop Benefit (Huai Mong River Basin) -Huai Kholo

1. Without Project

	Wet Season		Dry Season	
	Paddy (TP) Rainfed	Paddy (TP) Irrigated	Soybeans Irrigated	Total
Yield (ton/ha)	1.97	-	-	
Unit Price (Bahts/kg)	4.81	-	-	
Gross Income (Bahts/ha)	9,476	-	-	
Cost of Production (Bahts/ha)	3,758	-	-	
Net Income (Bahts/ha)	5,718	-	-	
Planted Area (ha)	728	-	-	
Total Net Income (Bahts)	4,162,486	-	-	4,162,486
2. With Project				
Yield (ton/ha)	-	3.00	1.70	
Unit Price (Bahts/kg)	-	4.81	11.22	
Gross Income (Bahts/ha)	-	14,430	19,074	
Cost of Production (Bahts/ha)	-	6,939	6,998	
Net Income (Bahts/ha)	-	7,491	12,076	
Planted Area (ha)	-	800	320	
Total Net Income (Bahts)	-	5,992,800	3,864,320	9,857,120
3. Incremental Benefit (Bahts)	-4,162,486	5,992,800	3,864,320	5,694,634

Crop Benefit (Huai Mong River Basin) -Huai Mong

1. Without Project

	Wet Season		Dry Season	
	Paddy (TP) Rainfed	Paddy (TP) Irrigated	Soybeans Irrigated	Total
Yield (ton/ha)	1.97	-	-	
Unit Price (Bahts/kg)	4.81	-	-	
Gross Income (Bahts/ha)	9,476	-	-	
Cost of Production (Bahts/ha)	3,758	-	-	
Net Income (Bahts/ha)	5,718	-	-	
Planted Area (ha)	910	-	-	
Total Net Income (Bahts)	5,203,107	-	-	5,203,107
2. With Project				
Yield (ton/ha)	-	3.00	1.70	
Unit Price (Bahts/kg)	-	4.81	11.22	
Gross Income (Bahts/ha)	-	14,430	19,074	
Cost of Production (Bahts/ha)	-	6,939	6,998	
Net Income (Bahts/ha)	-	7,491	12,076	
Planted Area (ha)	-	1,000	400	
Total Net Income (Bahts)	-	7,491,000	4,830,400	12,321,400
3. Incremental Benefit (Bahts)	-5,203,107	7,491,000	4,830,400	7,118,293

Crop Benefit (Huai Mong River Basin) -Huai Yap

1. Without Project

	Wet Season		Dry Season	
	Paddy (TP) Rainfed	Paddy (TP) Irrigated	Soybeans Irrigated	Total
Yield (ton/ha)	1.97	-	-	
Unit Price (Bahts/kg)	4.81	-	-	
Gross Income (Bahts/ha)	9,476	-	-	
Cost of Production (Bahts/ha)	3,758	-	-	
Net Income (Bahts/ha)	5,718	-	-	
Planted Area (ha)	145.6	-	-	
Total Net Income (Bahts)	832,497	-	-	832,497
2. With Project				
Yield (ton/ha)	-	3.00	1.70	
Unit Price (Bahts/kg)	-	4.81	11.22	
Gross Income (Bahts/ha)	-	14,430	19,074	
Cost of Production (Bahts/ha)	-	6,939	6,998	
Net Income (Bahts/ha)	-	7,491	12,076	
Planted Area (ha)	-	160	64	
Total Net Income (Bahts)	-	1,198,560	772,864	1,971,424
3. Incremental Benefit (Bahts)	-832,497	1,198,560	772,864	1,138,927

Crop Benefit (Huai Mong River Basin) -Huai Khanan

1. Without Project

	Wet Season		Dry Season	
	Paddy (TP) Rainfed	Paddy (TP) Irrigated	Soybeans Irrigated	Total
Yield (ton/ha)	1.97	-	-	
Unit Price (Bahts/kg)	4.81	-	-	
Gross Income (Bahts/ha)	9,476	-	-	
Cost of Production (Bahts/ha)	3,758	-	-	
Net Income (Bahts/ha)	5,718	-	-	
Planted Area (ha)	364	-	-	
Total Net Income (Bahts)	2,081,243	-	-	2,081,243
2. With Project				
Yield (ton/ha)	-	3.00	1.70	
Unit Price (Bahts/kg)	-	4.81	11.22	
Gross Income (Bahts/ha)	-	14,430	19,074	
Cost of Production (Bahts/ha)	-	6,939	6,998	
Net Income (Bahts/ha)	-	7,491	12,076	
Planted Area (ha)	-	400	120	
Total Net Income (Bahts)	-	2,996,400	1,449,120	4,445,520
3. Incremental Benefit (Bahts)	-2,081,243	2,996,400	1,449,120	2,364,277

Crop Benefit (Huai Mong River Basin) - Huai Han

	Wet Season		Dry Season	
	Paddy (TP) Rainfed	Paddy (TP) Irrigated	Soybeans Irrigated	Total
1. Without Project				
Yield (ton/ha)	1.97	-	-	
Unit Price (Bahts/kg)	4.81	-	-	
Gross Income (Bahts/ha)	9,476	-	-	
Cost of Production (Bahts/ha)	3,758	-	-	
Net Income (Bahts/ha)	5,718	-	-	
Planted Area (ha)	118.3	-	-	
Total Net Income (Bahts)	676,404	-	-	676,404
2. With Project				
Yield (ton/ha)	-	3.00	1.70	
Unit Price (Bahts/kg)	-	4.81	11.22	
Gross Income (Bahts/ha)	-	14,430	19,074	
Cost of Production (Bahts/ha)	-	6,939	6,998	
Net Income (Bahts/ha)	-	7,491	12,076	
Planted Area (ha)	-	130	26	
Total Net Income (Bahts)	-	973,830	313,976	1,287,806
3. Incremental Benefit (Bahts)	-676,404	973,830	313,976	611,402

Crop Benefit (Huai Mong River Basin) - Huai Ngao

	Wet Season		Dry Season	
	Paddy (TP) Rainfed	Paddy (TP) Irrigated	Soybeans Irrigated	Total
1. Without Project				
Yield (ton/ha)	1.97	-	-	
Unit Price (Bahts/kg)	4.81	-	-	
Gross Income (Bahts/ha)	9,476	-	-	
Cost of Production (Bahts/ha)	3,758	-	-	
Net Income (Bahts/ha)	5,718	-	-	
Planted Area (ha)	728	-	-	
Total Net Income (Bahts)	4,162,486	-	-	4,162,486
2. With Project				
Yield (ton/ha)	-	3.00	1.70	
Unit Price (Bahts/kg)	-	4.81	11.22	
Gross Income (Bahts/ha)	-	14,430	19,074	
Cost of Production (Bahts/ha)	-	6,939	6,998	
Net Income (Bahts/ha)	-	7,491	12,076	
Planted Area (ha)	-	800	320	
Total Net Income (Bahts)	-	5,992,800	3,864,320	9,857,120
3. Incremental Benefit (Bahts)	-4,162,486	5,992,800	3,864,320	5,694,634

Crop Benefit (Huai Mong River Basin) -Huai Ma

1. Without Project

	Wet Season		Dry Season	
	Paddy (TP) Rainfed	Paddy (TP) Irrigated	Soybeans Irrigated	Total
Yield (ton/ha)	1.97	-	-	
Unit Price (Bahts/kg)	4.81	-	-	
Gross Income (Bahts/ha)	9,476	-	-	
Cost of Production (Bahts/ha)	3,758	-	-	
Net Income (Bahts/ha)	5,718	-	-	
Planted Area (ha)	910	-	-	
Total Net Income (Bahts)	5,203,107	-	-	5,203,107
2. With Project				
Yield (ton/ha)	-	3.00	1.70	
Unit Price (Bahts/kg)	-	4.81	11.22	
Gross Income (Bahts/ha)	-	14,430	19,074	
Cost of Production (Bahts/ha)	-	6,939	6,998	
Net Income (Bahts/ha)	-	7,491	12,076	
Planted Area (ha)	-	1,000	100	
Total Net Income (Bahts)	-	7,491,000	1,207,600	8,698,600
3. Incremental Benefit (Bahts)	-5,203,107	7,491,000	1,207,600	3,495,493

Crop Benefit (Naw Suai Basin) -Huai Thong

1. Without Project

	Wet Season		Dry Season	
	Paddy (TP) Rainfed	Paddy (TP) Irrigated	Tomato Irrigated	Total
Yield (ton/ha)	1.91	-	-	
Unit Price (Bahts/kg)	4.81	-	-	
Gross Income (Bahts/ha)	9,187	-	-	
Cost of Production (Bahts/ha)	3,758	-	-	
Net Income (Bahts/ha)	5,429	-	-	
Planted Area (ha)	1,824	-	-	
Total Net Income (Bahts)	9,902,678	-	-	9,902,678
2. With Project				
Yield (ton/ha)	-	3.00	18.30	
Unit Price (Bahts/kg)	-	4.81	3.44	
Gross Income (Bahts/ha)	-	14,430	62,952	
Cost of Production (Bahts/ha)	-	6,939	15,350	
Net Income (Bahts/ha)	-	7,491	47,602	
Planted Area (ha)	-	1,920	576	
Total Net Income (Bahts)	-	14,382,720	27,418,752	41,801,472
3. Net Production Value (Bahts)	-9,902,678	14,382,720	27,418,752	31,898,794

Crop Benefit (Huai Luang Basin) - Huai Hin

1. Without Project

	Wet Season		Dry Season	
	Paddy (TP) Rainfed	Paddy (TP) Irrigated	Mungbean Irrigated	Total
Yield (ton/ha)	1.63	-	-	
Unit Price (Bahts/kg)	4.81	-	-	
Gross Income (Bahts/ha)	7,840	-	-	
Cost of Production (Bahts/ha)	3,758	-	-	
Net Income (Bahts/ha)	4,082	-	-	
Planted Area (ha)	957	-	-	
Total Net Income (Bahts)	3,906,761	-	-	3,906,761
2. With Project				
Yield (ton/ha)	-	3.00	1.18	
Unit Price (Bahts/kg)	-	4.81	7.50	
Gross Income (Bahts/ha)	-	14,430	8,850	
Cost of Production (Bahts/ha)	-	6,939	6,221	
Net Income (Bahts/ha)	-	7,491	2,629	
Planted Area (ha)	-	1100	110	
Total Net Income (Bahts)	-	8,240,100	289,190	8,529,290
3. Net Production Value (Bahts)	-3,906,761	8,240,100	289,190	4,622,529

Crop Benefit (Huai Luang Basin) - Huai Sai-1

1. Without Project

	Wet Season		Dry Season	
	Paddy (TP) Rainfed	Paddy (TP) Irrigated	Mungbean Irrigated	Total
Yield (ton/ha)	1.63	-	-	
Unit Price (Bahts/kg)	4.81	-	-	
Gross Income (Bahts/ha)	7,840	-	-	
Cost of Production (Bahts/ha)	3,758	-	-	
Net Income (Bahts/ha)	4,082	-	-	
Planted Area (ha)	174	-	-	
Total Net Income (Bahts)	710,320	-	-	710,320
2. With Project				
Yield (ton/ha)	-	3.00	1.18	
Unit Price (Bahts/kg)	-	4.81	7.50	
Gross Income (Bahts/ha)	-	14,430	8,850	
Cost of Production (Bahts/ha)	-	6,939	6,221	
Net Income (Bahts/ha)	-	7,491	2,629	
Planted Area (ha)	-	200	20	
Total Net Income (Bahts)	-	1,498,200	52,580	1,550,780
3. Net Production Value (Bahts)	-710,320	1,498,200	52,580	840,460

Crop Benefit (Huai Luang Basin) -Huai Takrai

1. Without Project

	Wet Season Paddy (TP) Rainfed	Dry Season Paddy (TP) Irrigated	Dry Season Mungbean Irrigated	Total
Yield (ton/ha)	1.63	-	-	
Unit Price (Bahts/kg)	4.81	-	-	
Gross Income (Bahts/ha)	7,840	-	-	
Cost of Production (Bahts/ha)	3,758	-	-	
Net Income (Bahts/ha)	4,082	-	-	
Planted Area (ha)	104.4	-	-	
Total Net Income (Bahts)	426,192	-	-	426,192

2. With Project

Yield (ton/ha)	-	3.00	1.18	
Unit Price (Bahts/kg)	-	4.81	7.50	
Gross Income (Bahts/ha)	-	14,430	8,850	
Cost of Production (Bahts/ha)	-	6,939	6,221	
Net Income (Bahts/ha)	-	7,491	2,629	
Planted Area (ha)	-	120	12	
Total Net Income (Bahts)	-	898,920	31,548	930,468
3. Net Production Value (Bahts)	-426,192	898,920	31,548	504,276

Crop Benefit (Huai Luang Basin) -Huai Pla Da

1. Without Project

	Wet Season Paddy (TP) Rainfed	Dry Season Paddy (TP) Irrigated	Dry Season Mungbean Irrigated	Total
Yield (ton/ha)	1.63	-	-	
Unit Price (Bahts/kg)	4.81	-	-	
Gross Income (Bahts/ha)	7,840	-	-	
Cost of Production (Bahts/ha)	3,758	-	-	
Net Income (Bahts/ha)	4,082	-	-	
Planted Area (ha)	200.1	-	-	
Total Net Income (Bahts)	816,868	-	-	816,868

2. With Project

Yield (ton/ha)	-	3.00	1.18	
Unit Price (Bahts/kg)	-	4.81	7.50	
Gross Income (Bahts/ha)	-	14,430	8,850	
Cost of Production (Bahts/ha)	-	6,939	6,221	
Net Income (Bahts/ha)	-	7,491	2,629	
Planted Area (ha)	-	230	23	
Total Net Income (Bahts)	-	1,722,930	60,467	1,783,397
3. Net Production Value (Bahts)	-816,868	1,722,930	60,467	966,529

Crop Benefit (Huai Luang Basin) - Huai Limi

1. Without Project

	Wet Season		Dry Season	
	Paddy (TP) Rainfed	Paddy (TP) Irrigated	Mungbean Irrigated	Total
Yield (ton/ha)	1.63	-	-	
Unit Price (Bahts/kg)	4.81	-	-	
Gross Income (Bahts/ha)	7,840	-	-	
Cost of Production (Bahts/ha)	3,758	-	-	
Net Income (Bahts/ha)	4,082	-	-	
Planted Area (ha)	435	-	-	
Total Net Income (Bahts)	1,775,801	-	-	1,775,801
2. With Project				
Yield (ton/ha)	-	3.00	1.18	
Unit Price (Bahts/kg)	-	4.81	7.50	
Gross Income (Bahts/ha)	-	14,430	8,850	
Cost of Production (Bahts/ha)	-	6,939	6,221	
Net Income (Bahts/ha)	-	7,491	2,629	
Planted Area (ha)	-	500	50	
Total Net Income (Bahts)	-	3,745,500	131,450	3,876,950
3. Net Production Value (Bahts)	-1,775,801	3,745,500	131,450	2,101,150

Crop Benefit (Huai Luang Basin) - Huai Mek

1. Without Project

	Wet Season		Dry Season	
	Paddy (TP) Rainfed	Paddy (TP) Irrigated	Mungbean Irrigated	Total
Yield (ton/ha)	1.63	-	-	
Unit Price (Bahts/kg)	4.81	-	-	
Gross Income (Bahts/ha)	7,840	-	-	
Cost of Production (Bahts/ha)	3,758	-	-	
Net Income (Bahts/ha)	4,082	-	-	
Planted Area (ha)	504.6	-	-	
Total Net Income (Bahts)	2,059,929	-	-	2,059,929
2. With Project				
Yield (ton/ha)	-	3.00	1.18	
Unit Price (Bahts/kg)	-	4.81	7.50	
Gross Income (Bahts/ha)	-	14,430	8,850	
Cost of Production (Bahts/ha)	-	6,939	6,221	
Net Income (Bahts/ha)	-	7,491	2,629	
Planted Area (ha)	-	580	58	
Total Net Income (Bahts)	-	4,344,780	152,482	4,497,262
3. Net Production Value (Bahts)	-2,059,929	4,344,780	152,482	2,437,333

Crop Benefit (Huai Luang Basin) -Huai Chiang

1. Without Project

	Wet Season		Dry Season	
	Paddy (TP) Rainfed	Paddy (TP) Irrigated	Mungbean Irrigated	Total
Yield (ton/ha)	1.63	-	-	
Unit Price (Bahts/kg)	4.81	-	-	
Gross Income (Bahts/ha)	7,840	-	-	
Cost of Production (Bahts/ha)	3,758	-	-	
Net Income (Bahts/ha)	4,082	-	-	
Planted Area (ha)	417.6	-	-	
Total Net Income (Bahts)	1,704,768	-	-	1,704,768
2. With Project				
Yield (ton/ha)	-	3.00	1.18	
Unit Price (Bahts/kg)	-	4.81	7.50	
Gross Income (Bahts/ha)	-	14,430	8,850	
Cost of Production (Bahts/ha)	-	6,939	6,221	
Net Income (Bahts/ha)	-	7,491	2,629	
Planted Area (ha)	-	480	48	
Total Net Income (Bahts)	-	3,595,680	126,192	3,721,872
3. Net Production Value (Bahts)	-1,704,768	3,595,680	126,192	2,017,104

Crop Benefit (Huai Luang Basin) -Huai Dan

1. Without Project

	Wet Season		Dry Season	
	Paddy (TP) Rainfed	Paddy (TP) Irrigated	Mungbean Irrigated	Total
Yield (ton/ha)	1.63	-	-	
Unit Price (Bahts/kg)	4.81	-	-	
Gross Income (Bahts/ha)	7,840	-	-	
Cost of Production (Bahts/ha)	3,758	-	-	
Net Income (Bahts/ha)	4,082	-	-	
Planted Area (ha)	522	-	-	
Total Net Income (Bahts)	2,130,961	-	-	2,130,961
2. With Project				
Yield (ton/ha)	-	3.00	1.18	
Unit Price (Bahts/kg)	-	4.81	7.50	
Gross Income (Bahts/ha)	-	14,430	8,850	
Cost of Production (Bahts/ha)	-	6,939	6,221	
Net Income (Bahts/ha)	-	7,491	2,629	
Planted Area (ha)	-	600	240	
Total Net Income (Bahts)	-	4,494,600	630,960	5,125,560
3. Net Production Value (Bahts)	-2,130,961	4,494,600	630,960	2,994,599

Crop Benefit (Nam Suai Basin) -Huai Khuk

1. Without Project

	Wet Season		Dry Season	
	Paddy (TP) Rainfed	Paddy (TP) Irrigated	Tomato Irrigated	Total
Yield (ton/ha)	1.91	-	-	
Unit Price (Bahts/kg)	4.81	-	-	
Gross Income (Bahts/ha)	9,187	-	-	
Cost of Production (Bahts/ha)	3,758	-	-	
Net Income (Bahts/ha)	5,429	-	-	
Planted Area (ha)	941	-	-	
Total Net Income (Bahts)	5,106,069	-	-	5,106,069

2. With Project

Yield (ton/ha)	-	3.00	18.30	
Unit Price (Bahts/kg)	-	4.81	3.44	
Gross Income (Bahts/ha)	-	14,430	62,952	
Cost of Production (Bahts/ha)	-	6,939	15,350	
Net Income (Bahts/ha)	-	7,491	47,602	
Planted Area (ha)	-	990	396	
Total Net Income (Bahts)	-	7,416,090	18,850,392	26,266,482

3. Net Production Value (Bahts)	-5,106,069	7,416,090	18,850,392	21,160,413

Economic Project Cost and Annual OM Cost

(million Bahts)

Site	Total			1st Year			2nd Year			3rd Year			4th Year			5th Year			OM Cost/year		
	LC	FC	Total	LC	FC	Total	LC	FC	Total	LC	FC	Total	LC	FC	Total	LC	FC	Total	LC	FC	Total
Huai Mong																					
1. H. Kholo	338.1	371.3	709.4	34.5	8.6	43.1	84.0	102.3	186.3	99.5	136.0	235.5	89.7	112.6	202.3	30.6	11.8	42.4	0.6	0.8	1.4
2. H. Mong	81.5	48.4	129.9	7.9	1.2	9.1	20.2	13.1	33.3	23.7	16.1	39.8	16.6	10.2	26.8	13.4	7.8	21.2	0.3	0.2	0.5
3. H. Yap	61.3	95.6	156.9	11.7	2.2	13.9	20.7	44.1	64.8	18.5	37.3	55.8	10.4	12.0	22.4	0.0	0.0	0.0	0.1	0.2	0.3
4. H. Khanan	66.9	31.0	97.9	14.2	1.1	15.3	25.5	13.8	39.3	21.1	12.9	34.0	6.2	3.2	9.4	0.0	0.0	0.0	0.1	0.1	0.2
5. H. Han	25.3	21.0	46.3	2.7	0.7	3.4	10.7	10.8	21.5	9.1	8.5	17.6	2.8	1.0	3.8	0.0	0.0	0.0	0.0	0.1	0.1
6. H. Ngao	215.3	55.5	270.8	62.5	2.0	64.5	78.8	20.8	99.6	57.3	23.2	80.5	16.7	9.5	26.2	0.2	0.0	0.2	0.3	0.2	0.5
7. H. Ma	83.7	55.8	139.5	8.0	1.8	9.8	23.1	19.1	42.2	24.8	19.1	43.9	15.2	9.0	24.2	12.9	6.8	19.7	0.3	0.2	0.5
Nam Suai																					
1. H. Thong	298.4	169.8	468.2	53.8	4.7	58.5	81.1	45.1	126.2	81.6	60.2	141.8	52.7	43.5	96.2	29.7	16.3	46.0	0.7	0.6	1.3
Huai Luang																					
1. H. Hin Lat	156.1	58.8	214.9	37.5	1.8	39.3	50.4	20.0	70.4	41.8	22.3	64.1	17.8	10.7	28.5	8.9	4.0	12.9	0.3	0.2	0.5
2. H. Sai-1	65.6	50.5	116.1	8.2	1.7	9.9	29.2	26.8	56.0	22.9	20.1	43.0	5.4	1.9	7.3	0.0	0.0	0.0	0.1	0.1	0.2
3. H. Takrai	56.7	48.8	105.5	5.7	1.5	7.2	26.1	26.7	52.8	20.3	19.3	39.6	4.7	1.3	6.0	0.0	0.0	0.0	0.1	0.1	0.2
4. H. Pla Dap	57.9	51.9	109.8	5.6	1.7	7.3	24.5	26.5	51.0	21.6	21.0	42.6	6.3	2.7	9.0	0.0	0.0	0.0	0.2	0.1	0.3
5. H. Limi	117.4	111.4	228.8	11.9	3.4	15.3	36.3	39.4	75.7	42.7	44.6	87.3	26.6	24.0	50.6	0.0	0.0	0.0	0.2	0.3	0.5
6. H. Mek	69.1	55.2	124.3	8.1	1.8	9.9	33.4	31.2	64.6	23.5	21.3	44.8	4.2	0.9	5.1	0.0	0.0	0.0	0.1	0.1	0.2
7. H. Chiang	91.2	81.1	172.3	8.5	2.5	11.0	27.1	27.5	54.6	34.2	32.9	67.1	21.5	18.2	39.7	0.0	0.0	0.0	0.2	0.2	0.4
8. H. Dan	182.9	78.8	261.7	43.7	2.6	46.3	60.6	24.3	84.9	53.1	31.7	84.8	25.7	20.2	45.9	0.0	0.0	0.0	0.3	0.2	0.5
Mekong River Basin																					
1. H. Khuk	151.6	54.6	206.2	35.7	1.7	37.4	51.2	19.0	70.2	38.3	18.8	57.1	14.7	8.5	23.2	12.0	6.6	18.6	0.3	0.2	0.5

Financial and Economic Price of Commodities

	Financial	Economic
I. 1 Land Preparation (Bahts/ha) by machine		
Paddy (TP)		
1st Plowing	625	575
2nd Plowing	500	460
Harrowing	500	460
Paddy (BC) -pre-germinated	625	575
Paddy (BC) -Dried broadcasting	625	575
Upland Crops		
1st Plowing	750	690
2nd Plowing	625	575
I. 2 Seed/Nursery (Bahts/kg)		
Paddy (TP)	4.95	4.55
Paddy (BC)	4.90	4.51
Upland rice	4.75	4.37
Maize	86.00	79.12
Cassava	0.04	0.04
Cucumber	320.00	294.40
Soybean	17.00	15.64
Sweet corn/Young corn	17.00	15.64
Sugarcane	0.57	0.52
String Beans	200.00	184.00
Tomato	800.00	736.00
Eucalyptus	2.00	1.84
Mango	30.74	28.28
I. 3 Fertilizer (Bahts/kg)		
N	14.88	14.27
P205	20.40	19.72
K20	8.41	8.12
Manure	0.85	0.78
I. 4 Irrigation (Bahts/hr)		
by Pump	40.00	36.80
I. 5 Threshing (Bahts/ton)		
Paddy	100.00	92.00
Maize	130.00	119.60
Soybean	500.00	460.00
I. 6 Hired Labor (Bahts/man. day)	70.00	64.40
I. 7 Transportation by machine (Bahts/ton)		
Paddy	145.00	133.40
Maize	145.00	133.40
Cassava	345.00	317.40
Soybean	90.00	82.80

I. 8 Crops (Bahts/kg)		
Non-glutinous	3. 21	3. 32
Glutinous	4. 65	4. 81
Maize	2. 36	2. 47
Sugarcane	665. 00	521. 00
Cassava	0. 78	0. 78
Soybean	11. 94	11. 22
Tomato	3. 33	3. 44
Young corn	13. 89	14. 53
Tobacco	80. 25	80. 25
Sweet corn	2. 00	1. 84
Cucumber	2. 70	2. 70
Stringbean	12. 00	12. 00
Mango	19. 58	21. 33
Common carp	50. 00	50. 00
Tilapia	25. 00	25. 00
Beef	183. 00	183. 00
Broiler chicken	22. 00	20. 24

Source. Farm Economic Survey Nov. 1995
Agricultural Economic Zone 1 Office in Udon Thani

Conversion Factors

	Central Value	Sensitivity Range
Standard Conversion Factor (SCF)	0. 92	0. 91 - 0. 94
Consumption goods	0. 95	0. 77 - 0. 98
Intermidiate goods	0. 94	0. 90 - 1. 09
Capital goods	0. 84	0. 83 - 0. 96
Construction	0. 88	0. 86 - 0. 92
Electricity	0. 90	0. 88 - 0. 93
Transportation	0. 87	0. 85 - 0. 90
Labour	0. 92	0. 91 - 0. 94
Marginal Productivity	0. 16	0. 12 - 0. 20
Rice	1. 11	0. 92 - 1. 49

Source. Thailand Managing Public Resources for
Structural Adjustment Report No. 4366-TH,

Price Structure of Tomato

(unit:Bahts/ton)

	2005	
	Financial	Economic
1. Wholesale price at Bangkok market, (constant price 1995), Bahts/ton a)	4,155	4,155
2. Margin of wholesaler b)		
VAT 7 %	28	0
Other market expenditure c)	401	369
3. Price at local market	3,726	3,786
4. Margin of local merchant		
VAT 7 %	26	0
Other market expenditure f)	373	343
5. Farmgate price (Bahts/ton)	3,327	3,443

Note.

a. Estimated by trend of price in 1989 to 1994
b. Margin of wholesale marketing 12.05 % CF=0.92
c. Included freight, quality adjustment, storage and lost from transportation, interst, profit CF=0.92
d. 9.65 % of BKK wholesale market
e. Accounted 10 % of local market price

Price Structure of Soybean

(unit:Bahts/ton)

	1995		2005	
	Financial	Economic	Financial	Economic
1. Import price, CIF Bangkok (US$/ton) a)	292	292	339	339
Import price, CIF Bangkok (Bahts/ton) b)	7,385	7,385	8,573	8,573
2. Miscellaneous c)	190	175	190	175
3. Import duty d)	443	0	514	0
4. Margin of importer e)	1,698	1,563	1,972	1,814
5. Selling price of importer	9,716	9,122	11,250	10,562
6. Margin of wholesaler f)	1,603	1,475	1,856	1,708
7. Wholesale price at Bangkok market	11,319	10,597	13,106	12,270
8. Transportation and hauling to wholesaler g)	458	401	458	401
9. Retail price	10,861	10,196	12,648	11,869
10. Margin of retailer h)	543	500	632	582
11. Transportation and hauling cost to the retailer i)	80	72	80	72
12. Farmgate price of soybean (Bahts/ton)	10,238	9,625	11,935	11,216

Note.

a. Soybean price on CIF Bangkok 1995 and from forecasted commodity price by the World Bank
b. Exchange rate 1 US$=25.29 Bahts
c. Vehicle for port pass, freight, container, labour. CF=0.92
d. About 6% of CIF price
e. 23% of CIF price, CF=0.92
f. 16.5% of importer price, CF=0.92
g. Transportation by truck 590 km from Bangkok port to the local market, Bahts 6,170 /truck (Bahts 0.70/ton/km), CF=0.87, and Bahts 45/ton for loading soybean, CF=0.92.
h. 5% of retail price, CF=0.92
i. Transportation by truck from the local market to farm, approximately 50 km. The freight rate 0.70 Bahts/ton/km, CF=0.87; Bahts45/ton for loading soybean, CF=0.92

Price Structure of Paddy

	1995		2000		2005	
	Financial	Economic	Financial	Economic	Financial	Economic
1. Export price, FOB Bangkok (US$/ton) a)	307	307	286	286	273	273
Export price, FOB Bangkok (Bahts/ton) b)	7,764	7,764	7,233	7,233	6,904	6,904
2. Average Price of mixed grade rice (Bahts/ton) c)	7,609	7,609	7,088	7,088	6,766	6,766
3. Margin of exporter d)	380	350	354	326	338	311
4. Miscellaneous e)	190	175	190	175	190	175
5. Tax and fees f)	0	0	0	0	0	0
6. Wholesale price at Bangkok market	7,038	7,084	6,544	6,587	6,238	6,280
7. Margin of wholesale merchant g)	352	324	327	301	312	287
8. Transportation and hauling to wholesaler h)	458	401	458	401	458	401
9. Rice price at Ex-ricemill	6,228	6,359	5,759	5,886	5,468	5,592
10. Paddy price at ricemill i)	4,111	4,197	3,801	3,885	3,609	3,691
11. Charge for milling paddy j)	140	133	140	133	140	133
12. Tax of milling rice k)	0	0	0	0	0	0
13. Rice bran and husk l)	120	110	120	110	120	110
14. Margin of ricemill m)	185	170	171	157	162	149
15. Paddy price at ricemill	3,906	4,004	3,610	3,705	3,426	3,519
16. Margin of local merchant n)	156	144	144	133	137	126
17. Transportation and hauling cost to local saler o)	80	72	80	72	80	72
18. Farmgate price of paddy	3,670	3,789	3,385	3,500	3,209	3,321

Note.

a. Rice price on FOB Bangkok, 1994 April-Mar 1995, from Thai Chamber of Commerce, and from forecasted commodity price by the World Bank for 2000 and 2005
b. Exchange rate 1 US$=25.29 Bahts
c. Adjusted to the quality of rice price 100%, 5%, 10%, 25% by accounting 98% of 5% broken rice
d. 5% of export price, CF=0.92
e. Vehicle for port pass, freight, container, labour. CF=0.92
f. 2.2% Of export price but abolished in 1988
g. 5% of wholesale price, CF=0.92
h. Transportation by 15 ton truck 590km from the local market to Bangkok port, Bahts 6,170 /truck (Bahts 0.70/ton/km), CF=0.87, and Bahts 45/ton for loading rice, CF=0.92.
i. Milling recovery rate=66%
j. Milling cost of paddy, Bahts 140/ton, CF=0.95
k. 3.5% of paddy price but abolished in Jan.1992
l. Bahts 120/ton, CF=0.92
m. 4.5% of item No.10, CF=0.92
n. 4% of item No. 13, CF=0.92
o. Transportation by truck from farm to the local market at Udon Thani approximately 50 km. The freight rate 0.70 Bahts/ton/km, CF=0.87; Bahts 45/ton for loading paddy, CF=0.92

Price Structure of Mango

	2005	
	Financial	Economic
1. Export price, FOB Bangkok (Bahts/ton) a) (constant price 1995)	34,780	34,780
2. Margin of market exporting b)	1,739	1,600
3. Margin of exporter		
Export tax c)	0	0
Transportation	720	626
Office expenditure d)	1,739	1,600
Certificate license e)	200	184
Packing f)	1,400	1,288
Labour for grading g)	1,196	1,100
4. Wholesale price at Bangkok market	27,786	28,382
5. Margin of wholesale merchant		
VAT 7 %	292	0
Margin of marketing h)	4,168	3,834
6. Local market price	23,326	24,547
7. Margin of local merchant		
VAT 7 %	245	0
Margin of marketing i)	3,499	3,219
8. Farmgate price (Bahts/ton)	19,582	21,328

Note.

a. Estimated by trend of price
b. 20 % of FOB CF=0.92
c. Tax 2,500 Bahts/ton
d. 5% of FOB adjusted by CF=0.92
e. 200 Bahts/ton adjusted by CF=0.92
f. 1,400 Bahts/ton adjusted by CF=0.92
g. 1,196 Bahts/ton adjusted by CF=0.92
h. 15% of wholesale price at BKK CF=0.92
i. 15% of local price adjusted by CF=0.92

Variety:Khieo Sawuai

Price Structure of Baby Corn

	2005	
	Financial	Economic
1. Wholesale price at Bangkok market, (constant price 1995), Bahts/ton a)	17,341	17,341
2. Margin of wholesaler b)		
VAT 7 %	117	0
Other market expenditure d)	1,673	1,456
3. Price at local market	15,550	15,885
4. Margin of local merchant c)		
VAT 7 %	109	0
Other market expenditure e)	1,555	1,353
5. Farmgate price (Bahts/ton)	13,887	14,532

Note.

a. Estimated by trend of price in 1983 to 1995
b. Margin of wholesale marketing 12.05 % CF=0.92
c. Included freight, quality adjustment, storage and lost from transportation, interst, profit CF=0.92
d. 9.65 % of BKK wholesale market CF=0.87
e. Accounted 10 % of local market price CF=0.87

Price Structure of Urea(46-0-0)

	1995		2005	
	Financial	Economic	Financial	Economic
1. Import price, CIF Bangkok(US$/ton) a)	211	211	181	181
Import price, CIF Bangkok(Bahts/ton) b)	5,336	5,336	4,577	4,577
2. Miscellaneous c)	190	175	190	175
3. Import duty d)	0	0	0	0
4. Margin of importer e)	534	491	458	421
5. Selling price of importer	6,060	6,002	5,225	5,173
6. Margin of wholesaler f)	606	558	523	481
7. Wholesale price at Bangkok market	6,666	6,559	5,748	5,654
8. Transportation and hauling to wholesaler g)	458	318	458	318
9. Retail price	7,124	6,878	6,206	5,972
10. Margin of retailer h)	641	603	559	525
11. Transportation and hauling cost to the farm i)	80	65	80	65
12. Farmgate price of Urea(Bahts/ton)	7,845	7,545	6,844	6,562
13. Farmgate price of Nutrient(Bahts/kg)	17.05	16.40	14.88	14.27

Note.

a. Urea(46-0-0) price on CIF Bangkok 1995(Jan. - Nov.), and from forecasted commodity price by the World Bank
b. Exchange rate 1 US$=25.29 Bahts
c. Vehicle for port pass, freight, container, labour. CF=0.92
d. 2.2% of CIF price as commercial tax but abolished in 1990
20% of CIF price as community tax but abolished in 1990
e. 10% of CIF price, CF=0.92
f. 10% of importer price, CF=0.92
g. Transporting by truck 590 km from Bangkok port to the local market, Bahts 6,170 /truck (Bahts 0.70/ton/km), CF=0.87, and Bahts 45/ton for loading Urea, CF=0.92.
h. 9% of retail price, CF=0.92
i. Transportation by truck from local market to farm approximately 50 km. The freight rate 0.70 Bahts/ton/km, CF=0.87; Bahts 45/ton for loading Urea, CF=0.92

Price Structure of Triple Super Phosphate(0-46-0)

	1995		2005	
	Financial	Economic	Financial	Economic
1. Import price, CIF Bangkok(US$/ton) a)	284	284	270	270
Import price, CIF Bangkok(Bahts/ton) b)	7,182	7,182	6,828	6,828
2. Miscellaneous c)	190	175	190	175
3. Import duty d)	0	0	0	0
4. Margin of importer e)	718	661	683	628
5. Selling price of importer	8,091	8,018	7,701	7,631
6. Margin of wholesaler f)	647	595	616	567
7. Wholesale price at Bangkok market	8,738	8,613	8,317	8,198
8. Transportation and hauling to wholesaler g)	458	318	458	318
9. Retail price	9,196	8,932	8,775	8,516
10. Margin of retailer h)	552	508	527	484
11. Transportation and hauling cost to the farm i)	80	72	80	72
12. Farmgate price of TSP(Bahts/ton)	9,828	9,511	9,382	9,072
13. Farmgate price of Nutrient(Bahts/kg)	21.36	20.68	20.40	19.72

Note.

a. TSP(0-46-0) price on CIF Bangkok 1995(Jan. - Nov.), and from forecasted commodity price by the World Bank
b. Exchange rate 1 US$=25.29 Bahts
c. Vehicle for port pass, freight, container, labour. CF=0.92
d. 2.2% of CIF price but abolished in 1990
e. 10% of CIF price, CF=0.92
f. 8% of importer price, CF=0.92
g. Transporting by truck 590 km from Bangkok port to the local market, Bahts 6,170 /truck (Bahts 0.70/ton/km), CF=0.87, and Bahts 45/ton for loading TSP, CF=0.92.
h. 6% of retail price, CF=0.92
i. Transportation by truck from local market to farm approximately 50 km. The freight rate 0.70 Bahts/ton/km, CF=0.87; Bahts 45/ton for loading TSP, CF=0.92

Price Structure of Muriate of Potash (0-0-60)

	1995		2005	
	Financial	Economic	Financial	Economic
1. Import price, CIF Bangkok (US$/ton) a)	127	127	127	127
Import price, CIF Bangkok (Bahts/ton) b)	3,212	3,212	3,212	3,212
2. Miscellaneous c)	190	175	190	175
3. Import duty d)	0	0	0	0
4. Margin of importer e)	321	295	321	295
5. Selling price of importer	3,723	3,682	3,723	3,682
6. Margin of wholesaler f)	372	343	372	343
7. Wholesale price at Bangkok market	4,095	4,025	4,095	4,025
8. Transportation and hauling to wholesaler g)	458	401	458	401
9. Retail price	4,553	4,425	4,553	4,425
10. Margin of retailer h)	410	377	410	377
11. Transportation and hauling cost to the farm i)	80	72	80	72
12. Farmgate price of Muriate of Potash (Bahts/ton)	5,043	4,874	5,043	4,874
13. Farmgate price of Nutrient (Bahts/kg)	8.41	8.12	8.41	8.12

Note.

a. Muriate of Potash (0-0-60) price on CIF Bangkok 1995 (Jan. - Nov.), and from forecasted commodity price by the World Bank
b. Exchange rate 1 US$=25.29 Bahts
c. Vehicle for port pass, freight, container, labour. CF=0.92
d. 2.2% of CIF price as commercial tax but abolished in 1990
20% of CIF price as community tax but abolished in 1990
e. 10% of CIF price, CF=0.92
f. 10% of importer price, CF=0.92
g. Transporting by truck 590 km from Bangkok port to the local market, Bahts 6,170 /truck (Bahts 0.70/ton/km), CF=0.87, and Bahts 45/ton for loading Muriate of Potash, CF=0.92.
h. 9% of retail price, CF=0.92
i. Transportation by truck from local market to farm approximately 50 km. The freight rate 0.70 Bahts/ton/km, CF=0.87; Bahts 45/ton for loading Muriate of Potash, CF=0.92

Financial Crop Budget

Master Plan Area
Crop: Paddy-Transplanting
Season: Wet Season-Rainfed

(unit: per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	4.95	40.00	198	40.00	198		
Chemical fertilizer								
- N	kg	14.88	15.70	234	16.00	238		
- P2O5	kg	20.40	15.70	320	16.00	326		
- K2O	kg	8.41	6.60	56	7.00	59		
Manure	kg	0.85	63.00	54	63.00	54		
Agro-chemicals								
- Fungicides				6.5		6		
- Insecticides				12		12		
Mechanization								
- Land preparation	B/ha			1,625		1,625		
- Pest control	hr	30.60	0.00	0	0.00	0		
- Watering	hr	36.60	0.13	5	0.13	5		
- Harvesting/Hauling	hr	38.00	0.00	0	0.00	0		
- Threshing	B			141		141		
- Transportation	B			213		213		
Hired labour	MD	70.00	15.65	1,096	15.65	1,096		
Fuel	Lit.	9.00	10.10	91	10.10	91		
Total				4,056		4,069		
2. Gross Value of Production								
Yield (kg/ha)			1,470		1,540			
Farmgate Price (Bahts/kg)				4.65		4.65		
Gross Income (Bahts/ha)				6,836		7,161		
3. Net Income (Bahts/ha)				2,780		3,092		

Economic Crop Budget

Master Plan Area
Crop: Paddy-Transplanting
Season: Wet Season-Rainfed

(unit: per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	4.55	40.00	182	40.00	182		
Chemical fertilizer								
- N	kg	14.27	15.70	224	16.00	228		
- P2O5	kg	19.72	15.70	310	16.00	316		
- K2O	kg	8.12	6.60	54	6.60	54		
Manure	kg	0.78	63.00	49	63.00	49		
Agro-chemicals								
- Fungicides				6		6		
- Insecticides				12		12		
Mechanization								
- Land preparation	B/ha			1,495		1,495		
- Pest control	hr	28.15	0.00	0	0.00	0		
- Watering	hr	28.15	0.13	4	0.13	4		
- Harvesting/Hauling	hr	34.95	0.00	0	0.00	0		
- Threshing	B			135		135		
- Transportation	B			196		196		
Hired labour	MD	64.40	15.65	1,008	15.65	1,008		
Fuel	Lit.	8.28	10.10	84	10.10	84		
Total				3,758		3,768		
2. Gross Value of Production								
Yield (kg/ha)			1,470.0		1,540.0			
Farmgate Price (Bahts/kg)				4.81		4.81		
Gross Income (Bahts/ha)				7,071		7,407		
3. Net Income (Bahts/ha)				3,313		3,640		

Financial Crop Budget

Master Plan Area
Crop:Paddy-Transplanting
Season:Wet Season-Irrigated

(unit:per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	4.95	56.06	277	56.06	277	40.00	198
Chemical fertilizer								
- N	kg	14.88	20.60	307	25.80	384	26.50	394
- P2O5	kg	20.40	25.80	526	25.80	526	26.50	541
- K2O	kg	8.41	0.00	0	0.00	0	10.00	84
Manure	kg	0.85	0.00	0	0.00	0	1500.00	1,275
Agro-chemicals								
- Fungicides				0		0		0
- Insecticides				76		76		60
Mechanization								
- Land preparation	R			1,625		1,625		1,625
- Pest control	hr	30.60	0.00	0	0.00	0	0.00	0
- Watering	hr	36.60	12.50	458	12.50	458	15.00	549
- Harvesting/Hauling	hr	38.00	0.00	0	0.00	0	0.00	0
- Threshing	R			204		214		246
- Transportation	R			295		310		353
Hired labour	MD	70.00	19.94	1,396	20.00	1,400	21.00	1,470
Fuel	lit.	9.00	78.40	706	78.40	706	81.00	729
Total				5,869		5,976		7,522
2. Gross Value of Production								
Yield (kg/ha)			2,039.0		2,150.0		3,200.0	
Farmgate Price (Bahts/kg)				4.65		4.65		4.65
Gross Income (Bahts/ha)				9,481		9,998		14,880
3. Net Income (Bahts/ha)				3,612		4,022		7,358

Economic Crop Budget

Master Plan Area
Crop:Paddy-Transplanting
Season:Wet Season-Irrigated

(unit:per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	4.55	56.06	255	56.06	255	40.00	182
Chemical fertilizer								
- N	kg	14.27	20.60	294	25.80	368	26.50	378
- P2O5	kg	19.72	25.80	509	25.80	509	26.50	523
- K2O	kg	8.12	0.00	0	0.00	0	10.00	81
Manure	kg	0.78	0.00	0	0.00	0	1500.00	1,170
Agro-chemicals								
- Fungicides				0		0		0
- Insecticides				70		70		55
Mechanization								
- Land preparation	R			1,495		1,495		1,495
- Pest control	hr	28.15	0.00	0	0.00	0	0.00	0
- Watering	hr	33.67	12.50	421	12.50	421	15.00	505
- Harvesting/Hauling	hr	34.95	0.00	0	0.00	0	0.00	0
- Threshing	R			188		193		224
- Transportation	R			272		280		325
Hired labour	MD	64.40	19.94	1,284	20.00	1,288	21.00	1,352
Fuel	lit.	8.28	78.40	649	78.40	649	81.00	671
Total				5,437		5,528		6,961
2. Gross Value of Production								
Yield (kg/ha)			2,039.0		2,150.0		3,200.0	
Farmgate Price (Bahts/kg)				4.81		4.81		4.81
Gross Income (Bahts/ha)				9,808		10,342		15,392
3. Net Income (Bahts/ha)				4,371		4,814		8,431

Financial Crop Budget

Master Plan Area
Crop:Paddy-Transplanting
Season:Dry Season-Irrigated

(unit:per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	4.95	60.00	297	53.00	262	50.00	248
Chemical fertilizer								
- N	kg	14.88	22.00	327	25.80	384	35.00	521
- P2O5	kg	20.40	27.50	561	25.80	526	35.00	714
- K2O	kg	8.41	5.00	42	7.00	59	20.00	168
Manure	kg	0.85	0.00	0	0.00	0	2000.00	1,700
Agro-chemicals								
- Fungicides				0		0		0
- Insecticides				80		180		220
Mechanization								
- Land preparation	R			1,625		1,625		1,625
- Pest control	hr	30.60	0.00	0	0.00	0	15.00	459
- Watering	hr	36.60	12.50	480	13.00	476	20.00	732
- Harvesting/Hauling	hr	38.00	0.00	0	0.00	0	0.00	0
- Threshing	R			220		214		244
- Transportation	R			320		360		400
Hired labour	MD	70.00	25.00	1,750	21.00	1,470	35.00	2,450
Fuel	lit.	9.00	80.00	720	83.00	747	95.00	855
Total				6,422		6,303		10,336
2. Gross Value of Production								
Yield (kg/ha)			2,500.0		2,640.0		3,850.0	
Farmgate Price (Bahts/kg)				4.65		4.65		4.65
Gross Income (Bahts/ha)				11,625		12,276		17,903
3. Net Income (Bahts/ha)				5,203		5,973		7,567

Economic Crop Budget

Master Plan Area
Crop:Paddy-Transplanting
Season:Dry Season-Irrigated

(unit:per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	4.55	60.00	273	53.00	241	50.00	228
Chemical fertilizer								
- N	kg	14.27	22.00	314	25.80	368	35.00	499
- P2O5	kg	19.72	27.50	542	25.80	509	35.00	690
- K2O	kg	8.12	5.00	41	7.00	57	20.00	162
Manure	kg	0.78	0.00	0	0.00	0	2000.00	1,560
Agro-chemicals								
- Fungicides				0		0		0
- Insecticides				70		70		55
Mechanization								
- Land preparation	R			1,495		1,495		1,495
- Pest control	hr	28.15	0.00	0	0.00	0	15.00	422
- Watering	hr	33.67	12.50	421	13.00	438	20.00	673
- Harvesting/Hauling	hr	34.96	0.00	0	0.00	0	0.00	0
- Threshing	R			188		193		224
- Transportation	R			272		280		325
Hired labour	MD	64.40	25.00	1,610	21.00	1,352	35.00	2,254
Fuel	lit.	8.28	80.00	662	83.00	687	95.00	787
Total				5,888		5,690		9,375
2. Gross Value of Production								
Yield (kg/ha)			2,500.0		2,640.0		3,850.0	
Farmgate Price (Bahts/kg)				4.81		4.81		4.81
Gross Income (Bahts/ha)				12,025		12,698		18,519
3. Net Income (Bahts/ha)				6,137		7,008		9,144

Financial Crop Budget

Master Plan Area
Crop: Soybeans
Season: Dry Season-Rainfed

(unit: per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	17.00	104.2	1,771	104.2	1,771		
Chemical fertilizer								
- N	kg	14.88	8.3	124	9.5	141		
- P2O5	kg	20.40	8.3	170	9.5	194		
- K2O	kg	8.41	4.1	34	4.7	40		
Manure	kg	0.85	0.0	0	0.0	0		
Agro-chemicals								
- Fungicides	B			0		0		
- Insecticides	B			450		450		
Mechanization								
- Land preparation	B			1,375		1,375		
- Pest control	hr	30.60	0.0	0	0.0	0		
- Watering	hr	36.60	20.0	732	0.0	0		
- Threshing	B			563		563		
- Transportation	B			101		101		
Hired labour	MD	0.00	0.0	0	0.0	0		
Fuel	Lit.	9.00	45.0	405	35.0	315		
Total				5,325		4,950		
2. Gross Value of Production								
Yield (kg/ha)			1,125.0		1,125.0			
Farmgate Price (Bahts/kg)				11.94		11.94		
Gross Income (Bahts/ha)				13,433		13,433		
3. Net Income (Bahts/ha)				7,707		8,482		

Economic Crop Budget

Master Plan Area
Crop: Soybeans
Season: Dry Season-Rainfed

(unit: per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	15.64	104.2	1,630	104.2	1,630		
Chemical fertilizer								
- N	kg	14.27	7.5	107	9.5	136		
- P2O5	kg	19.72	7.5	148	9.5	187		
- K2O	kg	8.12	3.4	28	4.7	38		
Manure	kg	0.78	0.0	0	0.0	0		
Agro-chemicals								
- Fungicides	B			0		0		
- Insecticides	B			414		414		
Mechanization								
- Land preparation	B			1,265		1,265		
- Pest control	hr	28.15	0.0	0	0.0	0		
- Watering	hr	33.67	0.0	0	0.0	0		
- Threshing	B			517		517		
- Transportation	B			93		93		
Hired labour	MD	0.00	0.0	0	0.0	0		
Fuel	Lit.	8.28	30.0	248	35.0	290		
Total				4,450		4,570		
2. Gross Value of Production								
Yield (kg/ha)			1,125.0		1,125.0			
Farmgate Price (Bahts/kg)				11.22		11.22		
Gross Income (Bahts/ha)				12,623		12,623		
3. Net Income (Bahts/ha)				8,173		8,053		

Financial Crop Budget

Master Plan Area
Crop: Soybeans
Season: Dry Season-Irrigated

(unit: per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	17.00	104.2	1,771	104.2	1,771	80.0	1,360
Chemical fertilizer								
- N	kg	14.88	8.3	124	9.5	141	11.4	170
- P2O5	kg	20.40	8.3	170	9.5	194	11.4	233
- K2O	kg	8.41	4.1	34	4.7	40	5.6	47
Manure	kg	0.85	0.0	0	0.0	0	0.0	0
Agro-chemicals								
- Fungicides	B			0		0		0
- Insecticides	B			450		450		380
Mechanization								
- Land preparation	R			1,325		1,265		1,265
- Pest control	hr	30.60	0.0	0	0.0	0	0.0	0
- Watering	hr	36.60	20.0	732	23.0	842	28.0	1,025
- Threshing	R			668		700		800
- Transportation	R			120		126		144
Hired labour	MD	0.00	0.0	0	0.0	0	0.0	0
Fuel	Lit.	9.00	45.0	405	52.0	468	62.0	558
Total				5,849		5,997		5,981
2. Gross Value of Production								
Yield (kg/ha)			1,336		1,400		1,700	
Farmgate Price (Bahts/kg)				11.94		11.94		11.94
Gross Income (Bahts/ha)				15,952		16,716		20,298
3. Net Income (Bahts/ha)				10,102		10,719		14,317

Economic Crop Budget

Master Plan Area
Crop: Soybeans
Season: Dry Season-Irrigated

(unit: per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	15.64	104.2	1,630	104.2	1,630	80.0	1,251
Chemical fertilizer								
- N	kg	14.27	8.3	119	9.5	136	11.4	163
- P2O5	kg	19.72	8.3	164	9.5	187	11.4	225
- K2O	kg	8.12	4.1	33	4.7	38	5.6	45
Manure	kg	0.78	0.0	0	0.0	0	1500.0	1,170
Agro-chemicals								
- Fungicides	B			0		0		0
- Insecticides	B			414		414		350
Mechanization								
- Land preparation	R			1,265		1,265		1,410
- Pest control	hr	28.15	0.0	0	0.0	0	0.0	0
- Watering	hr	33.67	20.0	673	23.0	774	28.0	943
- Threshing	R			614		644		736
- Transportation	R			111		116		132
Hired labour	MD	0.00	0.0	0	0.0	0	0.0	0
Fuel	Lit.	8.28	45.0	373	52.0	431	62.0	513
Total				5,396		5,635		6,998
2. Gross Value of Production								
Yield (kg/ha)			1,336		1,400		1,700	
Farmgate Price (Bahts/kg)				11.22		11.22		11.22
Gross Income (Bahts/ha)				14,990		15,708		19,074
3. Net Income (Bahts/ha)				9,594		10,073		12,076

Financial Crop Budget

Master Plan Area
Crop:Cucumber
Season:Dry Season-Irrigated

(unit:per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	320.00	3.1	998	3.3	1,056	4.0	1,280
Chemical fertilizer								
- N	kg	14.88	89.9	1,338	92.0	1,369	95.0	1,414
- P2O5	kg	20.40	112.4	2,293	115.0	2,346	118.0	2,407
- K2O	kg	8.41	0.0	0	0.0	0	40.0	336
Manure	kg	0.85	0	0	0	0	2000	1,700
Agro-chemicals								
- Fungicides				0		0		0
- Insecticides				3,125		3,125		2,800
Mechanization								
- Land preparation	R			1,375		1,375		1,600
- Pest control	hr	30.60	0	0	0	0	0	0
- Watering	hr	36.60	90	3,294	92	3,367	95	3,477
- Harvesting/Hauling	hr	38.00	0	0	0	0	0	0
Hired labour	MD	70.00	0	0	15	1,050	30	2,100
Fuel	lit.	9.00	62.5	563	62.5	563	70	630
Total				12,986		14,251		17,744
2. Gross Value of Production								
Yield (kg/ha)			12,500		13,000		16,000	
Farmgate Price (Bahts/kg)				2.70		2.70		2.70
Gross Income (Bahts/ha)				33,750		35,100		43,200
3. Net Income (Bahts/ha)				20,764		20,849		25,456

Economic Crop Budget

Master Plan Area
Crop:Cucumber
Season:Dry Season-Irrigated

(unit:per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	294.40	3.1	919	3.3	972	4.0	1,178
Chemical fertilizer								
- N	kg	14.27	89.9	1,283	92.0	1,313	95.0	1,356
- P2O5	kg	19.72	112.4	2,217	115.0	2,268	118.0	2,327
- K2O	kg	8.12	0.0	0	0.0	0	40.0	325
Manure	kg	0.78	0	0	0	0	2000	1,560
Agro-chemicals								
- Fungicides				0		0		0
- Insecticides				2,875		2,875		2,576
Mechanization								
- Land preparation	R			1,265		1,265		1,470
- Pest control	hr	28.15	0	0	0	0	0	0
- Watering	hr	33.67	90	3,030	92	3,098	95	3,199
- Harvesting/Hauling	hr	34.96	0	0	0	0	0	0
Hired labour	MD	64.40	0	0	15	966	30	1,932
Fuel	lit.	8.28	62.5	518	62.5	518	70	580
Total				12,106		13,273		16,501
2. Gross Value of Production								
Yield (kg/ha)			12,500		13,000		16,000	
Farmgate Price (Bahts/kg)				2.70		2.70		2.70
Gross Income (Bahts/ha)				33,750		35,100		43,200
3. Net Income (Bahts/ha)				21,644		21,827		26,699

Financial Crop Budget

River Basin:Master Plan Area
Crop:Groundnuts
Season:Dry Season-Irrigated

(unit:per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	6.00	187.5	1,125	190.0	1,140	190.0	1,140
Chemical fertilizer								
- N	kg	14.88	23	342	24	357	30	446
- P2O5	kg	20.4	23	469	24	490	30	612
- K2O	kg	8.41	23	193	24	202	30	252
Manure	kg	0.85	0.0	0		0	1000.0	850
- Fungicides				0		0	0	300
- Insecticides				0		0	0.0	300
Mechanization								
- Land preparation	hr			1,375		1,375		1,600
- Pest control	hr	30.60	0.0	0		0		500
- Watering	hr	36.60	0.0	0		0	15	549
- Transportation	hr	180.80	0.0	0		0		400
Hired labour	MD	80.00	31.3	2,500	35	2,800	40.0	3,200
Fuel	lit.	9.41	9.9	93	12	113	20	188
Total				6,098		6,476		10,338
2. Gross Value of Production								
Yield (kg/ha)			1,000		1,150		1,620	
Farmgate Price (Bahts/kg)				9.68		9.68		9.68
Gross Income (Bahts/ha)				9,680		11,132		15,682
3. Net Income (Bahts/ha)				3,582		4,656		5,344

Economic Crop Budget

River Basin:Master Plan Area
Crop:Groundnuts
Season:Dry Season-Irrigated

(unit:per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	5.52	187.5	1,035	190.0	1,049	190.0	1,049
Chemical fertilizer								
- N	kg	14.27	23.0	328	24	342	30	428
- P2O5		19.72	23	454	24	473	30	592
- K2O		8.12	23	187	24	195	30	244
Manure	kg	0.78	0.0	0		0	1500.0	1,170
Agro-chemicals				0		0	0	0
- Fungicides				0		0	0	0
- Insecticides				0		0	0.0	0
Mechanization								
- Land preparation	hr			1,265	1265	1,260		1,470
- Pest control	hr	28.15	0.0	0	0	0		500
- Watering	hr	33.67	0.0	0	0	0	15	505
- Transportation	hr			200		300		400
Hired labour	MD	64.40	31.3	2,013	35	2,254	40.0	2,576
Fuel	lit.	8.28	9.9	82	12	99	20	166
Total				5,563		5,913		9,099
2. Gross Value of Production								
Yield (kg/ha)			1,000		1,150		1,620	
Farmgate Price (Bahts/kg)				9.70		9.70		9.70
Gross Income (Bahts/ha)				9,700		11,155		15,714
3. Net Income (Bahts/ha)				4,137		5,182		6,615

Financial Crop Budget

Master Plan Area
Crop: Sweet Corn
Season: Wet Season-Irrigated

(unit: per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	17.10	9.8	167	9.8	167	9.8	167
Chemical fertilizer								
- N	kg	14.88	16.6	247	18.0	268	20.0	298
- P2O5	kg	20.40	16.6	339	18.0	367	20.0	408
- K2O	kg	8.41	8.3	70	9.0	76	10.0	84
Manure	kg	0.85	0.0	0	0.0	0	0.0	0
Agro-chemicals								
- Fungicides				76		76		65
- Insecticides				90		90		78
Mechanization								
- Land preparation	R			1,375		1,375		1,600
- Pest control	hr	30.60	0.0	0	0.0	0		0
- Watering	hr	36.69	17.0	622	20.0	732	25.0	915
- Harvesting/Hauling	hr	38.00	0.0	0	0.0	0	0.0	0
- Threshing	R	0.00	0.0	0	0.0	0	0.0	0
- Transportation	0	0.00	0.0	0	0.0	0	0.0	0
Hired labour	MD	70.00	35.0	2,450	45.0	3,150	50.0	3,500
Fuel	lit.	9.00	12.0	108	12.0	108	15.0	135
Total				5,543		6,408		7,247
2. Gross Value of Production								
Yield (kg/ha)			8,200		8,500		11,000	
Farmgate Price (Bahts/kg)				2.00		2.00		2.00
Gross Income (Bahts/ha)				16,400		17,000		22,000
3. Net Income (Bahts/ha)				10,857		10,592		14,753

Economic Crop Budget

Master Plan Area
Crop: Sweet Corn
Season: Wet Season-Irrigated

(unit: per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	15.64	9.8	152	9.8	153	9.8	153
Chemical fertilizer								
- N	kg	14.27	16.6	237	18.0	257	20.0	285
- P2O5	kg	19.72	16.6	327	18.0	355	20.0	394
- K2O	kg	8.12	8.3	67	9.0	73	10.0	81
Manure	kg	0.78	0.0	0	0.0	0	0.0	0
Agro-chemicals								
- Fungicides				70		70		60
- Insecticides				83		83		70
Mechanization								
- Land preparation	R			1,265		1,265		1,470
- Pest control	hr	28.15	0.0	0	0.0	0	25.0	704
- Watering	hr	33.67	17.0	572	20.0	673	0.0	0
- Harvesting/Hauling	hr	34.96	0.0	0	0.0	0	0.0	0
- Threshing	R	0.00	0.0	0	0.0	0	0.0	0
- Transportation	0	0.00	0.0	0	0.0	0	0.0	0
Hired labour	MD	64.40	35.0	2,254	45.0	2,898	50.0	3,220
Fuel	lit.	8.28	12.0	99	12.0	99	15.0	124
Total				5,128		5,927		6,562
2. Gross Value of Production								
Yield (kg/ha)			8,200		8,500		11,000	
Farmgate Price (Bahts/kg)				2.00		2.00		2.00
Gross Income (Bahts/ha)				16,400		17,000		22,000
3. Net Income (Bahts/ha)				11,272		11,073		15,438

Financial Crop Budget

Master Plan Area
Crop: Tomato
Season: Dry Season-Irrigated

(unit: per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	800	1.3	1,048	1.5	1,200	1.7	1,360
Chemical fertilizer								
- N	kg	14.88	40.1	597	44.1	656	48.0	714
- P2O5	kg	20.4	40.1	818	44.1	900	48.0	979
- K2O	kg	8.41	40.1	337	44.1	371	48.0	404
Manure	kg	0.85	0	0	0	0	2,000	1,700
Agro-chemicals								
- Fungicides				263		263		250
- Insecticides				1,300		1,300		1000
Mechanization								
- Land preparation	R			1,375		1,375		1,600
- Pest control	hr	30.6	0	0	0	0	0	0
- Watering	hr	36.6	95	3,477	95	3,477	110	4,026
- Threshing	R			0		0		0
- Transportation	R			0		0		0
Hired labour	MD	70.00	27.3	1,911	32	2,240	43	3,010
Fuel	lit.	9	150	1,350	150	1,350	172	1,548
Total				12,476		13,132		16,591
2. Gross Value of Production								
Yield (kg/ha)			15,260		16,000		24,000	
Farmgate Price (Bahts/kg)				3.33		3.33		3.33
Gross Income (Bahts/ha)				50,816		53,280		79,920
3. Net Income (Bahts/ha)				38,340		40,148		63,329

Economic Crop Budget

Master Plan Area
Crop: Tomato
Season: Dry Season-Irrigated

(unit: per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	736	1.3	964	1.5	1,104	1.7	1,251
Chemical fertilizer								
- N	kg	14.27	40.1	572	44.1	629	48.0	685
- P2O5	kg	19.72	40.1	791	44.1	870	48.0	947
- K2O	kg	8.12	40.1	326	44.1	358	48.0	390
Manure	kg	0.78	0	0	0	0	2,000	1,560
Agro-chemicals								
- Fungicides				242		242		230
- Insecticides				1,196		1,196		920
Mechanization								
- Land preparation	R			1,265		1,265		1,470
- Pest control	hr	28.15	0	0	0	0	0	0
- Watering	hr	33.67	95	3,199	95	3,199	110	3,704
- Threshing	R			0		0		0
- Transportation	R			0		0		0
Hired labour	MD	64.40	27.3	1,758	32	2,061	43	2,769
Fuel	lit.	8.28	150	1,242	150	1,242	172	1,424
Total				11,555		12,166		15,350
2. Gross Value of Production								
Yield (kg/ha)			15,260		16,000		24,000	
Farmgate Price (Bahts/kg)				3.44		3.44		3.44
Gross Income (Bahts/ha)				52,494		55,040		82,560
3. Net Income (Bahts/ha)				40,940		42,874		67,210

Financial Crop Budget

Master Plan Area
Crop:Maize
Season:Wet Season-Rainfed

(unit:per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	86.00	18.8	1,613	18.8	1,613		
Chemical fertilizer								
- N	kg	14.88	15.0	223	15.6	232		
- P2O5	kg	20.4	15.0	306	15.6	318		
- K2O	kg	8.41	7.5	63	7.5	63		
Manure	kg	0.85	0	0	0	0		
Agro-chemicals								
- Fungicides				300		300		
- Insecticides				0		0		
Mechanization								
- Land preparation	R			1,375		1,375		
- Watering	hr	36.6	0	0	0	0		
- Threshing	R			347		351		
- Transportation	R			387		391		
Hired labour	MD	70.00	5.5	385	5.7	399		
Fuel	lit.	9	0	0	0	0		
Others								
Total				4,999		5,042		
2. Gross Value of Production								
Yield (kg/ha)			2,670.0		2,700.0			
Farmgate Price (Bahts/kg)				2.36		2.36		
Gross Income (Bahts/ha)				6,301		6,372		
3. Net Income (Bahts/ha)				1,302		1,330		

Economic Crop Budget

Master Plan Area
Crop:Maize
Season:Wet Season-Rainfed

(unit:per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	79.12	18.8	1,484	18.8	1,484		
Chemical fertilizer								
- N	kg	14.27	15.0	214	15.6	223		
- P2O5	kg	19.72	15.0	296	15.6	308		
- K2O	kg	8.12	7.5	61	7.5	61		
Manure	kg	0.78	0	0	0	0		
Agro-chemicals								
- Fungicides				276		276		
- Insecticides				0		0		
Mechanization								
- Land preparation	R			1,265		1,265		
- Watering	hr	33.67	0	0	0	0		
- Threshing	R			319		323		
- Transportation	R			356		360		
Hired labour	MD	64.40	5.5	354	5.7	367		
Fuel	lit.	8.28	0	0	0	0		
Others								
Total				4,624		4,666		
2. Gross Value of Production								
Yield (kg/ha)			2,670.0		2,700.0			
Farmgate Price (Bahts/kg)				2.36		2.36		
Gross Income (Bahts/ha)				6,301		6,372		
3. Net Income (Bahts/ha)				1,677		1,706		

Financial Crop Budget

Master Plan Area
Crop:Maize
Season:Wet Season-Irrigated

(unit:per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	86.00	22.0	1,892	22.0	1,892	25.0	2,150
Chemical fertilizer								
- N	kg	14.88	17.0	253	17.5	260	18.0	268
- P2O5	kg	20.4	17.0	347	17.5	357	18.0	367
- K2O	kg	8.41	8.0	67	8.5	71	9.0	76
Manure	kg	0.85	0	0	0	0	0	0
Agro-chemicals								
- Fungicides				300		300		200
- Insecticides				0		0		0
Mechanization								
- Land preparation	R			1,375		1,375		1,375
- Watering	hr	36.6	0	0	0	0	5	183
- Threshing	R			364		377		455
- Transportation	R			406		421		507
Hired labour	MD	70.00	6.0	420	6.0	420	7.0	490
Fuel	lit.	9	0	0	0	0	0	0
Others								
Total				5,424		5,474		6,071
2. Gross Value of Production								
Yield (kg/ha)			2,300		2,330		3,150	
Farmgate Price (Bahts/kg)				2.36		2.36		2.36
Gross Income (Bahts/ha)				6,608		6,679		7,434
3. Net Income (Bahts/ha)				1,184		1,205		1,363

Economic Crop Budget

Master Plan Area
Crop:Maize
Season:Wet Season-Irrigated

(unit:per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	79.12	22.0	1,741	22.0	1,741	25.0	1,978
Chemical fertilizer								
- N	kg	14.27	17.0	243	17.5	250	18.0	257
- P2O5	kg	19.72	17.0	335	17.5	345	18.0	355
- K2O	kg	8.12	8.0	65	8.5	69	9.0	73
Manure	kg	0.78	0	0	0	0	0	0
Agro-chemicals								
- Fungicides				276		276		276
- Insecticides				0		0		0
Mechanization								
- Land preparation	R			1,265		1,265		1,265
- Watering	hr	33.67	0	0	0	0	5	168
- Threshing	R			334		346		419
- Transportation	R			373		386		466
Hired labour	MD	64.40	6.0	386	6.0	386	7.0	451
Fuel	lit.	8.28	0	0	0	0	0	0
Others								
Total				5,018		5,064		5,708
2. Gross Value of Production								
Yield (kg/ha)			2,300.0		2,330.0		3,150.0	
Farmgate Price (Bahts/kg)				2.47		2.47		2.47
Gross Income (Bahts/ha)				6,916		6,990		7,781
3. Net Income (Bahts/ha)				1,898		1,926		2,072

Financial Crop Budget

Master Plan Area
Crop:Cassava
Season:Wet Season-Rainfed

(unit:per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	0.04	10,283.0	411	10,283.0	411	10,283.0	411
Chemical fertilizer								
- N	kg	14.88	10.2	152	10.2	152	10.2	152
- P2O5	kg	20.40	10.2	208	10.2	208	10.2	208
- K2O	kg	8.41	9.5	80	9.5	80	9.5	80
Manure	kg	0.85	0.0	0	0.0	0	0.0	0
Agro-chemicals								
- Fungicides				47		47		47
- Insecticides				0		0		0
Mechanization								
- Land preparation	R			1,375		1,375		1,375
- Pest control	hr	30.60	0.0	0	0.0	0	0.0	0
- Watering	hr	36.60	0.0	0	0.0	0	0.0	0
- Harvesting/Hauling	hr	38.00	0.0	0	0.0	0	0.0	0
- Threshing	hr	62.70	0.0	0	0.0	0	0.0	0
- Transportation	R			4,022		4,022		4,022
Hired labour	MD	70.00	19.9	1,396	19.9	1,396	19.9	1,396
Fuel	Lit.	9.41	6.4	60	6.4	60	6.4	60
Total				7,751		7,751		7,751
2. Gross Value of Production								
Yield (kg/ha)			11,659		11,659		15,000	
Farmgate Price (Bahts/kg)				0.78		0.78		0.78
Gross Income (Bahts/ha)				9,094		9,094		11,700
3. Net Income (Bahts/ha)				1,343		1,343		3,949

Economic Crop Budget

Master Plan Area
Crop:Cassava
Season:Wet Season-Rainfed

(unit:per ha)

	Unit	Unit Price (Bahts)	Pre-Project Quant.	Pre-Project Value (Bahts)	Without Project Quant.	Without Project Value (Bahts)	With Project Quant.	With Project Value (Bahts)
1. Cost of Production								
Seeds	kg	0.04	10,283.0	411	10,283.0	411	10,283.0	411
Chemical fertilizer								
- N	kg	14.27	10.2	146	10.2	146	10.2	146
- P2O5	kg	19.72	10.2	201	10.2	201	10.2	201
- K2O	kg	8.12	9.5	77	9.5	77	9.5	77
Manure	kg	0.78	0.0	0	0.0	0	0.0	0
Agro-chemicals								
- Fungicides				43		43		43
- Insecticides				0		0		0
Mechanization								
- Land preparation	R			1,265		1,265		1,265
- Pest control	hr	28.15	0.0	0	0.0	0	0.0	0
- Watering	hr	33.67	0.0	0	0.0	0	0.0	0
- Harvesting/Hauling	hr	34.96	0.0	0	0.0	0	0.0	0
- Threshing	hr		0.0		0.0	0	0.0	0
- Transportation	R			3,701		3,701		3,701
Hired labour	MD	64.40	19.9	1,284	19.9	1,284	19.9	1,284
Fuel	Lit.	8.28	6.4	53	6.4	53	6.4	53
Total				7,181		7,181		7,181
2. Gross Value of Production								
Yield (kg/ha)			11,659		11,659		15,000	
Farmgate Price (Bahts/kg)				0.78		0.78		0.78
Gross Income (Bahts/ha)				9,094		9,094		11,700
3. Net Income (Bahts/ha)				1,913		1,913		4,519

Cost of Production

Without Project (Financial)

Master Plan Area Crop:Young Corn Season:Dry-Irrigated	(unit:Bahts/ha)
Seed	1,250
Land Preparation	1,375
Fertilizer	1,860
Chemicals	450
Watering	1,080
Labour	7,650
Others	9,400
Total	23,065
Yield	7,500
Farmgate Price	13.89
Gross Income	104,175
Net Income	81,110

Cost of Production

With Project (Financial)

Master Plan Area Crop:Young Corn Season:Dry-Irrigated	(unit:Bahts/ha)
Seed	1,250
Land Preparation	1,600
Fertilizer	2,230
Chemicals	500
Watering	1,200
Labour	8,700
Others	10,000
Total	25,480
Yield	8,630
Farmgate Price	13.89
Gross Income	119,871
Net Income	94,391

Without Project (Economic)

Master Plan Area Crop:Young Corn Season:Dry-Irrigated	(unit:Bahts/ha)
Seed	1,150
Land Preparation	1,265
Fertilizer	1,711
Chemicals	414
Watering	994
Labour	7,038
Others	9,401
Total	21,973
Yield	7,500
Farmgate Price	14.53
Gross Income	108,975
Net Income	87,002

With Project (Economic)

Master Plan Area Crop:Young Corn Season:Dry-Irrigated	(unit:Bahts/ha)
Seed	1,150
Land Preparation	1,518
Fertilizer	2,053
Chemicals	460
Watering	1,100
Labour	8,000
Others	9,200
Total	23,481
Yield	8,630
Farmgate Price	14.53
Gross Income	125,394
Net Income	101,912

Cost of Production

Without Project (Financial)

Master Plan Area Crop:Tobacco Season:Dry-Irrigated	(unit:Bahts/ha) Tobacco
Seed	313
Land Preparation	1,375
Fertilizer	3,125
Chemicals	1,250
Labour	3,125
Fuels	1,875
Total	11,063
Yield (kg/ha)	1,518
Farmgate Price (Bahts/kg)	80.25
Gross Income	121,820
Net Income	110,757

Cost of Production

With Project (Financial)

Master Plan Area Crop:Tobacco Season:Dry-Irrigated	(unit:Bahts/ha) Tobacco
Seed	313
Land Preparation	1,600
Fertilizer	3,750
Chemicals	1,250
Labour	3,750
Fuels	2,250
Total	12,913
Yield (kg/ha)	1,820
Farmgate Price (Bahts/kg)	80.25
Gross Income	146,055
Net Income	133,142

Cost of Production

Without Project (Economic)

Master Plan Area Crop:Tobacco Season:Dry-Irrigated	(unit:Bahts/ha) Tobacco
Seed	288
Land Preparation	1,265
Fertilizer	2,875
Chemicals	1,150
Labour	2,875
Fuels	1,725
Total	10,178
Yield (kg/ha)	1,518
Farmgate Price (Bahts/kg)	80.25
Gross Income	121,820
Net Income	111,642

Cost of Production

With Project (Economic)

Master Plan Area Crop:Tobacco Season:Dry-Irrigated	(unit:Bahts/ha) Tobacco
Seed	288
Land Preparation	1,518
Fertilizer	3,450
Chemicals	1,150
Labour	3,450
Fuels	2,070
Total	11,926
Yield (kg/ha)	1,820
Farmgate Price (Bahts/kg)	80.25
Gross Income	146,055
Net Income	134,129

Cost of Production(Mango:Khieo Sawoei)-Financial

	Quan. per/ha	Unit Price(B)	Year 1	2	3	4	5	6	7	8	9	10
Yield(kg/ha)			0	0	0	2,386	3,580	4,773	5,966	7,159	8,352	8,352
Unit Price(B/kg)		19.58	19.58	19.58	19.58	19.58	19.58	19.58	19.58	19.58	19.58	19.58
Gross Income(B/ha)			0	0	0	46,718	70,096	93,455	116,814	140,173	163,532	163,532
Cost of Production												
Nursery	238	30.7	7,301	0	0	0	0	0	0	0	0	0
Sevin 85	0.40	170.0	68	68	68	68	68	68	68	68	68	68
Malathion 57	0.40	130.0	52	52	52	52	52	52	52	52	52	52
Dithan	0.40	105.0	42	42	42	42	42	42	42	42	42	42
Labour(man day/ha)												
Land Preparation(Man. day)		70.0	490	0	0	0	0	0	0	0	0	0
Land Preparation(Mach/ha)		1375.0	1,375	0	0	0	0	0	0	0	0	0
Planting nursery		70.0	310	0	0	0	0	0	0	0	0	0
Fertilizing		70.0	220	220	220	330	330	330	330	440	440	440
Spraying		70.0	220	220	220	440	440	440	440	650	650	650
Weeding		70.0	3,470	3,470	3,470	2,660	2,660	2,660	2,660	2,190	2,190	2,190
Trimming		70.0	0	0	880	880	1,090	1,300	1,530	1,750	2,190	2,620
Irrigation		70.0	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310
Harvesting		70.0	0	0	1,310	2,190	2,630	2,630	2,630	3,500	3,500	3,500
Total Cost			15,464	5,382	7,572	1,972	8,628	8,342	9,062	10,002	10,442	10,872
Net Gross Income(B/ha)			-15,464	-5,382	-7,572	38,746	61,474	84,613	107,752	130,171	153,090	152,660

Cost of Production(Mango:Khieo Sawoei)-Economic

	Quan. per/ha	Unit Price(B)	Year 1	2	3	4	5	6	7	8	9	10
Yield(kg/ha)			0	0	0	2,386	3,580	4,773	5,966	7,159	8,352	8,352
Unit Price(B/kg)		21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30
Gross Income(B/ha)			0	0	0	50,822	76,254	101,665	127,076	152,487	177,898	177,898
Cost of Production												
Nursery	238	28.3	6,735	0	0	0	0	0	0	0	0	0
Sevin 85	0.40	155.4	63	63	63	63	63	63	63	63	63	63
Malathion 57	0.40	120.0	48	48	48	48	48	48	48	48	48	48
Dithan	0.40	106.6	43	43	43	43	43	43	43	43	43	43
Labour(man day/ha)												
Land Preparation(Man. day)		64.4	450	0	0	0	0	0	0	0	0	0
Land Preparation(Mach/ha)		1265.0	1,265	0	0	0	0	0	0	0	0	0
Planting nursery		64.4	831	0	0	0	0	0	0	0	0	0
Fertilizing		64.4	202	202	202	303	303	303	303	405	405	405
Spraying		64.4	202	202	202	405	405	405	405	598	598	598
Weeding		64.4	3,192	3,192	3,192	2,450	2,450	2,450	2,450	2,015	2,015	2,015
Trimming		64.4	0	0	810	810	1,003	1,205	1,408	1,610	2,015	2,410
Irrigation		64.4	1,205	1,205	1,205	1,205	1,205	1,205	1,205	1,205	1,205	1,205
Harvesting		64.4	0	0	1,205	2,015	2,420	2,420	2,420	3,220	3,220	3,220
Total Cost			14,242	4,955	6,970	1,342	1,940	8,142	8,345	9,207	9,612	10,007
Net Gross Income(B/ha)			-14,242	-4,955	-6,970	43,480	68,314	93,523	118,731	143,280	168,286	167,891

Cost of Production (Tamarind)

	Quan. per/ha	Unit Price (B)	Year 1	2	3	4	5	6	7	8	9	10
Nursery (tree)	160	33	5,280	0	0	0	0	0	0	0	0	0
Manure (kg)		1.0	940	940	940	940	1,090	1,090	1,560	1,560	1,560	1,560
Fertilizer (kg) (15-15-15)	20	10.0	3,200	3,200	4,800	6,400	8,000	9,600	12,800	12,800	12,800	12,800
Pesticides (kg)												
Azodrin	0.80	260.0	208	208	208	208	208	208	208	208	208	208
Sevin 85	0.40	170.0	68	68	68	68	68	68	68	68	68	68
Malathion 57	0.40	130.0	52	52	52	52	52	52	52	52	52	52
Dithan	0.40	105.0	42	42	42	42	42	42	42	42	42	42
Labour (man. day/ha)												
Land Preparation (Man. day)		70.0	490	0	0	0	0	0	0	0	0	0
Land Preparation (Mach/ha)		750.0	750	0	0	0	0	0	0	0	0	0
Planting nursery		70.0	910	0	0	0	0	0	0	0	0	0
Fertilizing		70.0	220	220	220	330	330	330	330	440	440	440
Spraying		70.0	220	220	220	440	440	440	440	650	650	650
Weeding		70.0	3,470	3,470	3,470	2,660	2,660	2,660	2,660	2,190	2,190	2,190
Trimming		70.0	0	0	880	880	1,090	1,310	1,530	1,750	2,190	2,620
Irrigation		70.0	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310	1,310
Harvesting		70.0	0	0	1,310	2,190	2,630	2,630	2,630	3,500	3,500	3,500
Total Cost			17,160	9,730	13,520	15,520	17,920	19,740	23,630	24,570	25,010	25,440
Yield (kg/ha)												
100%			0	0	781	1,560	3,125	4,690	6,250	9,375	12,500	15,625
50%			0	0	393	781	1,560	2,340	3,125	4,690	6,250	7,812
20%			0	0	156	312	625	940	1,250	1,875	2,500	3,125
Unit price (B/kg)			91.3	91.3	91.3	91.3	91.3	91.3	91.3	91.3	91.3	91.3
Gross Income (B/ha)												
100%			0	0	71,305	142,428	285,313	428,197	570,625	855,938	1,141,250	1,426,563
50%			0	0	35,881	71,305	142,428	213,642	285,313	428,197	570,625	713,236
20%			0	0	14,243	28,486	57,063	85,822	114,125	171,188	228,250	285,313
Total Gross Income (B/ha)			0	0	121,429	242,219	484,803	727,661	970,063	1,455,322	1,940,125	2,425,111
Net Income (B/ha)			-17,160	-9,730	107,909	226,699	466,883	707,921	946,433	1,430,752	1,915,115	2,399,671	817,449

Fish Culture in Fish Pond (Financial)

(unit:per ha)

	1 Rotation (6 months)	2 Rotation per Year
Income		
1. Yielding of Fish	2,800	5600
3. Price per (Bahts/kg)	38	38
Gross Income	106,400	212,800
Expense		
4. Preparing pond	4,000	8,000
5. Fingerlings (1 inch size)	26,000	52,000
6. Feed	7,400	14,800
7. Medicine	7,820	15,640
8. Labour	6,700	13,400
8. Electric for pumping	2,400	4,800
9. Others	27,000	54,000
Total	81,320	162,640
Net Income per ha	25,080	50,160

Note. Fish-Tilapia Nilotica, common carp

Fish Culture in Fish Pond (Economic)

(unit:per ha)

	1 Rotation (6 months)	2 Rotation per Year
Income		
1. Yielding of Fish (kg/ha)	2,800	5,600
3. Price per (Bahts/kg)	38	38
Gross Income	106,400	212,800
Expense		
4. Preparing pond	3,680	7,360
5. Fingerlings (1 inch size)	23,920	47,840
6. Feed	6,808	13,616
7. Medicine	7,194	14,389
8. Labour	6,164	12,328
8. Electric for pumping	2,208	4,416
9. Others	24,840	49,680
Total	74,814	149,629
Net Income per ha	31,586	63,171

Note. Fish-Tilapia Nilotica, common carp

Fish Culture in Reservoir (Financial)

	(Bahts/ha)
Income	
1. Yield (kg/ha)	150
2. Price per (Bahts/kg)	35
Gross Income	5,250
Expense	
3. Labour	3,000
4. Others	150
Total	3,150
Net Income per ha	2,100

Fish Culture in Reservoir (Economic)

	(Bahts/ha)
Income	
1. Yield (kg/ha)	150
2. Price per (Bahts/kg)	35
Gross Income	5,250
Expense	
3. Labour	2,760
4. Others	138
Total	2,898
Net Income per ha	2,352

Broiler (per 100 birds)

Pre-Project (Financial)

	1 Rotation (2 months)	6 Rotation per Year
Income		
1. Number of broiler fattened (birds)	94	564
2. Weight of Broiler fattend (kg)	1.9	2
3. Broiler weight (kg)	179	1,072
4. Price per (Bahts/ kg)	22	22
Gross Income	3,929	23,584
Expense		
4. Purchase of 1 day chick	450	2,700
5. Feed	2,464	14,781
6. Medical care	216	1,296
7. Water & electricity	50	300
8. Labour	107	198
Total	3,287	19,275
Net Income (Bahts)	642	4,309

Broiler (per 100 birds)

Pre-Project (Economic)

	1 Rotation (2 months)	6 Rotation per Year
Income		
1. Number of broiler fattened (birds)	94	564
2. Weight of Broiler fattend (kg)	1.9	2
3. Broiler weight (kg)	179	1,072
4. Price per (Bahts/ kg)	20.24	20.24
Gross Income	3,615	21,697
Expense		
4. Purchase of 1 day chick	414	2,484
5. Feed	2,267	13,599
6. Medical care	199	1,192
7. Water & electricity	46	276
8. Labour	98	182
Total	3,024	17,733
Net Income (Bahts)	591	3,964

Beef Cattle (Financial)

	(unit: Bahts per head) (6 months)
Income	
1. Young cattle (kg)	280
2. Beef cattle fattened (kg)	500
3. Price (Bahts/kg in live weight)	20
Gross Income	10,000
Expense	
4. Purchase of young cattle	4,800
5. Feed	
Concentrate	1,230
Roughage (straw)	500
6. Medical care	220
7. Water & electricity	130
8. Labour	550
Total	7,430
Net Income per head	2,570

Source. Department of Livestock, Udon Thani

Beef Cattle (Economic)

	(unit: Bahts per head) (6 months)
Income	
1. Young cattle (kg)	280
2. Beef cattle fattened (kg)	500
3. Price (Bahts/kg in live weight)	20
Gross Income	10,000
Expense	
4. Purchase of young cattle	4,416
5. Feed	
Concentrate	1,130
Roughage (straw)	460
6. Medical care	202
7. Water & electricity	120
8. Labour	506
Total	6,834
Net Income per head	3,166

Source. Department of Livestock, Udon Thani

Economic Project Cost (Huai Mong)

Items	Total			1st			2nd		
	Total	LC	FC	Total	LC	FC	Total	LC	FC
Dam	41.0	23.8	17.2	8.2	4.8	3.4	20.5	11.9	8.6
Irrigation canal	33.1	16.6	16.5	0.0	0.0	0.0	0.0	0.0	0.0
River improvement	24.3	6.6	17.7	0.0	0.0	0.0	0.0	0.0	0.0
On-farm	3.3	2.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0
Rural infrastructure	9.7	3.8	5.9	0.0	0.0	0.0	0.0	0.0	0.0
Sub-total	111.4	52.8	58.6	8.2	4.8	3.4	20.5	11.9	8.6
Engineering	6.8	4.0	2.8	4.1	2.4	1.7	0.7	0.4	0.3
Administration	14.6	14.6	0.0	2.9	2.9	0.0	2.9	2.9	0.0
Total	132.8	71.4	61.4	15.2	10.1	5.1	24.1	15.2	8.9

(Million Baht)

Items	3rd			4th			5th		
Dam	Total	LC	FC	Total	LC	FC	Total	LC	FC
Irrigation canal	12.3	7.1	5.2	0.0	0.0	0.0	0.0	0.0	0.0
River improvement	6.6	3.3	3.3	19.9	10.0	9.9	6.6	3.3	3.3
On-farm	7.3	2.0	5.3	9.7	2.6	7.1	7.3	2.0	5.3
Rural infrastructure	0.7	0.4	0.3	1.3	0.8	0.5	1.3	0.8	0.5
Sub-total	0.0	0.0	0.0	4.9	1.9	3.0	4.8	1.9	2.9
Engineering	26.9	12.8	14.1	35.8	15.3	20.5	20.0	8.0	12.0
Administration	0.7	0.4	0.3	0.7	0.4	0.3	0.6	0.4	0.2
Total	2.9	2.9	0.0	2.9	2.9	0.0	3.0	3.0	0.0
	30.5	16.1	14.4	39.4	18.6	20.8	23.6	11.4	12.2

Crop Benefit (Huai Mong River Basin)

1. Without Project

	Wet Season		Dry Season		
	Paddy (TP) Rainfed	Paddy (TP) Irrigated	Soybeans Rainfed	Soybeans Irrigated	Total
Yield (kg/ha)	1,540	-	1,125	-	
Unit Price (Bahts/kg)	4.81	-	11.22	-	
Gross Income (Bahts/ha)	7,407	-	12,623	-	
Cost of Production (Bahts/ha)	3,768	-	4,570	-	
Net Income (Bahts/ha)	3,640	-	8,053	-	
Planted Area (ha)	910	-	215	-	
Total Net Income (Bahts)	3,312,400	-	1,731,395	-	5,043,795

2. With Project					
Yield (kg/ha)	-	3,200	-	1,700	
Unit Price (Bahts/kg)	-	4.81	-	11.22	
Gross Income (Bahts/ha)	-	15,392	-	19,074	
Cost of Production (Bahts/ha)	-	6,961	-	6,998	
Net Income (Bahts/ha)	-	8,431	-	12,076	
Planted Area (ha)	-	1,000	-	400	
Total Net Income (Bahts)	-	8,431,000	-	4,830,400	13,261,400
3. Incremental Benefit (Bahts)	-3,312,400	8,431,000	-1,731,395	4,830,400	8,217,605

Fishery Benefit

Fish Culture in Reservoir (Economic)

	(Bahts/ha)
Income	
1. Yield (kg/ha)	150
2. Price per (Bahts/kg)	35
Gross Income	5,250
Expense	
3. Labour	2,760
4. Others	138
Total	2,898
Net Income per ha	2,352
Reservoir Area (ha)	165
Total Net Income	388,080

Calculation of EIRR (Huai Mong)

(million Bahts)

Year	Capital Cost	O & M Cost	Total	Benefit	Return	Present Worth Value by Discount Rate					
						Int. = 0.12		Int. = 0.10		Int. = 0.08	
						Cost	Benefit	Cost	Benefit	Cost	Benefit
1	15.2	0.6	15.8	1.7	-14.08	15.8	1.7	15.8	1.7	15.8	1.7
2	24.1	0.6	24.7	3.4	-21.26	19.7	2.7	20.4	2.8	21.2	2.9
3	30.5	0.6	31.1	5.2	-25.94	22.1	3.7	23.4	3.9	24.7	4.1
4	39.4	0.6	40	6.9	-33.12	25.4	4.4	27.3	4.7	29.4	5.1
5	23.6	0.6	24.2	8.6	-15.6	13.7	4.9	15.0	5.3	16.5	5.9
6	0	0.6	0.6	8.6	8	0.3	4.4	0.3	4.9	0.4	5.4
7	0	0.6	0.6	8.6	8	0.3	3.9	0.3	4.4	0.4	5.0
8	0	0.6	0.6	8.6	8	0.2	3.5	0.3	4.0	0.3	4.6
9	0	0.6	0.6	8.6	8	0.2	3.1	0.3	3.6	0.3	4.3
10	0	0.6	0.6	8.6	8	0.2	2.8	0.2	3.3	0.3	4.0
11	0	0.6	0.6	8.6	8	0.2	2.5	0.2	3.0	0.3	3.7
12	0	0.6	0.6	8.6	8	0.2	2.2	0.2	2.7	0.2	3.4
13	0	0.6	0.6	8.6	8	0.1	2.0	0.2	2.5	0.2	3.2
14	0	0.6	0.6	8.6	8	0.1	1.8	0.2	2.3	0.2	2.9
15	0	0.6	0.6	8.6	8	0.1	1.6	0.1	2.1	0.2	2.7
16	0	0.6	0.6	8.6	8	0.1	1.4	0.1	1.9	0.2	2.5
17	0	0.6	0.6	8.6	8	0.1	1.3	0.1	1.7	0.2	2.3
18	0	0.6	0.6	8.6	8	0.1	1.1	0.1	1.5	0.2	2.2
19	0	0.6	0.6	8.6	8	0.1	1.0	0.1	1.4	0.1	2.0
20	0	0.6	0.6	8.6	8	0.1	0.9	0.1	1.3	0.1	1.8
21	0	0.6	0.6	8.6	8	0.1	0.8	0.1	1.2	0.1	1.7
22	0	0.6	0.6	8.6	8	0.0	0.7	0.1	1.1	0.1	1.6
23	0	0.6	0.6	8.6	8	0.0	0.6	0.1	1.0	0.1	1.5
24	0	0.6	0.6	8.6	8	0.0	0.6	0.1	0.9	0.1	1.4
25	0	0.6	0.6	8.6	8	0.0	0.5	0.1	0.8	0.1	1.3
26	0	0.6	0.6	8.6	8	0.0	0.5	0.1	0.7	0.1	1.2
27	0	0.6	0.6	8.6	8	0.0	0.4	0.0	0.7	0.1	1.1
28	0	0.6	0.6	8.6	8	0.0	0.4	0.0	0.6	0.1	1.0
29	0	0.6	0.6	8.6	8	0.0	0.3	0.0	0.5	0.1	0.9
30	0	0.6	0.6	8.6	8	0.0	0.3	0.0	0.5	0.1	0.9
31	0	0.6	0.6	8.6	8	0.0	0.3	0.0	0.4	0.1	0.8
32	0	0.6	0.6	8.6	8	0.0	0.2	0.0	0.4	0.1	0.7
33	0	0.6	0.6	8.6	8	0.0	0.2	0.0	0.4	0.0	0.7
34	0	0.6	0.6	8.6	8	0.0	0.2	0.0	0.3	0.0	0.6
35	0	0.6	0.6	8.6	8	0.0	0.2	0.0	0.3	0.0	0.6
36	0	0.6	0.6	8.6	8	0.0	0.1	0.0	0.3	0.0	0.5
37	0	0.6	0.6	8.6	8	0.0	0.1	0.0	0.3	0.0	0.5
38	0	0.6	0.6	8.6	8	0.0	0.1	0.0	0.2	0.0	0.5
39	0	0.6	0.6	8.6	8	0.0	0.1	0.0	0.2	0.0	0.4
40	0	0.6	0.6	8.6	8	0.0	0.1	0.0	0.2	0.0	0.4
41	0	0.6	0.6	8.6	8	0.0	0.1	0.0	0.2	0.0	0.4
42	0	0.6	0.6	8.6	8	0.0	0.1	0.0	0.2	0.0	0.3
43	0	0.6	0.6	8.6	8	0.0	0.1	0.0	0.1	0.0	0.3
44	0	0.6	0.6	8.6	8	0.0	0.1	0.0	0.1	0.0	0.3
45	0	0.6	0.6	8.6	8	0.0	0.1	0.0	0.1	0.0	0.3
46	0	0.6	0.6	8.6	8	0.0	0.0	0.0	0.1	0.0	0.2
47	0	0.6	0.6	8.6	8	0.0	0.0	0.0	0.1	0.0	0.2
48	0	0.6	0.6	8.6	8	0.0	0.0	0.0	0.1	0.0	0.2
49	0	0.6	0.6	8.6	8	0.0	0.0	0.0	0.1	0.0	0.2
50	0	0.6	0.6	8.6	8	0.0	0.0	0.0	0.1	0.0	0.2
Total	132.8	30	162.8	412.8	250	99.6	57.8	105.6	71.1	112.5	90.5
								EIRR =	6.0 %		

B/C Ratio	12 %	0.58
B/C Ratio	10 %	0.67
B/C Ratio	8 %	0.80

Huai Mong Basin
Farm Size:4.0 1ha
Farm Model-Without Project

1. Crop Production

	Planted Area (ha)	Yield (kg/ha)	Production (kg)	Unit Price (Bahts/kg)	Value (Bahts)	Production Cost (Bahts)	Net Income (Bahts)
W. Paddy-rainfed	3.35	1,540	5,159	4.65	23,989	7,690	16,299
D. Soybean-rainfed	0.30	1,125	338	11.94	4,030	1,634	2,396
Total	3.65					9,324	18,695

2. Off-farm Income (Bahts/year) 33,230
3. Total Income (Bahts)) 51,925
4. Living Expense (Bahts/year) -Family size 5.8 person/family 38,944
5. Disposable Income (Bahts/year) 12,981

Farm Model-With Project

1. Crop Production

	Area (ha)	Yield (kg/ha)	Production (kg)	Unit Price (Bahts/kg)	Value (Bahts)	Production Cost (Bahts)	Net Income (Bahts)
W. Paddy-irrigated	3.11	3,200	9,952	4.65	46,277	15,646	30,631
D. Soybean	0.60	1,700	1,020	11.94	12,179	2,751	9,428
W. Maize	1.60	3,150	5,040	2.36	11,894	5,464	6,431
Tamarind	0.10						245,234
Fish pond	0.20	5,600	1,120	38.00	42,560	32,528	10,032
Beef cattle	4 head	500kg	4 head	20.00	40,000	29,720	10,280
Total	5.61						301,755

2. Off-farm Income (Bahts/year) 33,230
3. Total Income (Bahts)) 334,985
4. Living Expense (Bahts/year) -Family size 5.8 person/family 251,239
5. Disposable Income (Bahts/year) 83,746

Economic Project Cost (Bang Phuan)

(1,000 Bahts)

	Total			1st			2nd			3rd			4th			5th		
	Total	LC	FC	Total	LC	FC	Total	LC	FC	Total	LC	FC	Total	LC	FC	Total	LC	FC
1. Preparation works	20026	6776	13250	12016	4066	7950	2003	678	1325	2003	678	1325	2003	678	1325	2003	678	1325
2. Construction works																		
2-1. Flood protection																		
1) Regulators (D/S)	7554	4004	3550				3022	1602	1420	4532	2402	2130						
Civil works	3458	308	3150							3458	308	3150						
Gate works																		
2) Regulator (rehabilitation)	3458	308	3150							3458	308	3150						
Gate works																		
3) Pumping station																		
Civil works	21640	11440	10200							8656	4576	4080	12984	6864	6120			
Pump/motor	74100	6600	67500										74100	6600	67500			
4) Regulators (U/S)																		
Civil works	7554	4004	3550							3022	1602	1420	4532	2402	2130			
Gate works	3458	308	3150										3458	308	3150			
5) Drainage canals																		
Bypass	92117	34927	57190				44061	17741	28320	66031	26611	39480						
Rehabilitation	252944	76534	176410				20596	7366	13230	27461	9821	17640	20596	7366	13230			
Sub-total	300028	95875	204150				67678	26708	40970	116678	45628	71050	115670	23540	92130			
2-2. Swamp Area Development																		
1) Reservoir dredging	25925	3485	22440				5185	697	4488	7777	1045	6732	7777	1045	6732	5185	697	4488
2) Dike/road (fill)	12260	5130	7130				2452	1026	1426	3678	1539	2139	3678	1539	2139	2452	1026	1426
3) Dike/road (laterite)	1599	1399	200				73	33	40	572	512	60	572	512	60	381	341	40
4) Pumps	2820	1320	1500													2820	1320	1500
5) On-farm	24182	16262	7920										9673	6505	3168	14509	9757	4752
6) Fishery pond (cut)	6481	871	5610													6481	871	5610
7) Fishery pond (fill)	10217	4277	5940													10217	4277	5940
8) Others	16700	6600	10100										8350	3300	5050	8350	3300	5050
Sub-total	100185	39345	60840				7710	1756	5954	12023	3097	8931	30051	12902	17149	50396	21590	28806
Total (1+2)	420237	141997	278240	12016	4066	7950	77391	29142	48249	130708	49402	81306	147723	37119	110604	52399	22268	30131
3. Engineering	12808	4508	8300	12808	4508	8300												
4. Administration cost	42574	14774	27800	8541	2981	5560	8411	2851	5560	8541	2981	5560	8541	2981	5560	8541	2981	5560
Total	475819	161279	314340	33364	11554	21810	85802	31993	53809	139249	52383	86866	156264	40100	116164	60939	25248	35691

Economic Project Cost (Vieng Khuk)

(1,000 Babts)

	Total			1st			2nd			3rd			4th			5th		
	Total	LC	FC	Total	LC	FC	Total	LC	FC	Total	LC	FC	Total	LC	FC	Total	LC	FC
1. Preparation works	16516	5016	11500	9910	3010	6900	1652	502	1150	1652	502	1150	1652	502	1150	1652	502	1150
2. Construction works																		
2-1. Flood protection																		
1) Regulators (D/S)	0	0	0															
Civil works	0	0	0															
Gate works										6916	616	6300						
2) Regulator (rehabilitation)	0	0	0															
Gate works																		
3) Pumping station																		
Civil works	27520	14520	13000										11008	5808	5200	16512	8712	7800
Pump/motor	91884	8184	83700													91884	8184	83700
4) Regulators (U/S)																		
Civil works	0	0	0															
Gate works	0	0	0															
5) Drainage canals																		
Bypass	82382	29462	52920															
Rehabilitation	155228	55528	99700				27461	9821	17640	41191	14731	26460	41191	14731	26460		9821	17640
Sub-total	263624	72424	191200				27461	9821	17640	48107	15347	32760	52199	20539	31660	108396	26717	109140
2-2. Swamp Area Development																		
1) Reservoir dredging	14259	1918	12343							4273	575	3703	5703	766	4937	4278	575	3703
2) Dike/road (fill)	10898	4558	6340							3270	1368	1902	4359	1823	2536	3270	1368	1902
3) Dike/road (laterite)	1712	1522	190							514	457	57	685	609	76	514	457	57
4) Pumps	2820	1320	1500													2820	1320	1500
5) On-farm	15339	10349	5040										6156	4140	2016	9233	6209	3024
6) Fishery pond (cut)	4321	581	3740													4321	581	3740
7) Fishery pond (fill)	6811	2851	3960													6811	2851	3960
8) Others	11122	4534	6588										5561	2267	3294	5561	2267	3294
Sub-total	67332	27631	39701				0	0	0	8061	2399	5662	22464	9805	12859	36807	15627	21180
Total (1+2)	347472	105071	242401	9910	3010	6900	29112	10322	18790	57820	18248	39572	78315	30646	45669	146855	42845	131470
3. Engineering	10612	3312	7300	10612	3312	7300												
4. Administration cost	35053	10853	24200	7030	2190	4840	6934	2094	4840	7030	2190	4840	7030	2190	4840	7030	2190	4840
Total	393137	119236	273901	27551	8511	19040	36047	12417	23630	64849	20437	44412	83345	32836	50509	153884	45035	136310

1. Without Project

	Wet Season	Dry Season				
	Paddy (TP) Irrigated	Tomato Irrigated	Vegetables Irrigated	Maize Irrigated	Soybean	Total
Yield (kg/ha)	-	-	-	-	-	
Unit Price (Bahts/kg)	-	-	-	-	-	
Gross Income (Bahts/ha)	-	-	-	-	-	
Cost of Production (Bahts/ha)	-	-	-	-	-	
Net Income (Bahts/ha)	-	-	-	-	-	
Planted Area (ha)	-	-	-	-	-	
Total Net Income (Bahts)	-	-	-	-	-	0

2. With Project						
Yield (kg/ha)	3,200	24,000	16,000	3,150	1,700	
Unit Price (Bahts/kg)	4.81	3.44	2.70	2.47	11.22	
Gross Income (Bahts/ha)	15,392	82,560	43,200	7,781	19,074	
Cost of Production (Bahts/ha)	6,961	15,350	16,501	5,708	6,998	
Net Income (Bahts/ha)	8,431	67,210	26,699	2,072	12,076	
Planted Area (ha)	1,400	80	100	80	160	
Total Net Income (Bahts)	11,803,400	5,376,800	2,669,900	165,760	1,932,160	21,948,020

3. Net Production Value (Bahts)	11,803,400	5,376,800	2,669,900	165,760	1,932,160	21,948,020

Fish Culture in Fish Pond (Economic)

	1 Rotation (6 months)
Income	
1. Yielding of Fish (kg/ha)	2,800
3. Price per (Bahts/kg)	38
Gross Income	106,400
Expense	
4. Preparing pond	3,680
5. Fingerlings (1 inch size)	23,920
6. Feed	6,808
7. Medicine	7,194
8. Labour	6,164
8. Electric for pumping	2,208
9. Others	24,840
Total	74,814
Net Income per ha	31,586
Fish Pond Area (ha)	50
Rotation per Year	2 times
Total Net Income (Bahts)	3,158,560

Note. Fish-Tilapia Nilotica, common carp

Fish Culture in Reservoir (Economic)

	(Bahts/ha)
Income	
1. Yield (kg/ha)	150
2. Price per (Bahts/kg)	35
Gross Income	5,250
Expense	
3. Labour	2,760
4. Others	138
Total	2,898
Net Income per ha	2,352
Reservoir Area (ha)	620
Total Net Income	1,458,240

Benefit of Flood Prevention

Weighted average of flood damage

32,000 Bahts/ha x 3,500 ha=112 million/10 year period

Broiler (per 100 birds)

Pre-Project (Economic)

	6 Rotation per Year
Income	
1. Number of broiler fattened (birds)	564
2. Weight of Broiler fattend (kg)	1.9
3. Broiler weight (kg)	1,072
4. Price per (Bahts/ kg)	20.24
Gross Income	21,697
Expense	
4. Purchase of 1 day chick	2,484
5. Feed	13,599
6. Medical care	1,192
7. Water & electricity	276
8. Labour	182
Total	17,733
Net Income (Bahts/100 birds)	3,964
Number of Broilers per year	150,000
Incremental Benefit	5,946,000

Cost of Production (Mango: Khieo Sawnai) - Economic

	Quan. per/ha	Unit Price (B)	Year 1	2	3	4	5	6	7	8	9	10
Yield (kg/ha)			0	0	0	2,386	3,580	4,773	5,966	7,159	8,352	8,352
Unit Price (B/kg)		21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30	21.30
Gross Income (B/ha)			0	0	0	50,822	76,254	101,665	127,076	152,487	177,898	177,898
Cost of Production												
Nursery	238	28.3	6,735	0	0	0	0	0	0	0	0	0
Sevin 85	0.40	156.4	63	63	63	63	63	63	63	63	63	63
Malathion 57	0.40	120.0	48	48	48	48	48	48	48	48	48	48
Dithan	0.40	106.6	43	43	43	43	43	43	43	43	43	43
Labour (man. day/ha)												
Land Preparation (Man. day)		64.4	450	0	0	0	0	0	0	0	0	0
Land Preparation (Mach/ha)		1265.0	1,265	0	0	0	0	0	0	0	0	0
Planting nursery		64.4	837	0	0	0	0	0	0	0	0	0
Fertilizing		64.4	202	202	202	303	303	303	303	405	405	405
Spraying		64.4	202	202	202	405	405	405	405	598	598	598
Weeding		64.4	3,192	3,192	3,192	2,450	2,450	2,450	2,450	2,015	2,015	2,015
Trimming		64.4	0	0	810	810	1,003	1,205	1,408	1,610	2,015	2,410
Irrigation		64.4	1,205	1,205	1,205	1,205	1,205	1,205	1,205	1,205	1,205	1,205
Harvesting		64.4	0	0	1,205	2,015	2,420	2,420	2,420	3,220	3,220	3,220
Total Cost			14,242	4,955	6,970	7,342	7,940	8,142	8,345	9,207	9,612	10,007
Net Income (B/ha)			-14,242	-4,955	-6,970	43,480	68,314	93,523	118,731	143,280	168,286	167,891
Planted Area (ha)			120	120	120	120	120	120	120	120	120	120
Incremental Benefit (Bahts)			-1,709,088	-594,600	-836,400	5,217,576	8,197,680	11,222,748	14,247,696	17,193,564	20,194,272	20,146,872

Calculation of EIRR(Ban Phuan, Vieng Khuk)

(million Bahts)

Year	Capital Cost	O & M Cost	Total	Benefit	Return	Present Worth Value by Discount Rate					
						Int. = 0.12		Int. = 0.10		Int. = 0.08	
						Cost	Benefit	Cost	Benefit	Cost	Benefit
1	341	11.1	352.1	6.5	-345.6	352.1	6.5	352.1	6.5	352.1	6.5
2	121	11.1	132.1	13.0	-119.1	105.3	10.4	109.2	10.7	113.3	11.1
3	204	11.1	215.1	19.5	-195.6	153.1	13.9	161.6	14.7	170.8	15.5
4	239	11.1	250.1	26.0	-224.1	158.9	16.5	170.8	17.8	183.8	19.1
5	214	11.1	225.1	32.5	-192.6	127.7	18.4	139.8	20.2	153.2	22.1
6	0	11.1	11.1	32.5	21.4	5.6	16.5	6.3	18.3	7.0	20.5
7	0	11.1	11.1	32.5	21.4	5.0	14.7	5.7	16.7	6.5	19.0
8	0	11.1	11.1	32.5	21.4	4.5	13.1	5.2	15.2	6.0	17.6
9	0	11.1	11.1	32.5	21.4	4.0	11.7	4.7	13.8	5.6	16.3
10	0	11.1	11.1	144.5	133.4	3.6	46.5	4.3	55.7	5.1	66.9
11	0	11.1	11.1	32.5	21.4	3.2	9.3	3.9	11.4	4.8	13.9
12	0	11.1	11.1	32.5	21.4	2.8	8.3	3.5	10.4	4.4	12.9
13	0	11.1	11.1	32.5	21.4	2.5	7.4	3.2	9.4	4.1	12.0
14	0	11.1	11.1	32.5	21.4	2.3	6.7	2.9	8.6	3.8	11.1
15	0	11.1	11.1	32.5	21.4	2.0	5.9	2.7	7.8	3.5	10.2
16	0	11.1	11.1	32.5	21.4	1.8	5.3	2.4	7.1	3.2	9.5
17	0	11.1	11.1	32.5	21.4	1.6	4.7	2.2	6.4	3.0	8.8
18	0	11.1	11.1	32.5	21.4	1.4	4.2	2.0	5.8	2.8	8.1
19	0	11.1	11.1	32.5	21.4	1.3	3.8	1.8	5.3	2.6	7.5
20	0	11.1	11.1	144.5	133.4	1.2	15.0	1.6	21.5	2.4	31.0
21	0	11.1	11.1	32.5	21.4	1.0	3.0	1.5	4.4	2.2	6.5
22	0	11.1	11.1	32.5	21.4	0.9	2.7	1.4	4.0	2.0	6.0
23	0	11.1	11.1	32.5	21.4	0.8	2.4	1.2	3.6	1.9	5.5
24	0	11.1	11.1	32.5	21.4	0.7	2.1	1.1	3.3	1.8	5.1
25	92	11.1	103.1	32.5	-70.6	6.1	1.9	9.5	3.0	15.1	4.7
26	0	11.1	11.1	32.5	21.4	0.6	1.7	0.9	2.7	1.5	4.4
27	0	11.1	11.1	32.5	21.4	0.5	1.5	0.8	2.5	1.4	4.1
28	0	11.1	11.1	32.5	21.4	0.5	1.4	0.8	2.3	1.3	3.8
29	0	11.1	11.1	32.5	21.4	0.4	1.2	0.7	2.0	1.2	3.5
30	0	11.1	11.1	144.5	133.4	0.4	4.8	0.6	8.3	1.1	14.4
31	0	11.1	11.1	32.5	21.4	0.3	1.0	0.6	1.7	1.0	3.0
32	0	11.1	11.1	32.5	21.4	0.3	0.9	0.5	1.5	0.9	2.8
33	0	11.1	11.1	32.5	21.4	0.3	0.8	0.5	1.4	0.9	2.6
34	0	11.1	11.1	32.5	21.4	0.2	0.7	0.4	1.3	0.8	2.4
35	0	11.1	11.1	32.5	21.4	0.2	0.6	0.4	1.2	0.8	2.2
36	0	11.1	11.1	32.5	21.4	0.2	0.5	0.4	1.1	0.7	2.0
37	0	11.1	11.1	32.5	21.4	0.2	0.5	0.3	1.0	0.6	1.9
38	0	11.1	11.1	32.5	21.4	0.1	0.4	0.3	0.9	0.6	1.7
39	0	11.1	11.1	32.5	21.4	0.1	0.4	0.3	0.8	0.6	1.6
40	0	11.1	11.1	144.5	133.4	0.1	1.6	0.2	3.2	0.5	6.7
41	0	11.1	11.1	32.5	21.4	0.1	0.3	0.2	0.7	0.5	1.4
42	0	11.1	11.1	32.5	21.4	0.1	0.3	0.2	0.6	0.4	1.3
43	0	11.1	11.1	32.5	21.4	0.1	0.2	0.2	0.5	0.4	1.2
44	0	11.1	11.1	32.5	21.4	0.1	0.2	0.2	0.5	0.4	1.1
45	0	11.1	11.1	32.5	21.4	0.1	0.2	0.2	0.4	0.3	1.0
46	0	11.1	11.1	32.5	21.4	0.1	0.2	0.1	0.4	0.3	0.9
47	0	11.1	11.1	32.5	21.4	0.1	0.2	0.1	0.4	0.3	0.9
48	0	11.1	11.1	32.5	21.4	0.0	0.1	0.1	0.3	0.3	0.8
49	0	11.1	11.1	32.5	21.4	0.0	0.1	0.1	0.3	0.3	0.7
50	0	11.1	11.1	144.5	133.4	0.0	0.5	0.1	1.2	0.2	3.1
Total	1211	555	1766	2120	354	954.8	271.5	1009.9	338.5	1078.0	436.8
								EIRR =	1.1 %		
							B/C Ratio	12 %	0.28		
							B/C Ratio	10 %	0.34		
							B/C Ratio	8 %	0.41		

Calculation of EIRR (Flood Protection Project Only)

(million Bahts)

Year	Capital Cost	O & M Cost	Total	Benefit	Return	Present Worth Value by Discount Rate					
						Int. = 0.15		Int. = 0.12		Int. = 0.08	
						Cost	Benefit	Cost	Benefit	Cost	Benefit
1	47.1	9.4	56.5	0.0	-56.5	56.5	0.0	56.5	0.0	56.5	0.0
2	109.9	9.4	119.3	0.0	-119.3	90.2	0.0	95.1	0.0	102.3	0.0
3	179.6	9.4	189	0.0	-189	124.3	0.0	134.5	0.0	150.0	0.0
4	182.7	9.4	192.1	0.0	-192.1	109.8	0.0	122.1	0.0	141.2	0.0
5	142.8	9.4	152.2	0.0	-152.2	75.7	0.0	86.4	0.0	103.6	0.0
6	0	9.4	9.4	0.0	-9.4	4.1	0.0	4.8	0.0	5.9	0.0
7	0	9.4	9.4	0.0	-9.4	3.5	0.0	4.3	0.0	5.5	0.0
8	0	9.4	9.4	0.0	-9.4	3.1	0.0	3.8	0.0	5.1	0.0
9	0	9.4	9.4	0.0	-9.4	2.7	0.0	3.4	0.0	4.7	0.0
10	0	9.4	9.4	112.0	102.6	2.3	27.7	3.0	36.1	4.4	51.9
11	0	9.4	9.4	0.0	-9.4	2.0	0.0	2.7	0.0	4.0	0.0
12	0	9.4	9.4	0.0	-9.4	1.8	0.0	2.4	0.0	3.7	0.0
13	0	9.4	9.4	0.0	-9.4	1.5	0.0	2.2	0.0	3.5	0.0
14	0	9.4	9.4	0.0	-9.4	1.3	0.0	1.9	0.0	3.2	0.0
15	0	9.4	9.4	0.0	-9.4	1.2	0.0	1.7	0.0	3.0	0.0
16	0	9.4	9.4	0.0	-9.4	1.0	0.0	1.5	0.0	2.7	0.0
17	0	9.4	9.4	0.0	-9.4	0.9	0.0	1.4	0.0	2.5	0.0
18	0	9.4	9.4	0.0	-9.4	0.8	0.0	1.2	0.0	2.4	0.0
19	0	9.4	9.4	0.0	-9.4	0.7	0.0	1.1	0.0	2.2	0.0
20	0	9.4	9.4	112.0	102.6	0.6	6.8	1.0	11.6	2.0	24.0
21	0	9.4	9.4	0.0	-9.4	0.5	0.0	0.9	0.0	1.9	0.0
22	0	9.4	9.4	0.0	-9.4	0.4	0.0	0.8	0.0	1.7	0.0
23	0	9.4	9.4	0.0	-9.4	0.4	0.0	0.7	0.0	1.6	0.0
24	0	9.4	9.4	0.0	-9.4	0.3	0.0	0.6	0.0	1.5	0.0
25	92	101.4	193.4	0.0	-193.4	5.9	0.0	11.4	0.0	28.2	0.0
26	0	9.4	9.4	0.0	-9.4	0.2	0.0	0.5	0.0	1.3	0.0
27	0	9.4	9.4	0.0	-9.4	0.2	0.0	0.4	0.0	1.2	0.0
28	0	9.4	9.4	0.0	-9.4	0.2	0.0	0.4	0.0	1.1	0.0
29	0	9.4	9.4	0.0	-9.4	0.2	0.0	0.4	0.0	1.0	0.0
30	0	9.4	9.4	112.0	102.6	0.1	1.7	0.3	3.7	0.9	11.1
31	0	9.4	9.4	0.0	-9.4	0.1	0.0	0.3	0.0	0.9	0.0
32	0	9.4	9.4	0.0	-9.4	0.1	0.0	0.3	0.0	0.8	0.0
33	0	9.4	9.4	0.0	-9.4	0.1	0.0	0.2	0.0	0.7	0.0
34	0	9.4	9.4	0.0	-9.4	0.1	0.0	0.2	0.0	0.7	0.0
35	0	9.4	9.4	0.0	-9.4	0.1	0.0	0.2	0.0	0.6	0.0
36	0	9.4	9.4	0.0	-9.4	0.1	0.0	0.2	0.0	0.6	0.0
37	0	9.4	9.4	0.0	-9.4	0.1	0.0	0.1	0.0	0.5	0.0
38	0	9.4	9.4	0.0	-9.4	0.0	0.0	0.1	0.0	0.5	0.0
39	0	9.4	9.4	0.0	-9.4	0.0	0.0	0.1	0.0	0.5	0.0
40	0	9.4	9.4	112.0	102.6	0.0	0.4	0.1	1.2	0.4	5.2
41	0	9.4	9.4	0.0	-9.4	0.0	0.0	0.1	0.0	0.4	0.0
42	0	9.4	9.4	0.0	-9.4	0.0	0.0	0.1	0.0	0.4	0.0
43	0	9.4	9.4	0.0	-9.4	0.0	0.0	0.1	0.0	0.3	0.0
44	0	9.4	9.4	0.0	-9.4	0.0	0.0	0.1	0.0	0.3	0.0
45	0	9.4	9.4	0.0	-9.4	0.0	0.0	0.1	0.0	0.3	0.0
46	0	9.4	9.4	0.0	-9.4	0.0	0.0	0.1	0.0	0.3	0.0
47	0	9.4	9.4	0.0	-9.4	0.0	0.0	0.0	0.0	0.3	0.0
48	0	9.4	9.4	0.0	-9.4	0.0	0.0	0.0	0.0	0.2	0.0
49	0	9.4	9.4	0.0	-9.4	0.0	0.0	0.0	0.0	0.2	0.0
50	0	101.4	101.4	112.0	10.6	0.1	0.1	0.4	0.4	2.2	2.4
Total	754.1	654.0	1408.1	560.0	-848.1	493.3	36.7	549.9	53.0	659.9	91.6
								EIRR =	-46.5 %		

B/C Ratio	15 %	0.07
B/C Ratio	12 %	0.10
B/C Ratio	8 %	0.14

Calculation of EIRR (Swamp Development Project Only)

(million Bahts)

Year	Capital Cost	O & M Cost	Total	Benefit	Return	Present Worth Value by Discount Rate					
						Int. = 0.30		Int. = 0.20		Int. = 0.12	
						Cost	Benefit	Cost	Benefit	Cost	Benefit
1	13.9	1.7	15.6	6.5	-9.1	15.6	6.5	15.6	6.5	15.6	6.5
2	12.4	1.7	14.1	13.0	-1.1	8.3	7.7	9.8	9.0	11.2	10.4
3	24.5	1.7	26.2	19.5	-6.7	11.9	8.9	15.2	11.3	18.6	13.9
4	56.9	1.7	58.6	26.0	-32.6	20.5	9.1	28.3	12.5	37.2	16.5
5	99.5	1.7	101.2	32.5	-68.7	27.3	8.8	40.7	13.1	57.4	18.4
6	0	1.7	1.7	32.5	30.8	0.1	6.7	0.6	10.9	0.9	16.5
7	0	1.7	1.7	32.5	30.8	0.3	5.2	0.5	9.1	0.8	14.7
8	0	1.7	1.7	32.5	30.8	0.2	4.0	0.4	7.6	0.7	13.1
9	0	1.7	1.7	32.5	30.8	0.2	3.1	0.3	6.3	0.6	11.7
10	0	1.7	1.7	32.5	30.8	0.1	2.4	0.3	5.2	0.5	10.5
11	0	1.7	1.7	32.5	30.8	0.1	1.8	0.2	4.4	0.5	9.3
12	0	1.7	1.7	32.5	30.8	0.1	1.4	0.2	3.6	0.4	8.3
13	0	1.7	1.7	32.5	30.8	0.1	1.1	0.2	3.0	0.4	7.4
14	0	1.7	1.7	32.5	30.8	0.0	0.8	0.1	2.5	0.3	6.7
15	0	1.7	1.7	32.5	30.8	0.0	0.6	0.1	2.1	0.3	5.9
16	0	1.7	1.7	32.5	30.8	0.0	0.5	0.1	1.8	0.3	5.3
17	0	1.7	1.7	32.5	30.8	0.0	0.4	0.1	1.5	0.2	4.7
18	0	1.7	1.7	32.5	30.8	0.0	0.3	0.1	1.2	0.2	4.2
19	0	1.7	1.7	32.5	30.8	0.0	0.2	0.1	1.0	0.2	3.8
20	0	1.7	1.7	32.5	30.8	0.0	0.2	0.0	0.8	0.2	3.4
21	0	1.7	1.7	32.5	30.8	0.0	0.1	0.0	0.7	0.2	3.0
22	0	1.7	1.7	32.5	30.8	0.0	0.1	0.0	0.6	0.1	2.7
23	0	1.7	1.7	32.5	30.8	0.0	0.1	0.0	0.5	0.1	2.4
24	0	1.7	1.7	32.5	30.8	0.0	0.1	0.0	0.4	0.1	2.1
25	92	1.7	93.7	32.5	-61.2	0.1	0.0	1.0	0.3	5.5	1.9
26	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.3	0.1	1.7
27	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.2	0.1	1.5
28	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.2	0.1	1.4
29	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.2	0.1	1.2
30	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.1	0.1	1.1
31	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.1	0.1	1.0
32	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.1	0.0	0.9
33	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.1	0.0	0.8
34	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.1	0.0	0.7
35	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.1	0.0	0.6
36	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.0	0.0	0.5
37	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.0	0.0	0.5
38	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.0	0.0	0.4
39	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.0	0.0	0.4
40	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.0	0.0	0.3
41	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.0	0.0	0.3
42	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.0	0.0	0.3
43	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.0	0.0	0.2
44	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.0	0.0	0.2
45	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.0	0.0	0.2
46	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.0	0.0	0.2
47	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.0	0.0	0.2
48	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.0	0.0	0.1
49	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.0	0.0	0.1
50	0	1.7	1.7	32.5	30.8	0.0	0.0	0.0	0.0	0.0	0.1
Total	299.2	85.0	384.2	1560.0	1175.8	85.3	70.1	113.9	117.7	153.6	218.4

EIRR = 21.7 %

B/C Ratio 30 % 0.82

B/C Ratio 20 % 1.03

B/C Ratio 12 % 1.42

Huai Vieng Khuk Area
Farm Size:3.12ha
Farm Model-Without Project

1. Crop Production

	Area (ha)	Yield (kg/ha)	Production (kg)	Unit Price (Bahts/kg)	Value (Bahts)	Production Cost (Bahts)	Net Income (Bahts)
W. Paddy-rainfed	2.80	1,540	4,312	4.65	20,051	8,016	12,035
Tobacco	0.16	1,518	243	80.25	19,491	3,540	15,951
Cassava	0.32	11,659	3,731	0.78	2,910	2,480	430
Total	2.96						27,986

2. Off-farm Income (Bahts/year) 24,300
3. Total Income (Bahts)) 52,286
4. Living Expense (Bahts/year) -Family size 5.4 person/family 39,214
5. Disposable Income (Bahts/year) 13,071

Farm Model-With Project (1)

1. Crop Production

	Area (ha)	Yield (kg/ha)	Production (kg)	Unit Price (Bahts/kg)	Value (Bahts)	Production Cost (Bahts)	Net Income (Bahts)
W. Paddy-irrigated	2.50	3,200	8,000	4.65	37,200	18,805	18,395
D. Soybean	1.55	1,700	2,635	11.94	31,462	14,953	16,509
Beef cattle	3 head	500kg	3 head	20.00	30,000	22,290	7,710
Total	4.05						42,614

2. Off-farm Income (Bahts/year) 24,300
3. Total Income (Bahts)) 66,914
4. Living Expense (Bahts/year) -Family size 5.8 person/family 50,186
5. Disposable Income (Bahts/year) 16,729

Farm Model-With Project (2)

1. Crop Production

	Area (ha)	Yield (kg/ha)	Production (kg)	Unit Price (Bahts/kg)	Value (Bahts)	Production Cost (Bahts)	Net Income (Bahts)
Tomato	2.20	24,000	52,800	3.33	175,824	24,887	150,938
Maize	1.50	3,150	4,725	2.36	11,151	9,107	2,045
Vegetables	0.35	16,000	5,600	2.70	15,120	6,210	8,910
Beef Cattle	3 head	500kg	3 head	20.00	30,000	22,290	7,710
Total	4.05						169,602

2. Off-farm Income (Bahts/year) 24,300
3. Total Income (Bahts)) 193,902
4. Living Expense (Bahts/year) -Family size 5.8 person/family 145,426
5. Disposable Income (Bahts/year) 48,475

Estimation of Flood Damage (1)

1. Udon Thani (Total flooded area: 297,095 rai (47,535 ha)

1.1 Livestock

	Number (head)	unit price (Baht/head)	Amount of Damage (Bahts)	Per ha (Bahts)
Cattle	11,736	4,500	52,812,000	
Buffaloe	13,854	6,200	85,894,800	
Pig	2,340	2,950	6,903,000	
Duck	17,807	60	1,068,420	
Chicken	31,577	50	1,578,850	
Total	77,314	-	148,257,070	3,119

1.2 Fishery

	Area (ha)	Amount of Damage (Bahts)	Per ha (Bahts)
Fish pond	1,257	38,752,081	30,829

1.3 Agriculture

	Area (ha)	Yield of Paddy (kg/ha)	Famgate Price (B/kg)	Amount of Damage (Bahts)	Per ha (Bahts)
Area (ha)	47,535	1,471	4.65	325,146,530	6,840

1.4 Public Facilities

	Places Damaged	Damage in Value (Bahts)	Per ha (Bahts)
Roads (places)	1,072	154,504,861	
Schools/Temples (places)	33	5,789,473	
Weirs (places)	85	42,500,000	
Bridges (places)	38	3,164,697	
Total	-	205,959,031	4,333

1.5 Estimated Total Flood Damage per Hectare

Livestock	3,119	
Fishery	30,829	
Agriculture	6,840	
Public facilities	4,333	
Total	45,121	Bahts/ha

Estimation of Flood Damage (2)

2. Nong Bua Lamphu (Total flooded area: 70,382 rai (11,261 ha)

2.1 Livestock

	Number (head)	unit price (Baht/head)	Amount of Damage (Bahts)	Per ha (Bahts)
Cattle	5,660	4,500	25,470,000	
Buffaloe	2,632	6,200	16,318,400	
Pig	1,722	2,950	5,079,900	
Duck	779	60	46,740	
Chicken	35,409	50	1,770,450	
Total	46,202	-	48,685,490	4,323

2.2 Fishery

	Area (ha)	Amount of Damage (Bahts)	Per ha (Bahts)
Fish pond (ha)	342	27,417,928	80,169

2.3 Agriculture

	Area (ha)	Yield of Paddy (kg/ha)	Famgate Price (B/kg)	Amount of Damage (Bahts)	Per ha (Bahts)
Area (ha)	11,261	1,471	4.65	77,026,929	6,840

2.4 Public Facilities

	Places Damaged	Damage in Value	Per ha (Bahts)
Houses (place)	1	15000	
Rural roads (places)	311	44,823,705	
Farm Ponds (rai)	53,438	5,933,530	
Bridges (places)	8	666,252	
Total	-	51,438,487	4,568

2.5 Estimated Toatl Flood Damage per Hectare (Bahts)

Livestock	4,323
Fishery	80,169
Agriculture	6,840
Public facilities	4,568
Total	95,900 Bahts/ha

Estimation of Flood Damage (3)

3. Nong Khai (Total flooded area: 353,161 rai (56,505 ha)

3.1 Livestock

	Number (head)	unit price (Baht/head)	Amount of Damage (Bahts)	Per ha (Bahts)
Cattle	23,144	4,500	104,148,000	
Buffaloe	43,504	6,200	269,724,800	
Pig	6,343	2,950	18,711,850	
Duck	50,197	60	3,011,820	
Chicken	116,218	50	5,810,900	
Total	239,406	-	401,407,370	7,104

3.2 Fishery

	Area (ha)	Amount of Damage (Bahts)	Per ha (Bahts)
Fish pond (ha)	1,541	9,305,116	6,038

3.3 Agriculture

	Area (ha)	Yield of Paddy (kg/ha)	Famgate Price (B/kg)	Amount of Amount of	Per ha (Bahts)
Area (ha)	56,505	1,471	4.65	386,502,676	6,840

3.4 Public Facilities

	Places Damaged	Damage in Value	Per ha (Bahts)
Houses (place)	43,352	22,000,000	
National Roads	2	2,000,000	
Rural roads (places)	524	33,299,950	
Schools	57	10,000,000	
Farm Ponds (rai)	53,438	5,933,530	
Bridges (places)	23	5,000,000	
Total	-	78,233,480	1,385

3.5 Estimated Toatl Flood Damage per Hectare (Bahts)

Livestock	7,104	
Fishery	6,038	
Agriculture	6,840	
Public facilities	1,385	
Total	21,367	Bahts/ha

Economic Project Cost (Huai Luang)

Items	Total			1st			2nd		
	Total	I.C	F.C	Total	I.C	F.C	Total	I.C	F.C
N. Samrong	32.2	8.3	23.9	0.0	0.0	0.0	12.9	3.3	9.6
On-farm	1.8	0.6	1.2	0.0	0.0	0.0	0.0	0.0	0.0
River train	108.2	36.3	71.9	0.0	0.0	0.0	21.7	7.3	14.4
Weir	78.2	29.6	48.6	0.0	0.0	0.0	0.0	0.0	0.0
N. Samrong	78.2	29.6	48.6	0.0	0.0	0.0	0.0	0.0	0.0
Bung Sang	75.4	15.0	60.4	0.0	0.0	0.0	0.0	0.0	0.0
N. Bo Kong	67.3	19.8	47.5	0.0	0.0	0.0	0.0	0.0	0.0
H. Luang	27.5	7.9	19.6	0.0	0.0	0.0	0.0	0.0	0.0
SSIP	19.7	9.2	10.5	0.0	0.0	0.0	0.0	0.0	0.0
Sub-total	488.5	156.3	332.2	0.0	0.0	0.0	34.6	10.6	24.0
Engineering	14.6	8.5	6.1	7.4	4.3	3.1	2.9	1.7	1.2
Administration	56.3	56.3	0.0	11.3	11.3	0.0	11.3	11.3	0.0
Total	559.4	221.1	338.3	18.7	15.6	3.1	48.8	23.6	25.2

(Million Bahts)

Items	3rd			4th			5th		
	Total	I.C	F.C	Total	I.C	F.C	Total	I.C	F.C
N. Samrong	19.3	5.0	14.3	0.0	0.0	0.0	0.0	0.0	0.0
On-farm	0.7	0.2	0.5	1.1	0.4	0.7	0.0	0.0	0.0
River train	32.5	10.9	21.6	32.5	10.9	21.6	21.5	7.2	14.3
Weir	47.0	17.8	29.2	31.2	11.8	19.4	0.0	0.0	0.0
N. Samrong	31.2	11.8	19.4	47.0	17.8	29.2	0.0	0.0	0.0
Bung Sang	0.0	0.0	0.0	30.2	6.0	24.2	45.2	9.0	36.2
N. Bo Kong	0.0	0.0	0.0	26.9	7.9	19.0	40.4	11.9	28.5
H. Luang	0.0	0.0	0.0	0.0	0.0	0.0	27.5	7.9	19.6
SSIP	0.0	0.0	0.0	9.9	4.6	5.3	9.8	4.6	5.2
Sub-total	130.7	45.7	85.0	178.8	59.4	119.4	144.4	40.6	103.8
Engineering	1.5	0.9	0.6	1.5	0.9	0.6	1.3	0.7	0.6
Administration	11.3	11.3	0.0	11.3	11.3	0.0	11.1	11.1	0.0
Total	143.5	57.9	85.6	191.6	71.6	120.0	156.8	52.4	104.4

Crop Benefit (Nam Loang Basin)

I. Without Project

	Wet Season		Dry Season						
	Paddy (TP) Rainfed	Paddy (TP) Irrigated	Vegetable Irrigated	Young Corn	Paddy Irrigated	Soybean Irrigated	Groundnut Irrigated	Sweet Corn Irrigated	Total
Yield (kg/ha)	1,540	-	-	-	-	-	-	-	
Unit Price (Bahts/kg)	4.81	-	-	-	-	-	-	-	
Gross Income (Bahts/ha)	7,407	-	-	-	-	-	-	-	
Cost of Production (Bahts/ha)	3,768	-	-	-	-	-	-	-	
Net Income (Bahts/ha)	3,640	-	-	-	-	-	-	-	
Planted Area (ha)	1,035	-	-	-	-	-	-	-	
Total Net Income (Bahts)	3,768,492	-	-	-	-	-	-	-	3,768,492

II. With Project

Yield (kg/ha)	-	3,200	16,000	8,630	3,850	1,700	1620	11,000	
Unit Price (Bahts/kg)	-	4.81	2.70	14.53	4.81	11.22	9.70	2.00	
Gross Income (Bahts/ha)	-	15,392	43,200	535,394	18,519	19,074	15,714	22,000	
Cost of Production (Bahts/ha)	-	6,961	16,501	23,481	9,351	6,938	9,099	6,562	
Net Income (Bahts/ha)	-	8,431	26,699	501,913	9,144	12,076	6,615	15,438	
Planted Area (ha)	-	1,190	100	30	80	200	40	30	
Total Net Income (Bahts)	-	10,032,890	2,669,900	3,057,360	731,520	2,415,200	264,600	463,140	19,634,610

III. Net Production Value (Bahts) -3,768,492 10,032,890 2,669,900 3,057,360 731,520 2,415,200 264,600 463,140 15,866,118

Fish Culture in Reservoir (Economic)

	(Bahts/ha)
Income	
1. Yield (kg/ha)	150
2. Price per (Bahts/kg)	35
Gross Income	5,250
Expense	
3. Labour	2,760
4. Others	138
Total	2,898
Net Income per ha	2,352
Reservoir Area (ha)	611
Total Net Income	1,437,072

Benefit River Improvement

Flood damage at Udon Thani

6,840 Bahts/ha x 7,200 ha=49.2 million Bahts/year

Area (ha)	Yield of Paddy (kg/ha)	Fangate Price (B/kg)	Amount of Damage (Bahts)	Per ha (Bahts)
47,535	1,471	4.65	325,146,530	6,840

Calculation of EIRR(Huai Luang)

(million Bahts)

Year	Capital Cost	O & M Cost	Total	Benefit	Return	Present Worth Value by Discount Rate					
						Int. = 0.12		Int. = 0.10		Int. = 0.08	
						Cost	Benefit	Cost	Benefit	Cost	Benefit
1	18.7	3.1	21.8	3.5	-18.3	21.8	3.5	21.8	3.5	21.8	3.5
2	48.8	3.1	51.9	7.0	-44.9	41.4	5.6	42.9	5.8	44.5	6.0
3	143.5	3.1	146.6	10.4	-136.2	104.3	7.4	110.1	7.8	116.4	8.3
4	191.6	3.1	194.7	13.8	-180.9	123.7	8.8	133.0	9.4	143.1	10.1
5	156.8	3.1	159.9	66.5	-93.4	90.7	37.7	99.3	41.3	108.8	45.3
6	0	3.1	3.1	66.5	63.4	1.6	33.7	1.7	37.5	2.0	41.9
7	0	3.1	3.1	66.5	63.4	1.4	30.1	1.6	34.1	1.8	38.8
8	0	3.1	3.1	66.5	63.4	1.3	26.9	1.4	31.0	1.7	35.9
9	0	3.1	3.1	66.5	63.4	1.1	24.0	1.3	28.2	1.6	33.3
10	0	3.1	3.1	66.5	63.4	1.0	21.4	1.2	25.6	1.4	30.8
11	0	3.1	3.1	66.5	63.4	0.9	19.1	1.1	23.3	1.3	28.5
12	0	3.1	3.1	66.5	63.4	0.8	17.1	1.0	21.2	1.2	26.4
13	0	3.1	3.1	66.5	63.4	0.7	15.2	0.9	19.3	1.1	24.5
14	0	3.1	3.1	66.5	63.4	0.6	13.6	0.8	17.5	1.1	22.6
15	0	3.1	3.1	66.5	63.4	0.6	12.1	0.7	15.9	1.0	21.0
16	0	3.1	3.1	66.5	63.4	0.5	10.8	0.7	14.5	0.9	19.4
17	0	3.1	3.1	66.5	63.4	0.5	9.7	0.6	13.2	0.8	18.0
18	0	3.1	3.1	66.5	63.4	0.4	8.6	0.6	12.0	0.8	16.6
19	0	3.1	3.1	66.5	63.4	0.4	7.7	0.5	10.9	0.7	15.4
20	0	3.1	3.1	66.5	63.4	0.3	6.9	0.5	9.9	0.7	14.3
21	0	3.1	3.1	66.5	63.4	0.3	6.2	0.4	9.0	0.6	13.2
22	0	3.1	3.1	66.5	63.4	0.3	5.5	0.4	8.2	0.6	12.2
23	0	3.1	3.1	66.5	63.4	0.2	4.9	0.3	7.4	0.5	11.3
24	0	3.1	3.1	66.5	63.4	0.2	4.4	0.3	6.8	0.5	10.5
25	0	3.1	3.1	66.5	63.4	0.2	3.9	0.3	6.1	0.5	9.7
26	0	3.1	3.1	66.5	63.4	0.2	3.5	0.3	5.6	0.4	9.0
27	0	3.1	3.1	66.5	63.4	0.1	3.1	0.2	5.1	0.4	8.3
28	0	3.1	3.1	66.5	63.4	0.1	2.8	0.2	4.6	0.4	7.7
29	0	3.1	3.1	66.5	63.4	0.1	2.5	0.2	4.2	0.3	7.1
30	0	3.1	3.1	66.5	63.4	0.1	2.2	0.2	3.8	0.3	6.6
31	0	3.1	3.1	66.5	63.4	0.1	2.0	0.2	3.5	0.3	6.1
32	0	3.1	3.1	66.5	63.4	0.1	1.8	0.1	3.1	0.3	5.7
33	0	3.1	3.1	66.5	63.4	0.1	1.6	0.1	2.9	0.2	5.2
34	0	3.1	3.1	66.5	63.4	0.1	1.4	0.1	2.6	0.2	4.9
35	0	3.1	3.1	66.5	63.4	0.1	1.3	0.1	2.4	0.2	4.5
36	0	3.1	3.1	66.5	63.4	0.1	1.1	0.1	2.2	0.2	4.2
37	0	3.1	3.1	66.5	63.4	0.0	1.0	0.1	2.0	0.2	3.9
38	0	3.1	3.1	66.5	63.4	0.0	0.9	0.1	1.8	0.2	3.6
39	0	3.1	3.1	66.5	63.4	0.0	0.8	0.1	1.6	0.2	3.3
40	0	3.1	3.1	66.5	63.4	0.0	0.7	0.1	1.5	0.1	3.1
41	0	3.1	3.1	66.5	63.4	0.0	0.6	0.1	1.3	0.1	2.8
42	0	3.1	3.1	66.5	63.4	0.0	0.6	0.1	1.2	0.1	2.6
43	0	3.1	3.1	66.5	63.4	0.0	0.5	0.1	1.1	0.1	2.4
44	0	3.1	3.1	66.5	63.4	0.0	0.5	0.0	1.0	0.1	2.2
45	0	3.1	3.1	66.5	63.4	0.0	0.4	0.0	0.9	0.1	2.1
46	0	3.1	3.1	66.5	63.4	0.0	0.4	0.0	0.8	0.1	1.9
47	0	3.1	3.1	66.5	63.4	0.0	0.3	0.0	0.8	0.1	1.8
48	0	3.1	3.1	66.5	63.4	0.0	0.3	0.0	0.7	0.1	1.7
49	0	3.1	3.1	66.5	63.4	0.0	0.3	0.0	0.6	0.1	1.5
50	0	3.1	3.1	66.5	63.4	0.0	0.2	0.0	0.6	0.1	1.4
Total	559.4	155	714.4	3093.7	2379.3	396.6	375.5	426.1	475.1	460.2	621.2
								EIRR =	11.4 %		

B/C Ratio	12 %		0.95
B/C Ratio	10 %		1.11
B/C Ratio	8 %		1.35

Nuai Luang Basin
Farm size:3.44ha
Farm Model-Without Project

1. Crop Production

	Area (ha)	Yield (kg/ha)	Production (kg)	Unit Price (Bahts/kg)	Value (Bahts)	Production Cost (Bahts)	Net Income (Bahts)
W. Paddy-rainfed	2.66	1,540	4,096	4.65	19,048	7,080	11,968
Vegetables	0.18	13,000	2,340	2.70	6,318	3,016	3,302
Groundnut	0.15	1,150	173	9.68	1,670	1,447	222
Total	2.99						15,270

2. Off-farm Income (Bahts/year) 32,600
3. Total Income (Bahts)) 47,870
4. Living Expense (Bahts/year)-Family size 5.2 person/family 37,338
5. Disposable Income (Bahts/year) 10,531

Farm Model-With Project (1)

1. Crop Production

	Area (ha)	Yield (kg/ha)	Production (kg)	Unit Price (Bahts/kg)	Value (Bahts)	Production Cost (Bahts)	Net Income (Bahts)
W. Paddy-irrigated	3.44	3,200	11,008	4.65	51,187	15,044	36,143
D. Soybean	0.69	1,700	1,020	11.94	12,179	3,469	8,710
Groundnut	0.57	1,620	923	9.68	8,939	4,652	4,286
Mango	0.20						7,001
Beef cattle	4 head	500kg	4 head	20.00	40,000	29,720	10,280
Total	4.81						66,420

2. Off-farm Income (Bahts/year) 32,600
3. Total Income (Bahts)) 99,020
4. Living Expense (Bahts/year)-Family size 5.2 person/family 77,236
5. Disposable Income (Bahts/year) 21,784

Farm Model-With Project (2)

1. Crop Production

	Area (ha)	Yield (kg/ha)	Production (kg)	Unit Price (Bahts/kg)	Value (Bahts)	Production Cost (Bahts)	Net Income (Bahts)
W. Paddy-irrigated	3.44	3,200	11,008	4.65	51,187	15,044	36,143
Vegetables	0.50	16,000	8,000	2.70	21,600	10,292	11,308
Mango	0.87						7,001
Beef cattle	4 head	500kg	4 head	20.00	40,000	29,720	10,280
Total	4.81						64,732

2. Off-farm Income (Bahts/year) 32,600
3. Total Income (Bahts)) 97,332
4. Living Expense (Bahts/year)-Family size 5.2 person/family 75,919
5. Disposable Income (Bahts/year) 21,413