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ANNEX D AGRICULTURE AND FARM ECONOMY

ANNEX D. AGRICULTURE AND FARM ECONOMY

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Table D-1-1 Summary of Village-wise Land Use Data in 1978 Agricultural Census

(Unit: ha)

Sub-Project/Sub-System	Total Household	Farm Household	Land Utilization									
			Paddy Field					Upland Field				
			Total Area ($\sum_{i}^{5} Ai$)	Total Area (1)	Area Irrigated	Non-glutinous	Glutinous	Total Area (2)	Area Irrigated	Permanent (3)	Forest & Pasture (4)	Others (5)
I. P-1:Lam Plai Mat Sub-Project	6,811	4,800	16,937	8,523	727	6,710	1,813	6,657	8	247	1,305	205
Direct Diversion from Dam	2,027	1,560	4,919	1,886	455	1,536	350	2,323	3	55	618	37
1-1. Sra Ta Khian Sub-System	964	745	1,909	792	375	783	9	825	3	27	241	24
1-2. Soeng Sang Sub-System	1,063	815	3,010	1,094	80	753	341	1,498	0	28	377	13
Pa Kham Diversion Weir	4,784	3,240	12,018	6,637	272	5,174	1,463	4,334	5	192	687	168
1-3. Pa Kham Sub-System	1,809	1,177	4,591	1,782	237	1,375	407	2,494	5	70	192	53
1-4. Nong Bua Sub-System	1,337	904	3,220	1,594	0	1,519	75	1,108	0	65	374	79
1-5. Thai Charoen Sub-System	1,638	1,159	4,207	3,261	35	2,280	981	732	0	57	121	36
II. P-5:Nong Lumphuk Sub-Project	818	500	1,853	565	18	554	11	1,092	0	68	121	7
2-1. Nong Lumphuk Sub-System	818	500	1,853	565	18	554	11	1,092	0	68	121	7
III. C-3:Huai Phlu Sub-Project	473	444	941	267	0	210	57	658	0	6	0	10
3-1. Right Bank	237	192	464	148	0	104	44	302	0	4	0	10
3-2. Left Bank	236	221	277	119	0	106	13	356	0	2	0	0

Source : 1978 Agricultural Census

Table D-J-2 1982 Village-wise Agricultural Statistics (1)
(Summary on the Cultivated Area)

Sub-Project/Sub-system	Nos.of Farm Household	Holding Area: Cultivated Area: Total (ha)	Holding Area: Cultivated Area: Total (ha)	Paddy Field (ha)	Upland Field (ha)	Orchard (ha)	Others (ha)	Fallow (ha)	Water Source in Wet Season: Irrigated Area (ha)	Benefit Area of Natural Water Source 2/ (ha)	Benefit Area of Deep Well	Nos.of Deep Well	Water Source in Dry Season: Irrigated Area (ha)	Benefit Area of Natural Water Source (ha)	Benefit Area of Deep Well	Nos.of Deep Well
I. P-1:Lam Plai Mat Sub-Project	7,284	75,503	28,340	(11,360) 12,000	12,920	1,751	1,669	47,163	89	(3,846) 5,382	-	1	-	501	-	1
Direct Diversion from Dam	2,536	56,482	11,353	(2,820) 1/ 3,386	7,218	574	175	45,129	67	(1,461) 2,997	-	1	-	372	-	1
1-1 Sra Ta Khian Sub-System	1,418	38,195	6,798	(1,380) 1,603	5,027	115	53	31,397	-	(116) 1,500	-	1	-	68	-	1
1-2 Soeng Sang Sub-System	1,118	18,287	4,555	(1,440) 1,783	2,191	459	122	13,732	67	(1,345) 1,497	-	-	-	304	-	-
Pa Kham Diversion Weir	4,748	19,021	16,987	(8,540) 8,614	5,702	1,177	1,494	2,034	72	2,385	-	-	-	129	-	-
1-3 Pa Kham Sub-system	1,303	6,250	5,816	(2,730) 2,490	1,601	599	1,126	434	-	224	-	-	-	48	-	-
1-4 Nong Bua Sub-System	1,505	7,578	6,332	(2,600) 2,914	2,966	260	192	1,246	-	371	-	-	-	72	-	-
1-5 Thai Charoen Sub-System	1,940	5,193	4,839	3,210	1,135	318	176	354	22	1,790	-	-	-	9	-	-
II. P-5:Nong Lumphuk Sub-Project	755	10,589	2,473	690	1,714	52	17	8,116	-	959	-	2	-	350	-	-
2-1 Nong Lumphuk Sub-system	755	10,589	2,473	690	1,714	52	17	8,116	-	959	-	2	-	350	-	2
III. C-3:Huai Phlu Sub-Project	901	3,912	3,809	(790) 996	2,685	124	3	181	-	380	-	-	-	-	-	-
3-1 Right Bank	483	1,803	699	(350) 466	1,179	51	3	104	-	182	-	-	-	8	-	-
3-2 Left Bank	418	2,109	2,109	(440) 530	1,506	73	-	77	-	198	-		-	-	-	-

Note : 1/ ... The figures in the parenthesis show the beneficial area of each proposed Sub-Project
2/ ... The definition is not clear in the original data

Source : Dept. of Agricultural Extension

Table D-1-2 1982 Village-wise Agricultural Statistics (2)

Tambon	Muban No.	Muban Name	Nos.of Farm Household	Holding Area: Total (ha)	Cultivated Area: Total (ha)	Paddy Field (ha)	Upland Field (ha)	Orchard (ha)	Others (ha)	Fallow (ha)	Water Source in Wet Season: Irrigated Area (ha)	Benefit Area of Natural Water Source (ha)	Benefit Area of Deep Well	Nos.of Deep Well	Water Source in Dry Season: Irrigated Area (ha)	Benefit Area of Natural Water Source (ha)	Benefit Area of Deep Well	Nos.of Deep Well
I. P-1: Lam Plai Mat Sub-Project																		
1-1 Sra Ta Khian Sub-System																		
Non Sombun	6	Ratphattana	388	6,222	1,786	198	1,586	-	-	4,438	-	149	-	-	-	-	-	-
Sra Ta Khian	3	Khok Sung (W)	89	3,454	551	206	327	13	5	2,903	-	206	-	-	-	16	-	-
	7	Bu Ngiu	68	2,682	436	27	397	7	5	2,246	-	27	-	-	-	8	-	-
	2	Nong Hin (W)	100	3,975	619	293	307	15	4	3,356	-	293	-	-	-	28	-	-
	8	Mai (W)	118	4,458	728	234	485	6	3	3,730	-	234	-	-	-	-	-	-
	1	Sra Ta Khian (W)	142	6,910	953	285	652	12	4	5,957	-	285	-	-	-	-	-	-
Kut Bot	4	Khok Taolek	Counted in the Nong Lumphuk Sub-Project															
	3	Nong Lumphuk				(36)						(36)						
	2	Tha Yiam	128	3,847	513	94	397	13	9	3,334	-	94	-	-	-	7	-	-
						(80)						(80)						
	1	Kut Bot	310	4,927	716	212	457	34	13	4,211	-	212	-	1	-	9	-	-
						(21)						(-)						
	8	Khok Chot	75	1,720	498	54	419	15	10	1,222	-	-	-	-	-	-	-	-
						(1,380)						(116)						
		Sub-Total	1,418	38,195	6,798	1,603	5,027	115	53	31,397	-	1,500	-	1	-	68	-	1
1-2 Soeng Sang Sub-System																		
Non sombun																		
	1	Non Sombun	225	3,036	792	340	311	105	36	2,244	15	292	-	-	-	55	-	-
						(118)						(118)						
	4	Nong Kra Thum	275	3,268	713	251	385	77	-	2,555	52	179	-	-	-	90	-	-
						(188)						(188)						
	2	Khok Noi	258	2,912	976	398	469	89	20	1,936	-	279	-	-	-	-	-	-
	5	Wong Khla	120	2,997	671	350	267	54	-	2,326	-	350	-	-	-	132	-	-
	3	Non Samran	125	1,654	677	211	292	114	60	977	-	164	-	-	-	-	-	-
Sra Ta Khian	3	Khok Sung (W)																
	2	Nong Hin (W)	Counted in the Sra Ta Khian Sub-System															
	5	Nong Chai Nan	54	2,155	350	162	177	8	3	1,803	-	162	-	-	-	27	-	-

Table D-1-2 1982 Village-wise Agricultural Statistics (3)

Tambon	Muban No.	Muban Name	Nos. of Farm Household	Holding Area: Total	Cultivated Area: Total	Paddy Field	Upland Field	Orchard	Others	Fallow	Water Source in Wet Season: Irrigated Area	Benefit Area of Natural Water Source	Benefit Area of Deep Well	Nos. of Deep Well	Water Source in Dry Sesson: Irrigated Area	Benefit Area of Natural Water Source	Benefit Area of Deep Well	Nos. of Deep Well
	8	Mai Ⓦ	} Counted in the Sra Ta Khian Sub-System															
	1	Sra Ta Khian Ⓦ																
	4	Khok Mai Tai	61	2,258	376	71	290	12	3	1,891	-	71	-	-	-	-	-	-
Soeng Sang	1	Soeng Sang Ⓦ	Counted in the Nong Lumphuk Sub-Project			(1,440)						(1,345)						
		Sub-Total	1,118	18,278	4,555	1,783	2,191	459	122	13,732	67	1,497	-	-	-	-	-	304

Note : (1) The figures in the parethesis show the area of paddy field only in the Project Area.

(2) Ⓦ .... The paddy fields are located in not only one of the certain Muban, but also other Mubans.

Source : Dept. of Agricultural Extension

Table D-1-2 1982 Village-wise Agricultural Statistics (4)

Muban				Holding Area							Water Source in Wet Season				Water Source in Dry Season			
					Cultivated Area													
Tambon	No.	Name	Nos.of Farm Household	Total (ha)	Total (ha)	Paddy Field (ha)	Upland Field (ha)	Orchard (ha)	Others (ha)	Fallow (ha)	Irrigated Area (ha)	Benefit Area of Natural Water Source (ha)	Benefit Area of Deep Well	Nos.of Deep Well	Irrigated Area (ha)	Benefit Area of Natural Water Source (ha)	Benefit Area of Deep Well	Nos.of Deep Well
1-3:Pa Kham Sub-System																		
Khok Mamuang	6	Khok Khao Ya Kha	Ⓦ			(240)												
	3	Khok Ma uang	Ⓦ															
	5	Bu Ya		Counted in the Nong Bua Sub-System														
	4	Mamuang Wan	Ⓦ															
	2	Thep Samaki	Ⓦ															
	1	Thep Phattana	Ⓦ															
Pa Kham	15	Nong Khanon	Ⓦ															
	5	Khok Suk Samuran	Ⓦ	227	1,376	1,276	477	486	88	225	100	-	56	-	-	-	8	-	-
	9	Khok Wan	Ⓦ	193	1,367	1,236	455	470	75	236	131	-	48	-	-	-	8	-	-
	17	Thai Charoen	Ⓦ															
	4	Khong Phra Sai	Ⓦ	115	377	377	231	51	77	18	-	-	24	-	-	-	8	-	-
	12	Noi Pattana		202	975	882	252	346	92	192	93	-	26	-	-	-	-	-	-
	16	Non Sanga																	
	2	Pa Kham	Ⓦ	115	558	536	296	69	67	104	22	-	-	-	-	-	8	-	-
	13	Nong Krat	Ⓦ	64	267	254	134	30	42	48	13	-	-	-	-	-	-	-	-
	1	Pa Kham	Ⓦ	108	414	403	249	42	40	72	11	-	40	-	-	-	8	-	-
	11	Pa Kham	Ⓦ	188	590	550	261	48	83	158	40	-		-	-	-	8	-	-
	14	Som Payang																	
	3	Khok Ngiu	Ⓦ	91	326	302	135	59	35	73	24	-	40	-	-	-	8	-	-
		Sub-Total		1,303	6,250	5,816	(2,730) 2,490	1,601	599	1,126	434	-	224	-	-	-	48	-	-
1-4 Nong Bua Sub-System																			
Khok Mamuang	6	Khok Khao Ya Kha		199	964	762	(102) 342	400	20	-	202	-	56	-	-	-	8	-	-

Table D-1-2 1982 Village-wise Agricultural Statistics (5)

Tambon	Muban No.	Muban Name	Nos. of Farm Household	Holding Area: Total (ha)	Cultivated Area: Total (ha)	Paddy Field (ha)	Upland Field (ha)	Orchard (ha)	Others (ha)	Fallow (ha)	Water Source in Wet Season: Irrigated Area (ha)	Benefit Area of Natural Water Source (ha)	Benefit Area of Deep Well	Nos. of Deep Well	Water Source in Dry Season: Irrigated Area (ha)	Benefit Area of Natural Water Source (ha)	Benefit Area of Deep Well	Nos. of Deep Well
	3	Khok Manuang (W)	98	1,043	707	368	320	19	-	336	-	15	-	-	-	-	-	-
	5	Bu Ya																
	4	Mamuang Wan (W)	220	842	638	572	42	24	-	204	-	64	-	-	-	8	-	-
Khok Mamuang	2	Thep Sumaki (W)	287	1,178	946	186	724	36	-	232	-	9	-	-	-	8	-	-
	1	Thep Pattana (W)																
Nong Bua	6	Ta Lat Yae	121	1,069	1,069	260	578	39	192	-	-	-	-	-	-	8	-	-
	7	Don Tai				(192)												h
	5	Don Nang Ngan	203	779	627	351	241	35	-	152	-	64	-	-	-	8	-	-
	3	Nong Bua	95	396	387	246	120	21	-	9	-	32	-	-	-	8	-	-
	4	Bo Thong	78	197	192	(74) 94	86	12	-	5	-	19	-	-	-	8	-	-
	2	Khok Klang	95	631	565	215	315	35	-	66	-	56	-	-	-	8	-	-
	1	Nong Nam Khan	109	479	439	280	140	19	-	40	-	56	-	-	-	8	-	-
Pa Kham	15	Nong Khanon (W)	Counted in the Pa Kham Sub-System															
	5	Khok Suk Samuran (W)																
	4	Khong Pha Sai (W)																
		Sub-Total	1,505	7,578	6,332	(2,600) 2,914	2,966	260	192	1,246	-	371	-	-	-	72	-	-
1-5 Thai Charoen Sub-System																		
Thai Charoen	5	Khok Prasat	100	534	496	407	42	25	22	38	-	2	-	-	-	-	-	-
	2	Thanon Hak	47	177	155	113	23	12	7	22	-	3	-	-	-		-	-
	7	Nong Samet	72	328	299	132	138	21	8	29	-	1	-	-	-	-	-	-
	1	Thai Charoen	121	450	419	286	91	30	12	31	-	6	-	-	-	-	-	-
	9	Non Sawan	176	607	564	(338) 342	138	43	41	43	-	2	-	-	-	-	-	-
	3	Khok Loi																

Table D-1-2 1982 Village-wise Agricultural Statistics (6)

Tambon	Muban No.	Name	Nos.of Farm Household	Holding Area: Total (ha)	Cultivated Area: Total (ha)	Paddy Field (ha)	Upland Field (ha)	Orchard (ha)	Others (ha)	Fallow (ha)	Water Source in Wet Season: Irrigated Area (ha)	Benefit Area of Natural Water Source (ha)	Benefit Area of Deep Well	Nos.of Deep Well	Water Source in Dry Season: Irrigated Area (ha)	Benefit Area of Natural Water Source (ha)	Benefit Area of Deep Well	Nos.of Deep Well
	6	Khok Sung	153	686	634	221	354	37	22	52	2	-	-	-	-	-	-	-
	10	Khok Sangar																
	8	Phang Sri	50	164	142	101	23	12	6	22	-	-	-	-	-	-	-	-
	4	Khok Sombun	130	276	244	157	44	32	31	32	-	2	-	-	-	-	-	-
Pa Kham	2	Pa Kham (W)	Counted in the Pa Kham Sub-System															
	1	Pa Kham (W)																
	13	Nong Krat (W)																
	14	Som Payang (W)																
	11	Pa Kham (W)																
	3	Khok Ngiu (W)																
Chum Saeng	21	Tung Saen Tong	60	153	141	35	101	4	1	12	-	141	-	-	-	-	-	-
	4	Nong Ta Si	92	265	246	206	23	15	2	19	-	206	-	-	-	-	-	-
	20	Nong Na	80	214	207	164	28	12	3	7	-	210	-	-	-	3	-	-
	10	Khok Yang	414	414	398	325	38	23	12	16	-	399	-	-	-	6	-	-
	19	Nong Wa	161	161	159	132	15	9	3	2	-	161	-	-	-	-	-	-
	8	Nong Khun At	55	148	137	95	32	8	2	11	-	138	-	-	-	-	-	-
	12	Khok Makka	124	334	325	280	23	20	2	9	-	281	-	-	-	-	-	-
	13	Krasang	105	282	273	234	22	15	2	9	-	236	-	-	-	-	-	-
		Sub-Total	1,940	5,193	4,839	3,210	1,135	318	176	354	22	1,790	-	-	-	9	-	-

Table D-1-2 1982 Village-wise Agricultural Statistics (7)

Muban				Holding Area							Water Source in Wet Season				Water Source in Dry Season			
					Cultivated Area													
Tambon	No.	Name	Nos.of Farm Household	Total (ha)	Total (ha)	Paddy Field (ha)	Upland Field (ha)	Orchard (ha)	Others (ha)	Fallow (ha)	Irrigated Area (ha)	Benefit Area of Natural Water Source (ha)	Benefit Area of Deep Well	Nos.of Deep Well	Irrigated Area (ha)	Benefit Area of Natural Water Source (ha)	Benefit Area of Deep Well	Nos.of Deep Well
II. P-5:Nong Lumphuk Sub-Prpject																		
Kut Bot	4	Khok Tao Lek	271	4,427	840	236	597	17	8	2,587	-	267	-	1	-	8	-	1
	3	Nong Lumphuk	116	3,503	784	178	574	26	6	2,719	-	243	-	1	-	8	-	1
Soeng Sang	1	Soeng Sang	165	2,211	404	184	210	8	2	1,807	-	418	-	-	-	-	-	-
	4	Sap	203	448	445	92	351	1	1	3		31	-	-	-	334	-	-
Total of Sub-Project			755	10,589	2,473	690	1,714	52	17	8,116	-	950	-	2	-	350	-	2
III. C-3:Huai Phlu Sub-Project																		
3-1. Right Bank																		
Nong Mai Ngam	6	Sai Tri 9	138	830	730	23	675	32	-	100	-	8	-	-	-	-	-	-
Rung Charoen	1	Bung Charoen	128	288	288	173	104	8	3	-	-	123	-	-	-	8	-	-
	12	Sai Tri 9	85	229	229	9	220	-	-	-	-	-	-	-	-	-	-	-
	2	Bung Khao	55	154	154	73	77	4	-	-	-	-	-	-	-	-	-	-
	3	Sai Tri 5,6	77	302	298	(72) 188	103	7	-	4	-	51	-	-	-	-	-	-
		Sub-Total	483	1,803	1,699	(350) 466	1,179	51	3	104	-	182	-	-	-	8	-	-
3-2. Left Bank																		
Nong Mai Ngam	2	Nong Mai Kao	215	1,423	1,346	121	1,209	16	-	77	-	25	-	-	-	-	-	-
	4	Sai Tri 11	89	190	190	86	92	12	-	-	-	12	-	-	-	-	-	-
	5	Khok Wat	47	326	326	(66) 156	136	34	-	-	-	-	-	-	-	-	-	-
Bung Charoen	5	Nong Pru	67	247	247	167	69	11	-	-	-	161	-	-	-	-	-	-
		Sub-Total	418	2,186	2,109	(440) 530	1,506	73	-	77	-	198	-	-	-	-	-	-
Total of Sub-Project			901	3,912	3,809	(790) 996	2,685	124	3	181	-	380	-	-	-	8	-	-

Table D-1-3 Land Use and Land Holding Status on Tambon Level

Amphoe/Tambon	No. of Mubans (1982)	No. of Farm Households (1982)	Total Tambon Area (ha) (1982)	1982 Cultivated Area: Paddy ha	Paddy %	Upland ha	Upland %	Tree Crops ha	Tree Crops %	Total ha	Total %	By Land Ownership Category (1983): Title Deed (1) (%)	NOR SOR 3 (2) (%)	NOR SOR 3 KOR (3) (%)	SOR KOR 1 (4) (%)	BAI CHONG (5) (%)	Sub-total (1) to (5) (%)	POR BOR THOR 6 (%)
Amphoe Soeng Sang, Changwat Ratchasima																		
T. Sya Ta Khian	9	735	29,700	1,280	4.3	3,250	10.9	85	0.3	4,615	15.5	0	1.28	0	2.65	0	3.94	7.22
T. Non Sombun	10	1,684	31,000	1,754	5.7	4,544	14.7	442	1.4	6,740	21.7	0	0	0	0	0	0	9.11
T. Soeng Sang	16	2,245	29,100	1,429	4.9	8,243	28.3	257	0.9	9,929	34.1	0	1.16	0	1.34	0	2.50	10.65
T. Kut Bot	8	1,369	29,100	904	3.1	4,239	14.6	240	0.8	5,383	18.5	0	1.36	0	1.18	0	2.54	10.19
King Ampnoe Pa Kham, Changwat Buriram																		
T. Pa Kham	13	1,807	12,800	3,279	25.6	2,420	18.9	787	6.1	6,486	50.7	0	20.39	0	9.53	1.19	31.11	10.15
T. Khok Manuang 1/	21	1,934	4,970	4,758	64.7	5,616	76.4	517	7.0	10,891	148.2	0	2.68	0	0	7.19	9.87	31.03
T. Non Bua 1/																		
T. Tai Charoen			2,380															
Amphoe Nang Rong, Changwat Buriram																		
T. Chum Saeng 3/	23	2,072	6,268	4,141	66.1	611	9.7	843	13.4	5,009	79.9	0	12.41	10.02	0	0	22.43	69.69
T. Nong Bot 4/	21	1,911	9,783	8,875	90.7	894	9.1	155	1.6	9,924	101.4	0	8.53	6.05	0	0	14.58	59.85
Amphoe Ban Kruat, Changwat Buriram																		
T. Nong Mai Ngam	18	1,835	8,011	1,964	24.5	5,221	65.2	245	3.2	7,439	92.9	0	1.21	0.74	1.34	0	3.30	64.44
T. Bung Charoen 5/																		

Note : (1) It is observed that in the upper reaches of Lam Plai Mat and Lam Chi Noi such as the amphoes Soeng Sang and Ban Kruat, about 90 percent of the cultivated land would not have any of the landownership document which could be considered to be closely related with the recent encroachment into the public land for indiscriminate cassava cultivation. This means that these lands are occupied illegally.

(2) The above table is compared with those in the Huai Nam Basin, changwat Nong Khai where the feasibility study of this basin was carried out by Mekong Secretariat in 1981.
Title Deed = 14.2%, NS3 = 48.4%, NS3 Kor = 37.2%, SKI = 8.0%, PBT6 = 10.0%, Illegal = 14.4%

(3) Prior to implementation of the Project, Dept. of Land Ministry of Interior is requested to issue "Nor Sor 3" to holders which is normaly acceptable as loan collateral by the banks.

(4) In the above table, there are some inconsistencies which will be further examined based upon the collected basic data.

Source: Land Use --------- Muban-based Agricultura Statistics by DOAE in 1982.
Land Ownership --- From Land Officers in Ampnoe Offices concerned.

1/ ----- separated from T. Nong Bua in 1982.
2/ ----- separated from T. Thai Charoen in 1979.
3/ ----- established a new tambon in part of T. Chum Saeng in 1981.
4/ ----- separated from T. Chum Saeng in 1974.
5/ ----- separated from T. Nong Mai Ngam in 1982.

Table D-1-4 1982 Village-wise Agricultural Statistics (I)
(Summary on the Crop Production)

Sub System			Rice							
Tambon	No.	Name	Planted area (ha)	Production (ton)	Average Yield (ton/ha)	Planted area of recommended varieties (ha) 1/	Applied area of fertilizers (ha) 2/	Applied amount of fertilizers (kg/ha) 3/	Applied area of pesticides (ha) 4/	Planting time
I. P-1:Lam Plai Mat Sub-Project			11,823	20,032	1.69	2,894	5,253	85	4,984	May -Aug.
Direct Diversion from Dam			3,386	9,657	2.85	406	1,616	64	1,456	Jun.-Aug.
1-1. Sra Ta Khian Sub-System			1,603	4,407	2.75	247	101	21	99	Jun.-Aug.
1-2. Soeng Sang Sub-System			1,783	5,250	2.94	44	-	-	-	"
Pa Kham Diversion Weir			8,437	10,575	1.23	2,488	3,637	105	3,528	May -Aug.
1-3. Pa Kham Sub-System			2,490	2,872	1.15	621	1,109	35	592	Aug.
1-4. Nong Bua Sub-System			2,914	3,276	1.13	1,461	912	8	1,480	May -Aug.
1-5. Thai Charoen Sub-System			3,033	4,227	1.39	406	1,616	64	1,456	Aug.
II. F-5:Nong Lumphuk Sub-Project			690	1,852	2.65	172	168	145	178	Jul.-Aug.
2-1. Nong Lumphuk Sub-System			690	1,852	2.65	172	168	145	178	Jul.-Aug.
III. C-3:Huai Phlu Sub-Project			996	1,470	1,481	672	254	377	141	
3-1. Right Bank			466	476	1.02	35.6	134	252	52	Jun.-Aug.
3-2. Left Bank			530	994	1.87	316	120	125	89	"

Note: 1/ ~ 4/ ---- Included in the plated area. In case of other crops, same as the rice.

Source: Dept. of Agricultural Extension, 1982.

Table D-1-4 1982 Village-wise Agricultural Statistics (2)
(Summary on the Crop Production)

Sub-System	Maize							
	Planted area (ha)	Production (ton)	Average Yield (ton/ha)	Planted area of recommended varieties (ha)	Applied area of fertilizers (ha)	Applied amount of fertilizers (kg/ha)	Applied area of pesticides (ha)	Planting time
I. P-1:Lam Plai Mat Sub-Project	5,124	9,252	1.81	4,615	242	372	307	May -Oct.
Direct Diversion from Dam	2,796	5,522	1.98	2,588	-	-	-	May -Oct.
1-1. Sra Ta Khian Sub-System	1,751	3,349	1.91	1,556	-	-	9	May -Oct.
1-2. Soeng Sang Sub-System	1,045	2,173	2.08	1,032	-	-	-	"
Pa Khan Diversion Weir	2,328	3,730	1.60	2,027	242	372	307	May
1-3. Pa Kham Sub-System	331	650	1.96	299	210	342	262	May
1-4. Nong Bua Sub-System	1,877	2,930	1.56	1,613	-	-	-	"
1-5. Thai Charoen Sub-System	120	150	1.25	115	32	30	45	"
II. P-5:Nong Lumphuk Sub-Project	366	547	1.50	340	-	-	-	May -Oct.
2-1. Nong Lumphuk Sub-System	366	547	1.50	340	-	-	-	May -Oct.
III. C-3:Huai Phlu Sub-Project	-	-	-	-	-	-	-	-
3-1. Right Bank	-	-	-	-	-	-	-	-
3-2. Left Bank	-	-	-	-	-	-	-	-

Table D-1-4 1982 Village-wise Agricultural Statistics (3)
(Summary on the Crop Production)

Sub-System	Cassava							
	Planted area (ha)	Production (ton)	Average Yield (ton/ha)	Planted area of recommended varieties (ha)	Applied area of fertilizers (ha)	Applied amount of fertilizers (kg/ha)	Applied area of pesticides (ha)	Planting time
I. P-1:Lam Plai Mat Sub-Project	8,598	125,258	14.34	5,571	-	-	-	
Direct Diversion from Dam	4,039	64,896	16.07	2,175	-	-	-	May -Apr.
1-1. Sra Ta Khian Sub-System	2,805	43,697	15.58	1,421	-	-	-	May -Sep.
1-2. Soeng Sang Sub-System	1,234	21,199	17.18	754	-	-	-	Mar.-Sep.
								May -Arp.
Pa Khan Diversion Weir	4,559	58,362	12.80	1,396	-	-	-	Dec., Jan.-Apr.
1-3. Pa Kham Sub-System	807	12,355	15.31	807	-	-	-	Dec.
1-4. Nong Bua Sub-System	3,043	38,040	12.50	-	-	-	-	Dec.
1-5. Thai Charoen Sub-System	709	7,967	11.24	589	-	-	-	Jan.-Apr.
II. P-5:Nong Lumphuk Sub-Project	779	12,162	15.61	976	-	-	-	
2-1. Nong Lumphuk Sub-System	779	12,162	15.61	976	-	-	-	
III. C-3:Huai Phlu Sub-Project	2,780	34,710	12.48	-	-	-	-	
3-1. Right Bank	1,255	15,656	12.47	-	-	-	-	
3-2. Left Bank	1,525	19,054	12.49	-	-	-	-	

Table D-1-4 1982 Village-wise Agricultural Statistics (4)
(Summary on the Crop Production)

Tambon	Sub System No.	Sub System Name	Kenaf Planted area (ha)	Production (ton)	Average yield (ton/ha)	Planted area of recommended varieties (ha)	Applied area of fertilizers (ha)	Applied amount of fertilizers (kg/ha)	Applied area of pesticides (ha)	Planting time
I. P-1:Lam Plai Mat Sub-Project			321	436	1.36	301	155	67	8	May
Direct Diversion from Dam			--=-	--=-	--=-	--=-	--=-	--=-	--=-	-=-
1-1. Sra Ta Khian Sub-System			-	-	-	-	-	-	-	-
1-2. Soeng Sang Sub-System			-	-	-	-	-	-	-	-
Pa Kham Diversion Weir			321	436	1.36	301	155	67	8	May
1-3. Pa Kham Sub-System			237	319	1.35	229	143	81	-	May
1-4. Nong Bua Sub-System			-	-	-	-	-	-	-	-
1-5. Thai Charoen Sub-System			84	117	1.39	72	10	53	8	
II. P-5:Nong Lumphuk Sub-Project			-	-	-	-	-	-	-	-
2-1. Nong Lumphuk Sub-System			-	-	-	-	-	-	-	-
III. C-3:Huai Phlu Sub-Project			12	11	0.92	11	-	-	-	-
3-1. Right Bank			-	-	-	-	-	-	-	-
3-2. Left Bank			12	11	0.92	11	-	-	-	-

Table D-1-4 1982 Village-wise Agricultural Statistics (5)
(Summary on the Crop Production)

Sub System			Groundnut (Wet Season)							
Tambon	No.	Name	Planted area (ha)	Production (ton)	Average yield (ton/ha)	Planted area of recommended varieties (ha)	Applied area of fertilizers (ha)	Applied amount of fertilizers (kg/ha)	Applied area of pesticedes (ha)	Planting time
I. P-1:Lam Plai Mat Sub-Project			412	516	1.25	379	66	213	78	Sep.-Dec.
Direct Diversion from Dam			262	325	1.24	251	-	-	-	Sep.-Dec.
	1-1.	Sra Ta Khian Sub-System	104	126	1.21	93	-	-	-	Sep.-Dec.
	1-2.	Soeng Sang Sub-System	158	199	1.26	158	-	-	-	Sep.-Dec.
Pa Kham Diversion Weir			150	191	1.27	128	66	213	78	Sep.
	1-3.	Pa Kham Sub-System	59	76	1.29	63	37	93	11	Sep.
	1-4.	Nong Bua Sub-System	81	101	1.25	56	25	70	66	Sep.
	1-5.	Thai Charoen Sub-System	10	14	1.40	9	4	50	1	Sep.
II. P-5:Nong Lumphuk Sub-Project			63	82	1.30	56	-	-	-	-
	2-1.	Nong Lumphuk Sub-System	63	82	1.30	56	-	-	-	-
III. C-3:Huai Phlu Sub-Project			216	208	0.96	192	-	-	38	-
	3-1.	Right Bank	216	208	0.96	192	-	-	38	-
	3-2.	Left Bank	-	-	-	-	-	-	-	-

Table D-1-4 1982 Village-wise Agricultural Statistics (6)
(Summary on the Crop Production)

Sub-System	Groundnut (Dry Season)							
	Planted area (ha)	Production (ton)	Average yield (ton/ha)	Planted area of recommended varieties (ha)	Applied area of fertilizers (ha)	Applied amount of fertilizers (kg/ha)	Applied area of pesticides (ha)	Planting time
I. P-1:Lam Plai Mat Sub-Project	63	75	1.19	55	-	-	10	NA
Direct Diversion from Dam	47	57	1.21	47	-	-	8	-
1-1. Sra Ta Khian Sub-System	-	-	-	-	-	-	-	-
1-2. Soeng Sang Sub-System	47	57	1.21	47	-	-	8	-
Pa Khan Diversion Weir	16	18	1.12	8	-	-	2	-
1-3. Pa Kham Sub-System	14	16	1.14	7	-	-	2	-
1-4. Nong Bua Sub-System	-	-	-	-	-	-	-	-
1-5. Thai Charoen Sub-System	2	2	1.00	1	-	-	-	-
II. P-5:Nong Lumphuk Sub-Project								
2-1. Nong Lumphuk Sub-System	-	-	-	-	-	-	-	-
III. C-3:Huai Phlu Sub-Project	12	11	0.92	11	-	-	-	-
3-1. Right Bank	-	-	-	-	-	-	-	-
3-2. Left Bank	12	11	0.92	11	-	-	-	-

Table D-1-4 1982 Village-wise Agricultural Statistics (7)
(Summary on the Crop Production)

Sub System			Upland Rice							
Tambon	No.	Name	Planted area (ha)	Production (ton)	Average yield (ton/ha)	Planted area of recommended varieties (ha)	Applied area of fertilizers (ha)	Applied amount of fertilizers (kg/ha)	Applied area of pesticides (ha)	Planting time
I. P-1:Lam Plai Mat Sub-Project			169	305	1.81	11	11	0.50	11	
Direct Diversion from Dam			169	305	1.81	11	11	0.50	11	
	1-1.	Sra Ta Khian Sub-System	149	256	1.72	-	-	-	-	
	1-2.	Soeng Sang Sub-System	20	49	2.45	11	11	0.50	11	
Pa Kham Diversion Weir			-	-	-	-	-	-	-	
	1-3.	Pa Kham Sub-System	-	-	-	-	-	-	-	
	1-4.	Nong Bua Sub-System	-	-	-	-	-	-	-	
	1-5.	Thai Charoen Sub-System	-	-	-	-	-	-	-	
II. P-3:Nong Lumphuk Sub-Project			133	284	2.14	-	-	-	-	
	2-1.	Nong Lumphuk Sub-System	133	284	2.14	-	-	-	-	
III. C-3:Huai Phlu Sub-Project			-	-	-	-	-	-	-	
	3-1.	Right Bank	-	-	-	-	-	-	-	
	3-2.	Left Bank	-	-	-	-	-	-	-	

Table D-1-4 1982 Village-wise Agricultural Statistics (8)
(Summary on the Crop Production)

Tambon	Sub System No.	Sub System Name	Sesame Planted area (ha)	Production (ton)	Average yield (ton/ha)	Planted area of recommended varieties (ha)	Applied area of fertilizers (ha)	Applied amount of fertilizers (kg/ha)	Applied area of pesticides (ha)	Planting time
I. P-1:Lam Plai Mat Sub-Project			149	73	0.50	125	95	91	17	
Direct Diversion from Dam			-	-	-	-	-	-	-	-
1-1. Sra Ta Khian Sub-System			-	-	-	-	-	-	-	-
1-2. Soeng Sang Sub-System			-	-	-	-	-	-	-	-
Pa Kham Diversion Weir			149	73	0.50	125	95	91	17	
1-3. Pa Kham Sub-System			133	65	0.50	108	76	91	-	Mar.
1-4. Nong Bua Sub-System			16	8	0.50	17	17	-	17	"
1-5. Thai Charoen Sub-System			-	-	-	-	-	-	-	
II. P-5:Nong Lumphuk Sub-Project										
2-1. Nong Lumphuk Sub-System			-	-	-	-	-	-	-	-
III. C-3:Huai Phlu Sub-Project			-	-	-	-	-	-	-	-
3-1. Right Bank			-	-	-	-	-	-	-	-
3-2. Left Bank			-	-	-	-	-	-	-	-

Table D-1-4 1982 Village-wise Agricultural Statistics (9)
(Summary on the Crop Production)

Sub System			Other Crops							
Tambon	No.	Name	Planted area (ha)	Production (ton)	Average yield (ton/ha)	Planted area of recommended varieties (ha)	Applied area of fertilizers (ha)	Applied amount of fertilizers (kg/ha)	Applied area of pesticides (ha)	Planting time
I. P-1:Lam Plai Mat Sub-Project			99	201	7.73	-	-	-	-	
Direct Diversion from Dam			73	-	-	-	-	-	-	
1-1. Sra Ta Khian Sub-System			35	-	-	-	-	-	-	
1-2. Soeng Sang Sub-System			38	-	-	-	-	-	-	
Pa Kham Diversion Weir			26	201	7.73	-	-	-	-	
1-3. Pa Kham Sub-System			20	125	6.25	-	-	-	-	
1-4. Nong Bua Sub-System			5	75	15.00	-	-	-	-	
1-5. Thai Charoen Sub-System			1	0.5	0.50	-	-	-	-	
II. P-5:Nong Lumphuk Sub-Project										
2-1. Nong Lumphuk Sub-System			-	-	-	-	-	-	-	
III. C-3:Huai Phlu Sub-Project			11	12.5	13.8	1	-	-	-	
3-1. Right Bank			11	12.5	13.8	1	-	-	-	
3-2. Left Bank			-	-	-	-	-	-	-	

Table D-1-5 Rainfall at Nang Rong Station (1970/71 - 1982/83)

(unit : mm)

	Year	May to July				August to October				Total	Expected year to have the benefit from proposed nursery
		May	Jun.	Jul.	Sub-total	Aug.	Sep.	Oct.	Sub-total		
1.	1970/71	143	163	215	521	179	158	124	461	982	
2.	1971/72	169	139	56	364	232	310	84	426	790	Expected year 1/
3.	1972/73	6	404	110	520	138	507	192	837	1,357	
4.	1973/74	100	45	274	422	222	256	168	626	1,047	Expected year 1/
5.	1974/75	142	149	195	486	83	175	138	396	882	Drought year
6.	1975/76	129	175	148	452	106	235	91	432	884	
7.	1976/77	123	163	124	410	163	263	307	733	1,143	
8.	1977/78	260	93	127	352	368	165	124	657	1,010	Expected year
9.	1978/79	350	147	125	622	243	340	48	631	1,253	Sererest Drought year
10.	1979/80	110	204	229	543	93	262	3	358	900	
11.	1980/81	103	344	150	597	176	260	214	650	1,247	
12.	1981/82	176	82	195	453	97	200	58	355	807	Drought year
13.	1982/83	93	46	107	246	218	361	40	619	865	Expected year 1/

Note : The rainfall during May to July is less than 400 mm or monthly rainfall is smaller than 60 mm in June or July, excluding the years where the rainfall after the period is smaller than 600 mm.

Table D-1-6 Correlation between Wet Season Rice Planting Area in Changwat Buriram and Rainfall at Nang Rong Station

Year	Area of Paddy Field 1/		Planted Area		Rainfall at Nang Rong Station		
					May-Jul.	May-Aug.	Jun-Aug.
	('000ha,	%)	('000ha,	%)	(mm)	(mm)	(mm)
1. 1972/73	379	(100.0)	328	(86.5)	520	658	653
2. 1973/74	387	(100.0)	350	(90.0)	422	643	543
3. 1974/75	399	(100.0)	341	(85.5)	486	569	427
4. 1975/76	410	(100.0)	256	(62.4)	452	558	429
5. 1976/77	421	(100.0)	233	(55.3)	410	573	450
6. 1977/78	432	(100.0)	317	(73.4)	352	847	588
7. 1978/79	444	(100.0)	277	(62.4)	622	865	519
8. 1979/80	456	(100.0)	409	(89.7)	543	636	526
9. 1980/81	468	(100.0)	394	(84.2)	597	773	670
10. 1981/82	494	(100.0)	399	(80.8)	453	549	374
Mean	420	(100.0)	330	(77.0) 2/	485	667	518
Correlation					r=0.16	r=-0.01	r=0.34

Note : 1/ ... The area of paddy field from 1972/73 to 1979/80 is estimated area

2/ ... Maximum of three years average ... 88.7%

Source : "1973 Agricultural Statistics of Thailand", Office of Agricultural Economics, MOAC.

Table D-1-7 Revisement of the Percent of Planted Area and Harvested Area for Wet Season Rice

(unti : %, Area of paddy field=100%)

Sub-Project	Planted Area 1980/81 ∿1982/83	Planted Area 1972/73 ∿1981/82	Harvested Area 1980/81 ∿1982/83	Harvested Area 1972/73 ∿1981/82
1. Changwat Buriram 1/	84.9	77.0	78.9	73.3
2. Sub-Project 2/				
(1) P-1:Lam Plai Mat				
1-1 Direct Diversion from Dam	79.7	* 72.3	65.5	* 60.9
1-2 Pa Kham Diversion Weir	83.8	* 76.0	68.2	* 63.4
Total	82.4	* 75.2	67.9	* 62.3
(2) P-5:Nong Lumphuk	85.2	* 77.2	70.7	* 65.7
(3) C-3:Huai Phlu	80.9	* 73.4	75.4	* 70.0

Note : * ... Revised from the data of 1980/81 - 1982/83 and 1972/73 - 1981/82 at Changwat level.

Source : 1/ Changwat Buriram ... "1983 Agricultural Statistics of Thailand", Office of Agricultural Economics.

2/ Sub-Project ... Study Team's Farm Economic Survey, 1983

Estimation Yield of Wet Season Rice, at Present

1. Land Classification of Paddy Field

The area coverage by land class in soil suitability grouping of paddy fields in each sub project as well as for the whole paddy field in Buriram changwat is estimated as follows:

Table D-1-8 Classified Area of Paddy Fields

(Unit : %)

Sub-Project	Land Class 2nd	3rd	4th	Total
1. Paddy field of Buriram changwat 1/	4	81	15	100
2. Sub-Project 2/				
(1) Lam Plai Mat				
- Upper stream	-	56	44	100
- Midstream	6	67	27	100
(2) Nong Lum Puk	-	100	-	100
(3) Huai Phlu	-	43	57	100

Note : 1/ Classified for the corresponded area to the average of the total planted area with wet season rice for 1972 / 73 to 1982 / 83 in Buriram changwat as follows:

Class	Classified Ares (,000ha)	Coverage (%)	Remarks
2nd (P-II)	17.7	4.0	The classified area is considered to correspond to the average of the total planted area with wet season rice (1972 / 73 - 1982 / 83, Buriram changwat, Agricultural Statistics of Thailand)
3rd (P-III)	354.4	80.8	
4th (P-IV)	67.0	15.2	
Total	439.1	100.0	

Source : 1/, 2/ Detatiled Reconnassance Soil Map of Butiram Province, 1975.

The soils of paddy fields prevailing in the Sub-Projects and also the entire area of Buriram are mostly same, comprising of the soil series; Ratchaburi& Phimai for the first class, Roi Et& Roi Et variants for the second class, and Renu& Phen for the forth class, respectively.

2. Estimated Yield of Each Land Class.

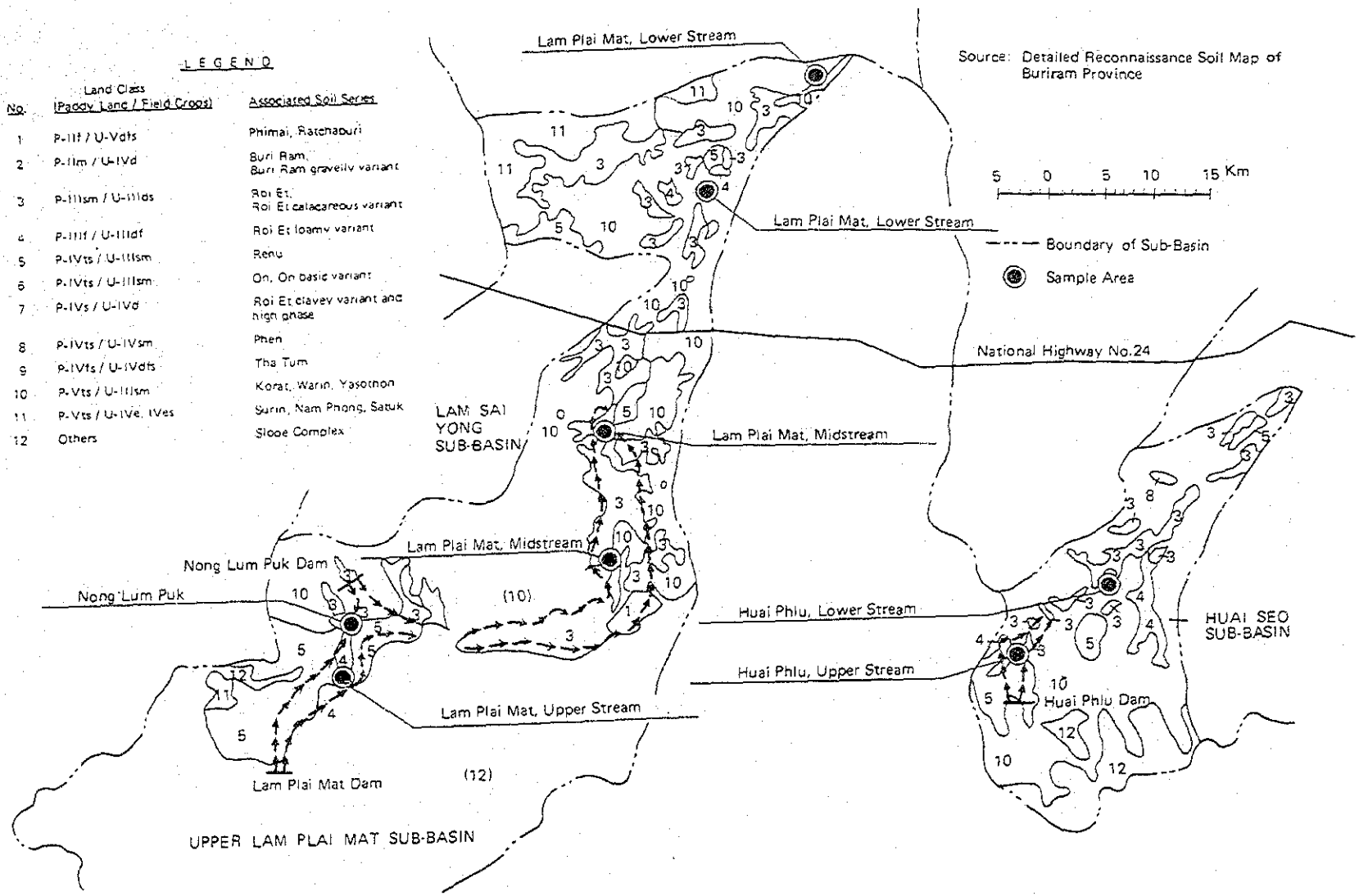
The yield difference of rice between land classes is estimated at 35 percent as follows;

Land Class	Sample Area	Planted Area (ha)	Production (kg)	Average Yield (ton/ha)
3rd	(1) Lam Plai Mat, Upper Stream	174.1	391,988	
	(2) Lam Plai Mat, Midstream	336.5	559,520	
	(3) Nong Lum Puk	170.5	351,266	
	(4) Huai Phlu, Upper Stream	158.4	397,172	
	Total	839.5	1,739,946	2.07
				(135%)
4th	(1) Lam Plai Mat, Lower Stream	163.5	243,320	
	(2) Huai Phlu, Lower Stream	343.6	529,100	
	Total	507.1	772,420	1.52
				(100%)

Source : Farm Economic Survey conducted Study Team in 1983.

The unit yield of wet season rice is estimated on the basis of the said yield difference and the average yield of wet season rice for past ten years (1972 / 73 to 1981 / 82) in Buriram changwat as follows;

Figure D-1-1 Location of Sample Area and Land Class of Soil Suitability for Farm Economic Survey



Land Class	(1) Area Coverage (%)	(2) Yield * (ton/ha)	(1) x (2)	Estimated Yield by Class (ton/ha)
2	4.0	1.82y	0.072y	1.91
3	80.8	1.35y	1.090y	1.42
4	15.2	1.00y	0.152y	1.05
Total			1.314y	1.38 * *
			(y = 1.05 = 1.38 / 1.314)	

Note * Yield difference by class = 35%

** Average yield of wet season rice in Buriram changwat (1972 / 73 - 1981 /82) in the "Agricultural Statistics of Thailand"

3. Estimated Unit Yield by Sub-Project.

The unit yield of wet season rice by Sub-Project is estimated as follows:

Table D-1-9 Estimated Yield of Wet Season Rice, at Present

Sub-Project	Land Class 2nd	3rd	4th	Weighed Average Yield (ton/ha)
A. Estimated Yield by Land Class in Buriram (ton/ha) 2/	1.91	1.42	1.05	1.38 1/
B. Percent of Area by Land Class (%)				
1. Lam Plai Mat				
1-1. Upper stream	-	56	44	1.26
1-2. Midstream	6	67	27	1.35
2. Nong Lum Puk	-	100	-	1.42
3. Huai Phlu	-	43	57	1.21

Table D-2-1 1978 Village-wise Agricultural Statistics
(Summary on the Number of Livestock and Poultry, Fish and Farm Machinery)

Sub-Project/ Sub-System	Nos. of Livestock & Poultry					Nos. of Fish Cultured						Nos. of Farm Machinery								
						Area of Fish Pond (ha)	Nos. of Fish					Tractor			Power Tiller	Water Pump			Thresher	Sprayer & Others
	Cattle	Buffalo	Swine	Chicken	Duck		Catfish	Pra Nil	Pilot Fish	Common Carp	Dace	Big	Medium	Small		ø over 8"	ø 3"-8"	ø Less than 3"		
P-1:Lam Plai Mat Sub-Project	(2,143) 2,586	(9,740) 11,231	2,906	65,411	9,630	6.6	-	36,000	72,000	20,000	5,000	48	-	-	212	3	117	174	5	9
Direct Diversion from Dam	(281) 679	(1,528) 2,547	1,093	33,375	3,501	2.9	-	26,000	-	20,000	5,000	43	-	-	99	1	26	32	5	8
1-1. Sra Ta Khian Sub-System	(137) 435	(743) 1,335	764	20,507	1,129	0.5	-	10,000	-	-	5,000	21	-	-	47	1	17	11	-	6
1-2. Soeng Sang Sub-System	(144) 244	(785) 1,212	329	12,868	2,372	2.4	-	16,000	-	20,000	-	22	-	-	52	-	9	21	5	2
Pa Kham Diversion Weir	(1,862) 1,907	(8,212) 8,684	1,813	32,036	6,129	3.7	-	10,000	72,000	-	-	5	-	-	113	2	91	142	-	1
1-3. Pa Kham Sub-System	1,077	2,253	503	9,455	2,317	-	-	-	-	-	-	-	-	-	1	-	-	24	-	-
1-4. Nong Bua Sub-System	(179) 244	(2,339) 2,811	751	9,618	2,488	-	-	-	-	-	-	5	-	-	87	-	68	106	-	-
1-5. Thai Charoen Sub-System	606	3,620	559	12,963	1,324	3.7	-	10,000	72,000	-	-	-	-	-	25	2	23	12	-	1
I. P-5:Nong Lumphuk Sub-Project	132	395	270	6,028	663	-	-	-	-	-	-	21	1	-	44	6	22	7	1	-
2-1. Nong Lumphuk Sub-System	132	395	270	6,028	663	-	-	-	-	-	-	21	1	-	44	6	22	7	1	-
II. C-3:Huai Phlu Sub-Project	(118) 146	(1,114) 1,316	379	8,704	2,905	1.0	-	2,000	3,300	-	-	-	-	-	6	-	-	-	-	-
3-1. Right Bank	(102) 117	(548) 688	130	4,971	1,005	1.0	-	2,000	3,300	-	-	-	-	-	-	-	-	-	-	-
3-2. Left Bank	(16) 29	(566) 628	249	3,733	1,900	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-

Note : The figures in the parenthesis show the number of cattle and buffalo, excluding those in the Muban which have no village pond.
According to Dept. of Agricultural extension, above fish ponds are mostly managed by businessmen.

Source: Dept. of Agricultural Extension, 1982

Table D-2-2 Estimated Amount of TDN of Rice Straw (At Present)

Sub-Project	Paddy Field (ha)	Harvest-ed Area (%)	Harvest-ed Area (ha)	Unit Yield Straw (ton/ha)	Amount of TDN (ton)	Content of TDN (%)	Amount of TDN (ton)
P-1:Lam Plai Mat							
1-1 Sra Ta Khian W/Irri.	1,603	72.3	1,159	2.7	3,129	37.8	1,183
W/O Irri.							
1-2 Soeng Sang W/Irri.	1,783	72.3	1,289	2.7	3,480		1,315
W/O Irri.							
1-3 Pa Kham W/Irri.	2,490	76.0	1,892	2.7	5,108		1,931
W/O Irri.							
1-4 Nong Bua W/Irri.	2,914	76.0	2,215	2.7	5,981		2,261
W/O Irri.							
1-5 Thai Charoen W/Irri.	3,210	76.0	2,440	2.7	6,588		2,490
W/O Irri.							
P-5:Nong Lumphuk							
P-5:Nong Lumphuk W/Irri.	690	77.2	533	2.7	1,439		544
W/O Irri.							
C-3:Huai Phlu							
3-1 Right Bank W/Irri.	466	73.4	342	2.7	923		349
W/O Irri.							
3-2 Left Bank W/Irri.	530	73.4	389	2.7	1,050		397
W/O Irri.							
Total					27,698		10,470

Table D-2-3 TDN Requirement of Cattle and Buffaloes in the Project
(At Present)

Kind	Ratio (%)	Alive Weight Assumed (kg/head)	Requirement TDN (kg/day/head)	P-1:Lam Plai Mat Upper Head	P-1:Lam Plai Mat Upper TDN (kg)	P-1:Lam Plai Mat Lower Head	P-1:Lam Plai Mat Lower TDN (kg)	P-1:Lam Plai Mat Total Head	P-1:Lam Plai Mat Total TDN (kg)	P-5:Nong Lumphuk Head (head)	P-5:Nong Lumphuk TDN (kg)	C-3:Huai Phlu Head (head)	C-3:Huai Phlu TDN (kg)
A. Cattle													
1. Under 1 year	12.0	150	2.6	81	211	229	595	310	306	16	42	18	47
2. 1 - 2 year	23.3	300	4.1	158	648	444	1,820	602	2,468	31	127	34	139
3. 2 year and over	64.7	350	5.7	440	2,508	1,234	7,034	1,674	9,542	85	485	94	536
Total	100.0			679	3,367	1,907	9,449	2,586	12,816	132	654	146	722.
B. Buffaloes													
1. Under 1 year	8.3	200	3.2	211	675	721	2,307	932	2,982	33	106	109	349
2. 1 - 3 year	19.3	350	4.5	492	2,214	1,676	7,542	2,168	9,756	76	342	254	1,143
3. 3 year and over	72.4	450	6.7	1,844	12,355	6,287	42,123	8,131	54,478	286	1,916	953	6,385
Total	100.0			2,547	15,244	8,684	51,972	11,231	67,216	395	2,364	1,316	7,877

Source : 1/ ... 1978 Agricultural Census, the ratio mean those of the total cattle and buffaloes in Changwat Buriram.

2/ ... Nos. of cattle and buffaloes ... Dept. of Agricultural Extension.

D.3 FARM ECONOMY

Table D-3-1 List of Sample Muban and Number of Sample Farm for Farm Economic Survey

Amphoe	Tambon	Sample Muban	Number of Sample Farm	Remarks
I. Lam Plai Mat Sub-Project				
1. Soeng Sang (Changmat Nakhon Ratchasima)	1. Sra Ta Khian	1-1 Nong Hin	20	Upper stream
	"	1-2 Sra Ta Khian	19	"
2. Pa Kham (Changmat Buri Ram)	1. Thai Charoen	1-3 Thai Charoen	25	Midstream
3. Nang Rong (")	1. Chum Saeng	1-4 Khok Makha	25	"
	2. Kan Luang	1-5 Laluat	25	Lower stream
	3. Chamni	1-6 Cho Phaka	25	"
	TOTAL		139	
II. Nong Lumphuk Sub-Project				
1. Soeng Sang (Changmat Nakhon Ratchasima)	1. Kut Bot	2-1 Nong Lumphuk	12	
	"	2-2 Khok Tao Lek	13	
	2. Soeng Sang	2-3 Soeng Sang	17	
	"	2-4 Sap	20	
	TOTAL		62	
III. Huan Phlu Sub-Project				
1. Ban Kruat (Changmat Buri Ram)	1. Nong Mai Ngam	3-1 Nong Mai Ngam	25	Upper stream
	"	3-2 Nong Mai Ngam Kao	10	"
	"	3-3 Khok Wat	5	"
	"	3-4 Nong Pru	10	"
	2. Ban Kruat	3-5 Khao Din Tai	10	Lower stream
	"	3-6 Khok Yang	11	"
2. Prakhon Chai (")	1. Khao Khok	3-7 Ta Ko	10	"
	"	3-8 Nong Yian	10	"
	TOTAL		91	
Total of Sample Farm			292	

Talbe D-3-2 Number of Farm Households by Family Size

(unit : households, persons)

Sub-Projects	Family Size 1	2	3	4	5	6	7	8	9	10	Over 11	Total persons	Total Farms	Average Family Size
I. Lam Plai Mat Sub-Project														
1-1. Upper steam	-	-	4	5	12	6	3	7	2	-	-	223	39	5.7
1-2. Midstream	-	-	-	7	12	12	10	4	1	2	2	314	50	6.3
1-3. Lower stream	-	-	3	3	8	6	15	11	-	3	1	331	50	6.6
Total	-	-	7	15	32	24	28	22	3	5	3	868	139	6.2
II. Nong Lumphuk Sub-Project	-	1	-	8	14	17	11	6	4	1	6	377	62	6.1
III. Huai Phlu Sub-Project														
3-1. Upper stream	-	-	3	5	10	12	8	4	4	3	1	317	50	6.3
3-2. Lower stream	1	-	2	9	9	9	4	5	2	-	-	228	41	5.6
Total	1	-	5	14	19	21	12	9	6	3	1	545	91	6.0

Table D-3-3 Number of Population by Age and Sex

(unit : persons)

Sub-Projects	Items	Under 10	10 -14	15 -19	20 -29	30 -39	40 -49	50 -59	60 -69	Over 69	Total
I. Lam Plai Mat Sub-Project											
I-1. Upper stream	∘Male	28	16	12	11	12	12	8	3	0	102
	∘Female	28	26	19	15	12	12	9	0	0	121
	Total	56	42	31	26	24	24	17	3	0	223
I-2. Midstream	∘Male	26	36	25	24	14	18	11	4	0	158
	∘Female	30	27	29	23	21	11	8	3	4	156
	Total	56	63	54	47	35	29	19	7	4	314
I-3. Lower stream	∘Male	35	27	18	24	21	15	12	4	2	158
	∘Female	35	28	27	31	21	16	8	4	3	173
	Total	70	55	45	55	42	31	20	8	5	331
Total	∘Male	89	79	55	59	47	45	31	11	2	418
	∘Female	93	81	75	69	54	39	25	7	7	450
	Total	182	160	130	128	101	84	56	18	9	868
II. Nong Lumphuk Sub-Project	∘Male	40	32	32	19	22	15	20	3	0	183
	∘Female	49	34	38	19	21	23	9	1	0	194
	Total	89	66	70	38	43	38	29	4	0	377
III. Huai Phlu Sub-Project											
3-1. Upper stream	∘Male	44	23	19	15	21	15	9	1	2	149
	∘Female	40	37	26	20	25	12	6	0	2	168
	Total	84	60	45	35	46	27	15	1	4	317
3-2. Lower stream	∘Male	31	20	15	19	12	7	10	4	2	120
	∘Female	23	10	20	20	15	9	7	2	2	108
	Total	54	30	35	39	27	16	17	6	4	228
Total	∘Male	75	43	34	34	33	22	19	5	4	269
	∘Female	63	47	46	40	40	21	13	2	4	276
	Total	138	90	80	74	73	43	32	7	8	545

Table D-3-4 Circumstances of School Attendance of In School Age

(unit : persons)

Sub-Project	Not Enrolled	Elementary School 1-4	Elementary School 5,6	Lower Secondary School	Upper Secondary School	Vocational School	Other School	Total
I. Lam Plau Mat Sub-Project								
1-1. Upper stream	40	30	23	4	1	-	-	98
1-2. Midstream	39	35	27	14	4	2	-	121
1-3. Lower stream	48	39	19	4	1	-	1	112
Total	127	104	69	22	6	2	1	331
II. Nong Lumphuk Sub-Project	55	57	29	10	6	2	-	159
III. Huai Phlu Sub-Project								
3-1. Upper stream	61	43	32	6	1	-	-	143
3-2. Lower stream	40	24	17	3	1	-	-	85
Total	101	67	49	9	2	-	-	228

Table D-3-5 Circumstances of School Career of Out of School Age

Sub-Project	Illiterate	Less than Elementary School 4	Finish Elementary School 4	Finish Elementary School 6	Lower Secondary School	Upper Secondary School	Vocational School	Other School	Total
I. Lam Plai Mat Sub-Project									
1-1. Upper stream	4	13	92	14	1	-	1	-	125
1-2. Midstream	13	7	138	31	3	-	1	-	193
1-3. Lower stream	18	2	170	28	1	-	-	-	219
Total	35	22	400	73	5	-	2	-	537
II. Nong Lumphuk Sub-Project	12	21	132	48	4	1	-	-	218
III. Huai Phlu Sub-Project									
3-1. Upper stream	12	12	130	19	1	-	-	-	174
3-2. Lower stream	17	12	96	15	3	-	-	-	143
Total	29	24	226	34	4	-	-	-	317

Table D-3-6 Working State of Family Member

(unit : persons)

Items & Sub-Project	Total Members Worked			Members Worked per a House		
	Male	Female	Total	Male	Female	Total
A. Own Farm Occupation						
I. Lam Plai Mat Sub-Project						
1-1. Upper stream	54	65	119	1.4	1.7	3.1
1-2. Midstream	88	88	176	1.8	1.8	3.6
1-3. Lower stream	91	96	187	1.8	1.9	3.7
Total	233	249	482	1.7	1.8	3.5
II. Nong Lumphuk Sub-Project	100	107	207	1.6	1.7	3.3
III. Huai Phlu Sub-Project						
3-1. Upper stream	74	84	158	1.5	1.7	3.2
3-2. Lower stream	64	67	131	1.6	1.6	3.2
Total	138	151	289	1.5	1.7	3.2
B. Other Farm Occupation						
I. Lam Plai Mat Sub-Project						
1-1. Upper stream	47	49	96	1.2	1.3	2.5
1-2. Midstream	64	58	122	1.3	1.2	2.5
1-3. Lower stream	62	66	128	1.2	1.3	2.5
Total	173	173	346	1.2	1.2	2.4
II. Nong Lumphuk Sub-Project	67	76	143	1.1	1.2	2.3
III. Huai Phlu Sub-Project						
3-1. Upper stream	58	58	116	1.2	1.2	2.4
3-2. Lower stream	48	32	80	1.2	0.8	2.0
Total	106	90	196	1.2	1.0	2.2
C. Non-Agricultural Occupation						
I. Lam Plai Mat Sub-Project						
1-1. Upper stream	12	-	12	0.3	-	0.3
1-2. Midstream	16	1	17	0.3	0.0	0.3
1-3. Lower stream	28	1	29	0.6	0.0	0.6
Total	56	2	58	0.4	0.0	0.4
II. Nong Lumphuk Sub-Project	22	2	24	0.4	0.0	0.4
III. Huai Phlu Sub-Project						
3-1. Upper stream	8	1	9	0.2	0.0	0.2
3-2. Lower stream	15	3	18	0.4	0.1	0.5
Total	23	4	27	0.3	0.0	0.3

Table D-3-7 Numbers and Percent of Persons Worked for Own Farm

Sub-Project	Total Nos. of Persons Worked	Persons Who Worked by Month											
		Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
A. Number of Persons Who Worked on Own Farm (unit : persons)													
I. Lam Plai Mat Sub-Project													
1-1. Upper stream	119	45	18	15	19	41	63	65	56	37	15	19	58
1-2. Midstream	176	51	68	40	48	34	44	98	55	82	38	43	78
1-3. Lower stream	187	63	46	17	19	15	33	65	86	104	69	52	122
Total	482	159	132	72	86	90	140	228	197	223	122	114	258
II. Nong Lumphuk Sub-Project	207	52	49	65	69	77	79	80	84	37	22	39	87
III. Huai Phlu Sub-Project													
3-1. Upper stream	158	39	47	48	60	67	52	80	51	29	20	26	82
3-2. Lower stream	131	48	43	13	20	14	20	55	65	81	48	37	76
Total	289	87	90	61	80	81	72	135	116	110	68	63	158
B. Percentage of Persons Who Worked on Own Farm (Total Numbers of Persons Worked = 100)													
I. Lam Plai Mat Sub-Project													
1-1. Upper stream		37.8	15.1	12.6	16.0	34.5	52.9	54.6	47.1	31.1	12.6	16.0	48.7
1-2. Midstream		30.0	38.6	22.7	27.3	19.3	25.0	55.7	31.3	46.6	21.6	24.4	44.3
1-3. Lower stream		33.7	24.6	9.1	10.2	8.0	17.6	34.8	46.0	55.6	36.9	27.8	65.3
Total		33.0	27.4	14.9	17.8	18.7	29.0	47.3	40.9	46.3	25.3	23.7	53.5
II. Nong Lumphuk Sub-Project		25.1	23.7	31.4	33.3	37.2	38.2	38.6	40.6	17.9	10.6	18.8	42.0
III. Huai Phlu Sub-Project													
3-1. Upper stream		24.7	29.7	30.4	38.0	42.4	32.9	50.6	32.3	18.4	12.7	16.5	51.9
3-2. Lower stream		36.6	32.8	9.9	15.3	10.7	15.3	42.0	49.6	61.8	36.6	28.2	58.0
Total		30.1	31.1	21.1	27.7	28.0	24.9	46.7	40.1	38.1	23.5	22.8	54.7

Table D-3-8 Persons Worked of Own Farm Occupation

(unit : persons)

Sub-Projects	Items	Under 10	10 -14	15 -19	20 -29	30 -39	40 -49	50 -59	60 -69	Over 69	Total
I. Lam Plai Mat Sub-Project											
1-1. Upper stream	°Male	-	-	9	10	12	12	8	3	-	54
	°Female	-	3	15	15	12	12	8	-	-	65
	Total	-	3	24	25	24	24	16	3	-	119
1-2. Midstream	°Male	-	2	18	24	13	18	10	3	-	88
	°Female	-	4	24	24	20	10	6	-	-	88
	Total	-	6	42	48	33	28	16	3	-	176
1-3. Lower stream	°Male	-	3	15	20	20	16	12	4	1	91
	°Female	-	2	21	29	20	16	7	1	-	96
	Total	-	5	36	49	40	32	19	5	1	187
Total	°Male	-	5	42	54	45	46	30	10	1	233
	°Female	-	9	60	68	52	38	21	1	-	249
	Total	-	14	102	122	97	84	51	11	1	482
II. Nong Lumphuk Sub-Project	°Male	-	1	21	17	22	16	20	3	-	100
	°Female	-	5	33	17	20	24	8	-	-	107
	Total	-	6	54	34	42	40	28	3	-	207
III. Huai Phlu Sub-Project											
3-1. Upper stream	°Male	-	-	16	16	19	15	7	1	-	74
	°Female	-	1	23	20	23	11	6	-	-	84
	Total	-	1	39	36	42	26	13	1	-	158
3-2. Lower stream	°Male	-	2	13	18	12	6	10	3	-	64
	°Female	-	2	17	19	14	9	6	-	-	67
	Total	-	4	30	37	26	15	16	3	-	131
Total	°Male	-	2	29	34	31	21	17	4	-	138
	°Female	-	3	40	39	37	20	12	-	-	151
	Total	-	5	69	73	68	41	29	4	-	289

Table D-3-9 Persons Worked of Other Farm Occupation

(unit : persons)

Sub-Project	Items	Under 10	10 -14	15 -19	20 -29	30 -39	40 -49	50 -59	60 -69	Over 69	Total
I. Lam Plai Mat Sub-Project											
1-1. Upper stream	∘Male	-	1	8	10	11	10	6	1	-	47
	∘Female	-	2	12	12	10	11	2	-	-	49
	Total	-	3	20	22	21	21	8	1	-	96
1-2. Midstream	∘Male	-	1	10	21	12	14	6	-	-	64
	∘Female	-	1	19	19	11	5	3	-	-	58
	Total	-	2	29	40	23	19	9	-	-	122
1-3. Lower stream	∘Male	-	-	11	19	14	12	5	1	-	62
	∘Female	-	1	13	25	14	11	1	1	-	66
	Total	-	1	24	44	28	23	6	2	-	128
Total	∘Male	-	2	29	50	37	36	17	2	-	173
	∘Female	-	4	44	56	35	27	6	1	-	173
	Total	-	6	73	106	72	63	23	3	-	346
II. Nong Lumphuk Sub-Project	∘Male	-	-	15	14	18	12	8	-	-	67
	∘Female	-	2	27	16	15	14	2	-	-	76
	Total	-	2	42	30	33	26	10	-	-	143
III. Huai Phlu Sub-Project											
3-1. Upper stream	∘Male	-	-	10	11	18	12	6	1	-	58
	∘Female	-	1	16	13	19	8	1	-	-	58
	Total	-	1	26	24	37	20	7	1	-	116
3-2. Lower stream	∘Male	-	-	13	16	9	3	4	3	-	48
	∘Female	-	-	9	10	6	4	3	-	-	32
	Total	-	-	22	26	15	7	7	3	-	80
Total	∘Male	-	-	23	27	27	15	10	4	-	106
	∘Female	-	1	25	23	25	12	4	-	-	90
	Total	-	1	48	50	52	27	14	4	-	196

Table D-3-10 Persons Worked of Non-Agricultural Occupation

(unit : persons)

Sub-Project	Items	Under 10	10 -14	15 -19	20 -29	30 -39	40 -49	50 -59	60 -69	Over 69	Total
I. Lam Plai Mat Sub-Project											
1-1. Upper stream	∘Male	-	-	1	3	5	3	-	-	-	12
	∘Female	-	-	-	-	-	-	-	-	-	-
	Total	-	-	1	3	5	3	-	-	-	12
1-2. Midstream	∘Male	-	-	1	7	3	5	-	-	-	16
	∘Female	-	-	1	-	-	-	-	-	-	1
	Total	-	-	2	7	3	5	-	-	-	17
1-3. Lower steam	∘Male	-	-	3	9	8	6	2	-	-	28
	∘Female	-	-	-	-	1	-	-	-	-	1
	Total	-	-	3	9	9	6	2	-	-	29
Total	∘Male	-	-	5	19	16	14	2	-	-	56
	∘Female	-	-	1	-	1	-	-	-	-	2
	Total	-	-	6	19	17	14	2	-	-	58
II. Nong Lumphuk Sub-Project	∘Male	-	-	1	3	10	2	6	-	-	22
	∘Female	-	-	-	1	-	1	-	-	-	2
	Total	-	-	1	4	10	3	6	-	-	24
III. Huai Phlu Sub-Project											
3-1. Upper stream	∘Male	-	-	-	2	6	-	-	-	-	8
	∘Female	-	-	1	-	-	-	-	-	-	1
	Total	-	-	1	2	6	-	-	-	-	9
3-2. Lower stream	∘Male	-	-	3	5	3	3	1	-	-	15
	∘Female	-	-	1	-	2	-	-	-	-	3
	Total	-	-	4	5	5	3	1	-	-	18
Total	∘Male	-	-	3	7	9	3	1	-	-	23
	∘Female	-	-	2	-	2	-	-	-	-	4
	Total	-	-	5	7	11	3	1	-	-	27

Table D-3-11 Average Days Worked of Own Farm Occupation by Age Group

(unit : days/person)

Sub-Project	Items	Under 10	10 -14	15 -19	20 -29	30 -39	40 -49	50 -59	60 -69	Over 69	Total
I. Lam Plai Mat Sub-Project											
1-1. Upper stream	◦Male	-	-	63	74	113	85	88	69	-	85
	◦Female	-	75	54	76	85	58	69	-	-	68
	Total	-	75	57	75	99	72	78	69	-	76
1-2. Midstream	◦Male	-	60	68	106	135	99	68	70	-	95
	◦Female	-	55	67	83	87	56	55	-	-	73
	Total	-	57	67	95	106	84	63	70	-	84
1-3. Lower stream	◦Male	-	83	54	60	66	63	35	31	80	57
	◦Female	-	10	51	40	44	33	30	10	-	41
	Total	-	54	53	48	55	48	33	27	80	49
Total	◦Male	-	74	62	83	98	83	60	54	80	78
	◦Female	-	52	68	63	70	47	52	10	-	59
	Total	-	60	60	72	83	67	57	50	80	68
II. Nong Lumphuk Sub-Project	◦Male	-	40	74	96	105	107	67	40	-	87
	◦Female	-	17	65	78	94	71	57	-	-	71
	Total	-	21	69	87	100	86	64	40	-	79
III. Huai Phlu Sub-Project											
3-1. Upper stream	◦Male	-	-	67	63	132	127	36	80	-	92
	◦Female	-	65	63	77	98	49	35	-	-	72
	Total	-	65	65	71	113	94	35	80	-	81
3-2. Lower stream	◦Male	-	60	117	135	130	179	103	179	-	129
	◦Female	-	43	103	124	83	75	92	-	-	98
	Total	-	51	109	129	105	117	99	179	-	113
Total	◦Male	-	60	89	101	131	142	75	154	-	109
	◦Female	-	50	80	100	92	61	63	-	-	84
	Total	-	54	84	100	110	102	70	154	-	96

Table D-3-12 Average Days Worked of Other Farm Occupation by Age Group

(unit : days/person)

Sub-Project	Items	Under 10	10 -14	15 -19	20 -29	30 -39	40 -49	50 -59	60 -69	Over 69	Total
I. Lam Plai Mat Sub-Project											
1-1. Upper stream	∘Male	-	30	57	88	55	58	36	20		59
	∘Female	-	15	96	63	40	55	18	-		61
	Total	-	20	81	74	48	56	31	20		60
1-2. Midstream	∘Male	-	20	42	56	68	54	22	-		52
	∘Female	-	15	50	53	45	26	15	-		46
	Total	-	18	47	54	57	46	19	-		49
1-3. Lower stream	∘Male	-	-	46	60	84	50	26	30		58
	∘Female	-	20	45	45	46	32	20	90		43
	Total	-	20	46	51	65	42	25	60		50
Total	∘Male	-	25	48	64	70	54	28	25		56
	∘Female	-	16	61	51	44	41	17	90		49
	Total	-	19	56	57	58	48	26	47		52
II. Nong Lumphuk Sub-Project	∘Male	-	-	58	87	52	76	73	-		67
	∘Female	-	78	73	37	65	77	28	-		63
	Total	-	78	68	60	58	76	64	-		65
III. Huai Phle Sub-Project											
3-1. Upper stream	∘male	-	-	52	107	72	73	64	30		74
	∘Female	-	90	68	57	74	59	80	-		67
	Total	-	90	61	80	73	67	66	30		70
3-2. Lower stream	∘Male	-	-	75	48	61	37	43	25		55
	∘Female	-	-	27	33	37	24	33	-		31
	Total	-	-	55	42	51	29	39	25		45
Total	∘Male	-	-	65	72	68	65	55	26		65
	∘Female	-	90	53	46	65	68	45	-		34
	Total	-	90	59	60	67	57	52	26		60

Table D-3-13 Average Days Worked of Non-Agricultural Occupation by Age Group

(unit : days/person)

Sub-Project	Items	Under 10	10 -14	15 -19	20 -29	30 -39	40 -49	50 -59	60 -69	Over 69	Total
I. Lam Plai Mat Sub-Project											
1-1. Upper stream	°Male	-	-	90	97	17	43	-	-	-	50
	°Female	-	-	-	-	-	-	-	-	-	-
	Total	-	-	90	97	17	43	-	-	-	50
1-2. Midstream	°Male	-	-	8	26	92	53	-	-	-	46
	°Female	-	-	10	-	-	-	-	-	-	10
	Total	-	-	9	26	92	53	-	-	-	44
1-3. Lower stream	°Male	-	-	30	74	56	36	60	-	-	55
	°Female	-	-	-	-	80	-	-	-	-	80
	Total	-	-	30	74	59	36	60	-	-	56
Total	°Male	-	-	38	60	51	44	60	-	-	51
	°Female	-	-	10	-	80	-	-	-	-	45
	Total	-	-	33	60	52	44	60	-	-	51
II. Nong Lumphuk Sub-Project	°Male	-	-	10	115	50	28	39	-	-	52
	°Female	-	-	-	300	-	10	-	-	-	155
	Total	-	-	10	161	50	22	39	-	-	60
III. Huai Phlu Sub-Project											
3-1. Upper stream	°Male	-	-	-	154	59	-	-	-	-	83
	°Female	-	-	60	-	-	-	-	-	-	60
	Total	-	-	60	154	59	-	-	-	-	80
3-2. Lower stream	°Male	-	-	6	51	25	112	180	-	-	57
	°Female	-	-	6	-	5	-	-	-	-	5
	Total	-	-	6	51	17	112	180	-	-	49
Total	°Male	-	-	9	80	48	112	180	-	-	66
	°Female	-	-	33	-	5	-	-	-	-	19
	Total	-	-	17	80	40	112	180	-	-	59

Table D-3-14 Area of Land Holding

Sub-Project	Farm Land: Paddy Field	Farm Land: Upland Field	Farm Land: Total	Wood Land	House Lot	Others	Total
A. Total Area							
I. Lam Plai Mat Sub-Project (ha)							
1-1. Upper stream	85.9	28.3	114.2	15.5	5.8	-	135.5
1-2. Midstream	164.6	69.0	233.6	-	11.7	-	245.3
1-3. Lower stream	202.9	14.1	217.0	7.2	13.4	-	237.6
Total	453.4	111.4	564.8	22.7	30.9	-	618.4
II. Nong Lumphuk Sub-Project	81.5	247.2	328.7	32.2	11.5	-	372.4
III. Huai Phlu Sub-Project							
3-1. Upper stream	70.6	113.5	184.1	3.4	8.9	0.5	196.9
3-2. Lower stream	161.4	27.8	189.2	-	8.7	-	197.9
Total	232.0	141.3	373.3	3.4	17.6	0.5	394.8
B. Average Holding Area (ha/Farm)							
I. Lam Plai Mat Sub-Project (ha)							
1-1. Upper stream	2.2	0.7	2.9	0.4	0.2	-	3.5
1-2. Midstream	3.3	1.4	4.7	-	0.2	-	4.9
1-3. Lower stream	4.1	0.3	4.4	0.1	0.3	-	4.8
Total	3.3	0.8	4.1	0.2	0.2	-	4.5
II. Nong Lumphuk Sub-Project	1.3	4.0	5.3	0.5	0.2	-	6.0
III. Huai Phlu Sub-Project							
3-1. Upper stream	1.4	2.3	3.7	0.1	0.2	0.0	4.0
3-2. Lower stream	3.9	0.7	4.6	-	0.2	-	4.8
Total	2.5	1.6	4.1	0.0	0.2	0.0	4.3

Table D-3-15 Production Area and Source of Irrigation Water of Wet Season Paddy

Sub-Project	Total Area (ha) (A)	Planted Area*1		Harvested Area*1		Source of Irrigation Water (%)				
		Area (ha)	A=100 (%)	Area (ha)	A=100 (%)	Rain	Additional Water Source: River	Swamp	Well	Others
I. Lam Plai Mat Sub-Project										
1-1. Upper stream	85.9	68.5	(79.7)	58.0	(67.5)	100	22.1	19.4	-	31.8
1-2. Midstream	164.6	138.0	(83.8)	112.2	(68.2)	100	16.8	8.1	-	3.9
1-3. Lower stream	202.9	80.4	(39.6)	54.5	(26.9)	100	3.4	-	-	22.9
Total	453.4	286.9	(63.3)	224.7	(49.6)	100	14.2	8.4	-	15.7
II. Nong Lumphuk Sub-Project	81.5	69.4	(85.2)	57.6	(70.7)	100	22.4	13.1	-	2.2
III. Huai Phlu Sub-Project										
3-1. Upper stream	70.6	57.1	(80.9)	53.2	(75.4)	100	0.1	0.6	-	12.2
3-2. Lower stream	161.4	134.2	(83.1)	114.5	(71.0)	100	18.2	5-3	-	17.0
Total	232.0	191.3	(82.5)	167.7	(72.3)	100	13.1	5.6	-	15.5

Note : *1 ... Average of three years (crop year 1980/81 - 1982/83).

Table D-3-16 Crop Production

(Unit : Area ... ha, Production ... kg, Yield ... kg/ha)

Crops, Sub-Projects	Crop year 1980/81 Planted Area	Harvested Area	Production	Yield Planted area base	Crop Year 1981/82 Planted Area	Harvested Area	Production	Yield Planted area base	Crop Year 1982/83 Planted Area	Harvested Area	Production	Yield Planted area base	Average Yield Planted Area Base	Harvested Area Base
I. Lam Plai Mat Sub-Project														
1-1 Upper stream														
a) Paddy (Non-glutinous)	68.5	56.5	119,310	1,742	68.5	58.9	134,363	1,962	68.4	58.7	138,315	2,022	1,908	2,252
b) Cassava	7.0	7.0	68,100	9,729	15.5	15.5	158,750	10,242	16.1	16.1	192,618	11,964	10,867	10,867
c) Maize (Wet Season)	4.8	3.7	4,940	1,029	4.8	4.8	6,180	1,288	8.1	8.1	13,476	1,663	1,389	1,481
d) Maize (Dry Season)	1.6	1.6	3,000	1,875	2.6	2.6	5,000	1,923	4.3	3.4	5,900	1,372	1,635	1,829
e) Maize (Inter Crop)	1.9	1.9	1,750	921	7.0	6.2	4,000	571	10.6	10.6	8,350	788	723	754
f) Groundnut (Wet Season)	1.0	1.0	672	672	1.6	1.6	976	610	2.1	2.1	1,192	568	604	604
g) Groundnut (Dry Season)	1.3	1.3	480	369	1.3	1.3	880	677	1.3	1.3	1,000	769	605	605
h) Cucumber	-	-	-	-	-	-	-	-	0.2	0.2	1,000	5,000	1,000	5,000
Sub-Total	86.1	73.0			101.3	90.9			111.1	100.5				
1-2. Midstream														
a) Paddy (Non-glutinous)	108.6	85.6	157,796	1,453	114.1	81.4	136,750	1,199	116.8	105.9	195,354	1,673	1,443	1,795
b) Paddy (Glutinous)	24.2	21.2	39,960	1,651	21.1	15.8	24,468	1,160	29.1	26.6	45,192	1,553	1,475	1,724
c) Cassava	34.6	34.6	374,410	10,821	44.3	44.3	454,709	10,264	61.1	61.1	660,740	10,814	10,642	10,642
d) Maize (Wet Season)	1.6	1.6	2,000	1,250	0.8	0.8	1,200	1,500	4.5	4.5	5,000	1,111	1,188	1,188
e) Maize (Inter Crop)	1.0	1.0	1,500	1,500	1.0	1.0	1,500	1,500	5.4	5.4	3,447	638	871	871
f) Kenaf	4.0	4.0	3,550	888	-	-	-	-	1.6	1.6	1,300	813	866	866
g) Tomato	-	-	-	-	-	-	-	-	0.2	0.2	2,000	10,000	10,000	10,000
Sub-Total	174.0	148.0			181.3	143.3			218.7	205.3				

Crop Production

(Unit : Area ... ha, Production ... kg, Yield ... kg/ha)

Crops, Sub-Projects	Crop Year 1980/81				Crop Year 1981/82				Crop Year 1982/83				Average Yield	
	Planted Area	Harvested Area	Production	Yield Planted area base	Planted Area	Harvested Area	Production	Yield Planted area base	Planted Area	Harvested Area	Production	Yield Planted area base	Planted Area Base	Harvested Area Base
I. Lam Plai Mat Sub-Project (Cont'd)														
1-3. Lower stream														
a) Paddy (Non-glutinous)	99.8	69.0	105,870	1,061	55.6	34.4	47,470	854	85.8	60.1	89,980	1,049	1,008	1,488
b) Cassava	8.5	8.5	84,000	9,882	8.5	8.5	91,650	10,782	12.3	11.8	122,932	9,994	10,197	10,367
c) Kenaf	-	-	-	-	-	-	-	-	1.1	1.1	804	731	731	731
Sub-Total	108.3	77.5			64.1	42.9			99.2	73.0				
II. Nong Lumphuk Sub-Project														
a) Paddy (Non-glutinous)	64.7	57.7	114,450	1,769	74.3	59.6	122,183	1,644	64.7	53.2	114,633	1,772	1,724	2,060
b) Paddy (Upland)	1.1	1.1	1,440	1,309	-	-	-	-	3.4	1.3	2,950	868	976	1,829
c) Cassava	174.4	166.2	2,417,900	13,864	193.8	186.6	2,257,170	11,647	208.0	201.1	2,527,653	12,152	12,500	13,004
d) Maize (Wet Season)	17.1	14.1	32,280	1,888	34.6	25.4	44,150	1,276	33.8	24.8	47,434	1,403	1,448	1,926
e) Maize (Dry Season)	9.9	8.2	16,350	1,652	5.8	5.8	12,700	2,190	8.2	8.0	15,236	1,858	1,853	2,013
f) Maize (Inter Crop)	8.2	7.2	6,620	807	21.1	16.0	12,897	611	27.8	25.8	26,510	954	806	939
g) Mungbean	-	-	-	-	-	-	-	-	0.8	0.8	575	719	719	719
h) Sweet Potato	3.2	3.2	40,000	12,500	-	-	-	-	-	-	-	-	12,500	12,500
Sub-Total	278.6	257.7			329.6	293.4			346.7	315.0				

Crop Production

(Unit : Area ... ha, Production ... kg, Yield ... kg/ha)

Crops, Sub-Projects	Crop Year 1980/81				Crop Year 1981/82				Crop Year 1982/83				Average Yield	
	Planted Area	Harvested Area	Production	Yield Planted area base	Planted Area	Harvested Area	Production	Yield Planted area base	Planted Area	Harvested Area	Production	Yield Planted area base	Planted Area Base	Harvested Area Base
III. Huai Phlu Sub-Project														
3-1. Upper Stream														
a) Paddy (Non-glutinous)	52.8	47.8	120,888	2,290	50.1	43.1	111,485	2,225	57.0	50.4	131,754	2,311	2,277	2,577
b) Paddy (Glutinous)	5.0	5.0	9,400	1,880	5.8	5.3	10,340	1,785	7.2	6.8	13,305	1,848	1,836	1,932
c) Paddy (Upland)	-	-	-	-	-	-	-	-	0.5	0.5	300	625	625	625
d) Cassava	60.2	59.4	634,900	10,547	81.1	79.1	857,930	10,579	96.3	96.3	1,122,034	11,651	11,005	11,137
e) Maize (Wet Season)	1.6	1.6	2,500	1,563	3.8	3.8	7,300	1,921	0.4	0.4	300	750	1,741	1,741
f) Maize (Inter Crop)	-	-	-	-	1.3	1.3	1,200	923	3.2	3.2	1,980	619	707	707
g) Jute	-	-	-	-	-	-	-	-	1.3	1.3	2,650	2,038	2,038	2,038
h) Sugarcane	-	-	-	-	-	-	-	-	2.7	2.7	119,000	44,074	44,074	44,074
i) Groundnut (Wet Season)	-	-	-	-	-	-	-	-	1.6	1.6	4,500	2,813	2,813	2,813
Sub-Total	119.6	113.8			142.1	132.6			170.2	163.2				
3-2. Lower Stream														
a) Paddy (Non-glutinous)	102.7	87.0	131,846	1,284	98.4	84.8	137,608	1,398	122.7	106.1	157,056	1,280	1,317	1,535
b) Paddy (Glutinous)	25.4	21.9	35,360	1,392	23.1	18.4	28,250	1,223	30.2	25.4	38,980	1,291	1,304	1,561
c) Cassava	18.6	18.6	221,500	11,909	23.5	23.5	239,100	10,174	25.8	25.8	285,500	11,066	10,988	10,988
d) Kenaf	1.1	1.1	1,000	909	1.4	1.4	1,080	771	1.4	1.4	1,200	857	841	841
e) Jute	-	-	-	-	-	-	-	-	0.6	0.6	50	83	83	83
f) Water Melon (Dry Season)	-	-	-	-	0.3	0.3	1,700	5,667	0.5	0.4	1,300	2,600	3,750	4,286
g) Pumpkin (Dry Season)	-	-	-	-	0.2	0.2	1,370	6,850	0.2	0.2	1,300	6,500	6,675	6,675
Sub-Total	147.8	128.6			146.9	128.6			181.4	159.9				

Table D-3-17 Use of Crop Products, 1982/83

(unit : kg)

Sub-Projects & Crops	Total Production	Solds	Home Comsumption	Seeds	Feeds	Payment for Works	Stock	Others
I. Lam Plai Mat Sub-Project								
1-1 Upper stream								
a) Paddy (Non-glutinous)	138,315	38,740	81,480	2,830	110	1,500	9,605	4,050
b) Cassava	192,618	192,618	-	-	-	-	-	-
c) Maize	27,720	27,513	-	207	-	-	-	-
d) Groundnut	2,192	2,000	-	192	-	-	-	-
e) Cucumber	1,000	999	1	-	-	-	-	-
1-2 Midstream								
a) Paddy (Non-glutinous)	195,354	71,408	80,216	5,520	-	16,440	18,130	3,640
b) Paddy (Glutinous)	45,192	2,660	34,589	1,791	-	2,400	3,752	-
c) Cassava	660,740	660,740	-	-	-	-	-	-
d) Maize	8,447	8,335	-	112	-	-	-	-
e) Kenaf	1,300	1,300	-	-	-	-	-	-
f) Tomato	2,000	2,000	-	-	-	-	-	-
1-3 Lower stream								
a) Paddy (Non-glutinous)	89,980	10,840	56,605	6,305	-	730	11,280	4,220
b) Cassava	122,932	122,932	-	-	-	-	-	-
c) Kenaf	804	804	-	-	-	-	-	-
II. Nong Lumphuk Sub-Project								
a) Paddy (Non-glutinous)	114,633	7,780	76,883	3,446	443	440	23,841	1,800
b) Paddy (Upland)	2,950	-	2,695	255	-	-	-	-
c) Cassava	2,527,653	2,527,653	-	-	-	-	-	-
d) Maize	89,180	88,391	-	789	-	-	-	-
e) Mungbean	575	575	-	-	-	-	-	-
III. Huai Phlu Sub-Project								
3-1 Upper stream								
a) Paddy (Non-glutinous)	131,754	45,165	57,032	2,597	500	2,500	19,620	4,340
b) Paddy (Glutinous)	13,305	-	12,280	325	-	-	700	-
c) Paddy (Upland)	300	-	280	30	-	-	-	-
d) Cassava	1,122,034	1,068,034	-	-	-	-	-	54,000
e) Maize	2,280	2,250	-	30	-	-	-	-
f) Jute	2,650	2,650	-	-	-	-	-	-
g) Sugarcane	119,000	119,000	-	-	-	-	-	-
h) Groundnut	4,500	4,500	-	-	-	-	-	-
3-2 Lower stream								
a) Paddy (Non-glutinous)	157,056	57,008	61,883	6,765	650	11,250	10,870	8,630
b) Paddy (Glutinous)	38,980	8,949	20,432	2,589	-	1,090	5,920	-
c) Cassava	285,500	285,500	-	-	-	-	-	-
d) Kenaf	1,200	1,200	-	-	-	-	-	-
e) Jute	50	50	-	-	-	-	-	-
f) Water Melon	1,300	1,000	150	-	-	-	-	150
g) Pumpkin	1,300	1,250	19	1	-	-	-	30

Table D-3-18 Farm-gate Prices of Sold Crops, Livestock and Poultry, 1982/83

(unit : ฿)

Crops, Livestock & Poultry	Unit @	I. Lam Plai Mat Sub-Project			II. Nong Lumphuk Sub-Project	III. Huai Phlu Sub-Project	
		1-1. Upper stream	1-2. Midstream	1-3. Lower stream		3-1. Upper stream	3-2. Lower stream
1. Crops							
a) Non-glutinous Rice (Paddy)	kg	2.67	2.82	2.91	2.46	2.72	3.00
b) Glutinous Rice (Paddy)	"	-	3.09	-	-	-	2.65
c) Cassava (standing crop)	"	-	-	-	-	-	0.40
d) Cassava (fresh)	"	0.75	0.73	0.67	0.78	0.68	0.58
e) Cassava (shredded)	"	-	1.95	-	-	1.60	-
f) Maize (shelled)	"	1.75	1.80	-	1.66	1.38	-
g) Groundnut (fresh)	"	3.00	-	-	-	1.00	-
h) Groundnut (dried)	"	5.15	-	-	-	-	-
i) Mungbean (shelled)	"	-	-	-	6.00	-	-
j) Water Melon	"	-	-	-	-	-	1.80
k) Pumpkin	"	-	-	-	-	-	4.00
l) Cucumber	"	3.00	-	-	-	-	-
m) Tomato	"	-	1.00	-	-	-	-
n) Kenef (dried)	"	-	5.00	4.21	-	-	4.17
o) Jute (dried)	"	-	-	-	-	4.50	3.00
p) Sugarcane	"	-	-	-	-	0.35	-
2. Livestock and Poultry							
a) Buffalo	head	4,189	3,950	4,142	4,168	5,250	4,300
b) Cattle	"	-	4,800	1,900	-	-	-
c) Hogs	"	692	2,550	1,221	1,687	1,100	923
d) Chickens	"	23.1	23.2	21.1	23.0	20.5	21.7
e) Ducks	"	-	25.7	25.0	40.0	-	25.0

Table D-3-19 Labor and Animal Inputs for Paddy Production

Sub-Projects	Planted area (ha)	Labor (man-days)			Land Preparation (days)		
		Family	Hired	Total	Animal	Tractor	Hand tractor
A. Total Inputs							
1. Lam Plai Mat							
1-1 Upper stream	68.4	5,292	903	6,195	803	8	269
1-2 Midstream	145.9	9,308	2,012	11,320	1,751	4	326
1-3 Lower stream	85.8	6,394	717	7,111	1,159	-	67
Total	300.1	20,994	3,632	24,626	3,713	12	662
2. Nong Lumphuk	64.7	4,093	1,555	5,648	1,253	28	739
3. Huai Phlu							
3-1 Upper stream	64.2	4,736	1,027	5,763	1,128	-	124
3-2 Lower stream	152.9	11,494	1,868	13,362	2,602	-	-
Total	217.1	16,230	2,895	19,125	3,730	-	124
B. Inputs per Hectare							
1. Lam Plai Mat							
1-1 Upper stream		77.4	13.2	90.6	11.7	0.1	3.9
1-2 Midstream		63.8	13.8	77.6	12.0	0.0	2.2
1-3 Lower stream		74.5	8.4	82.9	13.5	-	0.8
Total		70.0	12.1	82.1	12.4	0.0	2.2
2. Nong Lumphuk		63.3	24.0	87.3	19.4	0.4	11.4
3. Huai Phlu							
3-1 Upper stream		73.8	16.0	89.8	17.6	-	1.9
3-2 Lower stream		75.2	12.2	87.4	17.0	-	-
Total		74.8	13.3	88.1	17.2	-	0.6

Table D-3-20 Inputs Materials for Paddy Production

Sub-Project	Planted Area(ha)	Seedling (kg)	Fertilizers (kg) 16-20-0	20-20-0	Manures	Pesticide (฿)
A. Total Inputs						
1. Lam Plai Mat						
1-1 Upper stream	68.4	2,248	-	-	-	150
1-2 Midstream	145.9	5,806	3,280	-	180	80
1-3 Lower stream	85.8	3,142	2,660	-	-	30
Total	300.1	11,196	5,940	-	180	260
2. Nong Lumphuk	64.7	2,381	100	-	-	-
3. Huai Phlu						
3-1 Upper stream	64.2	2,345	925	-	-	700
3-2 Lower stream	152.9	6,229	3,928	150	1,880	101
Total	217.1	8,574	4,853	150	1,880	801
B. Inputs per Hectare						
1. Lam Plai Mat						
1-1 Upper stream		32.9	-	-	-	2.2
1-2 Midstream		39.9	22.5	-	1.2	0.5
1-3 Lower stream		36.6	31.0	-	-	0.3
Total		37.3	19.8	-	0.6	0.9
2. Nong Lumphuk		36.8	1.5	-	-	-
3. Huai Phlu						
3-1 Upper stream		36.5	14.4	-	-	10.9
3-2 Lower stream		40.7	25.7	1.0	12.3	0.7
Total		39.5	22.4	0.7	8.7	3.7

Table D-3-21 Labor and Animal Inputs for Cassava Production

Sub-Projects	Planted area	Labor (man-days) Family	Hired	Total	Land Preparation (days) Animal	Tractor	Hand tractor
A. Total Inputs							
1. Lam Plai Mat							
1-1 Upper stream	16.1	1,169	401	1,570	19	52	-
1-2 Midstream	61.1	2,982	2,263	5,245	247	153	-
1-3 Lower stream	12.3	902	221	1,123	181	2	48
Total	89.5	5,053	2,885	7,938	447	207	48
2. Nong Lumphuk	208.0	7,752	10,740	18,492	121	834	72
3. Huai Phlu							
3-1 Upper stream	96.3	6,468	3,733	10,201	561	165	80
3-2 Lower stream	25.8	1,576	753	2,329	361	-	20
Total	122.1	8,044	4,486	12,530	922	165	100
B. Inputs per Hectare							
1. Lam Plai Mat							
1-1 Upper stream		72.6	24.9	97.5	1.2	3.2	-
1-2 Midstream		48.8	37.0	85.8	4.0	2.5	-
1-3 Lower stream		73.3	18.0	91.3	14.7	0.2	3.9
Total		56.5	32.2	88.7	5.0	2.3	0.5
2. Nong Lumphuk		37.3	51.6	88.9	0.6	4.0	0.3
3. Huai Phlu							
3-1 Upper stream		67.2	38.8	105.9	5.8	1.7	0.8
3-2 Lower stream		61.1	29.2	90.3	14.0	-	0.8
Total		65.9	36.7	102.6	7.6	1.4	0.8

Table D-3-22 Inputs Materials for Cassava Production

Sub-Project	Planted Area (ha)	Seedling (kg)	Fertilizers (kg) 16-20-0	20-20-0	Manures	Pesticide (ℬ)
A. Total Inputs						
1. Lam Plai Mat						
1-1 Upper stream	16.1	128,800	-	-	-	-
1-2 Midstream	61.1	395,500	-	-	-	-
1-3 Lower stream	12.3	84,400	-	-	-	-
Total	89.5	608,700	-	-	-	-
2. Nong Lumphuk	208.0	1,531,300	-	-	-	1,150
3. Huai Phlu						
3-1 Upper stream	96.3	805,400	-	-	-	-
3-2 Lower stream	25.8	189,500	-	-	-	-
Total	122.1	994,900	-	-	-	-
B. Inputs per Hectare						
1. Lam Plai Mat						
1-1 Upper stream		8,000	-	-	-	-
1-2 Midstream		6,473	-	-	-	-
1-3 Lower stream		6,862	-	-	-	-
Total		6,801	-	-	-	-
2. Nong Lumphuk		7,362	-	-	-	5.5
3. Huai Phlu						
3-1 Upper stream		8,363	-	-	-	-
3-2 Lower stream		7,345	-	-	-	-
Total		8,148	-	-	-	-

Table D-3-23 Labor and Animal Inputs for Maize Production

Sub-Projects	Planted area(ha)	Labor (man-days)			Land Preparation (days)		
		Family	Hired	Total	Animal	Tractor	Hand tractor
A. Total Inputs							
1. Lam Plai Mat							
1-1 Upper stream	23.0	1,058	439	1,497	8	62	-
1-2 Midstream	9.9	333	82	415	6	24	-
1-3 Lower stream	-	-	-	-	-	-	-
Total	32.9	1,391	521	1,912	14	86	-
2. Nong Lumphuk	69.8	2,438	2,599	5,037	-	178	136
3. Huai Phlu							
3-1 Upper stream	3.6	80	8	88	-	-	-
3-2 Lower stream	-	-	-	-	-	-	-
Total	3.6	80	8	88	-	-	-
B. Inputs per Hectare							
1. Lam Plai Mat							
1-1 Upper stream		46.0	19.1	65.1	0.3	2.7	-
1-2 Midstream		33.6	8.3	41.9	0.6	2.4	-
1-3 Lower stream		-	-	-	-	-	-
Total		42.3	15.8	58.1	0.4	2.6	-
2. Nong Lumphuk		34.9	37.2	72.2	-	2.6	1.9
3. Huai Phlu							
3-1 Upper stream		22.2	2.2	24.4	-	-	-
3-2 Lower stream		-	-	-	-	-	-
Total		22.2	2.2	24.4	-	-	-

Table D-3-24 Inputs Materials for Maize Production

Sub-Project	Planted Area(ha)	Seedling (kg)	Fertilizers (kg) 16-20-0	20-20-0	Manures	Pesticide (฿)
A. Total Inputs						
1. Lam Plai Mat						
1-1 Upper stream	23.0	307	-	-	-	-
1-2 Midstream	9.9	125	-	-	-	-
1-3 Lower stream	-	-	-	-	-	-
Total	32.9	432	-	-	-	-
2. Nong Lumphuk	69.8	525	-	-	-	-
3. Huai Phlu						
3-1 Upper stream	3.6	13	-	-	-	-
3-2 Lower stream	-	-	-	-	-	-
Total	3.6	13	-	-	-	-
B. Inputs per Hectare						
1. Lam Plai Mat						
1-1 Upper stream		13.3	-	-	-	-
1-2 Midstream		12.6	-	-	-	-
1-3 Lower stream		-	-	-	-	-
Total		13.1	-	-	-	-
2. Nong Lumphuk		7.5	-	-	-	-
3. Huai Phlu						
3-1 Upper stream		3.6	-	-	-	-
3-2 Lower stream		-	-	-	-	-
Total		3.6	-	-	-	-

Table D-3-25 Number of Households by Source of Domestic Water

(unit : households)

Water Source	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
A. Drinking Water													
1. Rain Water	103	75	34	35	152	195	242	269	274	267	216	157	2,019
2. River Water	2	2	4	5	3	-	-	-	-	-	-	1	17
3. Swamp or Pond	21	23	31	32	15	11	6	5	5	6	10	15	180
4. Deep Well	11	14	15	15	5	3	1	-	1	1	5	9	80
5. Shallow Well (Outside the house lot)	117	135	161	162	112	83	65	23	18	22	48	81	1,027
6. Shallow Well (Inside the house lot)	36	44	46	43	23	14	10	8	7	8	24	31	294
B. Other Domestic Water													
1. Rain Water	23	9	-	-	55	90	136	173	185	180	130	76	1,044
2. River Water	7	6	8	8	6	5	6	5	5	4	4	4	68
3. Swamp or Pond	46	46	49	52	40	32	30	27	25	26	34	41	451
4. Deep Well	17	19	19	20	19	11	10	9	8	10	11	29	182
5. Shallow Well (Outside the house lot)	150	159	164	163	148	130	106	72	60	62	83	98	1,395
6. Shallow Well (Inside the house lot)	55	57	55	52	40	38	33	27	27	28	45	51	508

Table D-3-26 Percent of Households by Source by Domestic Water by Month

(unit : %)

Water Source	Jan.	Feb.	Mar.	Arp.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
A. Drinking Water													
1. Rain Water	35.5	25.6	11.7	12.0	49.0	63.7	74.7	88.2	89.8	87.8	71.3	53.4	55.8
2. River Water	0.7	0.7	1.4	1.7	9.7	-	-	-	-	-	-	0.3	0.5
3. Swamp or Pond	7.2	7.8	10.7	11.0	4.8	3.6	1.9	1.6	1.6	2.0	3.3	5.1	5.0
4. Deep Well	3.8	4.8	5.2	5.1	1.6	1.0	3.1	-	0.3	3.3	1.7	3.1	2.2
5. Shallow Well (Outside the house lot)	40.3	46.1	55.3	55.5	36.1	27.1	20.1	7.5	5.9	7.2	15.8	27.6	28.4
6. Shallow Well (Inside the house lot)	12.4	15.0	15.8	14.7	7.4	4.6	3.1	2.6	2.3	2.6	7.9	10.5	8.1
B. Other Domestic Water													
1. Rain Water	7.7	3.0	-	-	17.9	29.3	42.4	55.3	59.7	58.1	42.3	25.4	28.9
2. River Water	2.3	2.0	2.7	2.7	1.9	2.0	1.9	1.6	1.6	1.3	1.3	1.3	1.9
3. Swamp or Pond	15.4	15.8	16.9	17.9	13.0	10.4	9.3	8.6	8.1	8.4	11.1	13.7	12.3
4. Deep Well	5.7	6.4	6.4	6.8	6.2	3.6	3.1	2.9	2.6	3.2	3.6	9.7	5.0
5. Shallow Well (Outside the house lot)	50.3	53.7	55.4	55.1	48.1	42.3	33.0	23.0	19.4	20.0	27.0	32.8	38.1
6. Shallow Well (Inside the house lot)	18.5	19.2	18.6	17.6	13.0	12.4	10.3	8.6	8.7	9.0	14.7	17.1	13.9

Table D-3-27 Number of Households by Source of Domestic Water
I. Lam Plai Mat Sub-Project (1-1. Upper stream) (unit : households)

Water Source	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
A. Drinking Water													
1. Rain Water	23	15	6	5	27	32	36	39	37	37	36	32	325
2. River Water	1	1	1	2	2	-	-	-	-	-	-	-	7
3. Swamp or Pond	1	1	2	2	1	1	-	-	-	-	-	-	8
4. Deep Well	5	6	6	6	1	1	1	-	1	1	2	4	34
5. Shallow Well (Outside the house lot)	8	15	23	24	10	6	3	1	2	2	2	3	99
6. Shallow Well (Inside the house lot)	1	1	2	1	-	-	-	-	-	-	-	-	5
B. Other Domestic Water													
1. Rain Water	10	2	-	-	14	21	25	30	30	30	27	21	210
2. River Water	6	6	7	7	5	4	5	4	4	3	2	3	56
3. Swamp or Pond	5	5	5	1	3	1	-	-	-	-	2	3	25
4. Deep Well	5	6	6	11	5	1	1	1	1	1	2	2	42
5. Shallow Well (Outside the house lot)	16	22	24	23	17	15	12	7	7	6	7	9	165
6. Shallow Well (Inside the house lot)	2	2	1	1	-	-	-	-	-	-	-	2	8

Table D-3-28 Number of Households by Source of Domestic Water
I. Lam Plai Mat Sub-Project (1-2. Midstream) (unit : households)

Water Source	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
A. Drinking Water													
1. Rain Water	15	12	8	8	30	36	45	48	49	49	43	26	369
2. River Water	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Swamp or Pond	2	3	4	4	-	-	-	-	-	-	-	-	13
4. Deep Well	4	4	4	4	2	1	-	-	-	-	2	4	25
5. Shallow Well (Outside the house lot)	27	28	31	31	26	17	27	5	2	2	8	19	223
6. Shallow Well (Inside the house lot)	2	3	3	3	1	-	-	-	1	1	1	2	17
B. Other Domestic Water													
1. Rain Water	4	1	-	-	8	13	27	34	33	33	24	9	186
2. River Water	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Swamp or Pond	9	11	2	12	9	8	7	6	6	6	7	9	92
4. Deep Well	5	5	15	5	5	4	4	3	2	4	4	20	76
5. Shallow Well (Outside the house lot)	28	30	31	31	30	23	19	11	9	10	14	10	246
6. Shallow Well (Inside the house lot)	3	3	2	2	2	3	1	1	2	2	4	2	27

Table D-3-29 Number of Households by Source of Domestic Water
I. Lam Plai Mat Sub-Project (1-3. Lower stream) (unit : households)

Water Source	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
A. Drinking Water													
1. Rain Water	5	3	-	-	10	17	31	44	49	46	32	17	254
2. River Water	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Swamp or Pond	1	1	2	2	-	-	-	-	-	-	-	1	6
4. Deep Well	-	-	-	-	-	-	-	-	-	-	-	-	-
5. Shallow Well (Outside the house lot)	37	38	40	40	36	34	22	10	7	8	17	27	316
6. Shallow Well (Inside the house lot)	6	8	8	8	7	3	1	1	-	1	5	5	53
B. Other Domestic Water													
1. Rain Water	2	2	-	-	-	3	13	25	31	30	18	10	134
2. River Water	1	-	1	1	1	1	1	1	1	1	2	1	12
3. Swamp or Pond	2	2	2	2	2	2	2	2	1	1	2	2	22
4. Deep Well	-	-	-	-	-	-	-	-	-	-	-	-	-
5. Shallow Well (Outside the house lot)	38	38	39	39	39	37	34	19	14	14	24	31	366
6. Shallow Well (Inside the house lot)	6	7	7	7	7	7	6	5	4	5	6	6	73

Table D-3-30 Number of Households by Source of Domestic Water

I. Lam Plai Mat Sub-Project (Total) (unit : households)

Water Source	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
A. Drinking Water													
1. Rain Water	43	30	14	13	67	85	112	131	135	132	111	75	948
2. River Water	1	1	1	2	2	-	-	-	-	-	-	-	7
3. Swamp or Pond	4	5	8	8	1	1	-	-	-	-	-	1	28
4. Deep Well	9	10	10	10	3	2	1	-	1	1	4	8	59
5. Shallow Well (Outside the house lot)	72	81	94	95	72	57	52	16	11	12	27	49	638
6. Shallow Well (Inside the house lot)	9	12	12	12	8	3	1	1	1	2	6	7	74
B. Other Domestic Water													
1. Rain Water	16	5	-	-	22	37	65	89	94	93	69	40	530
2. River Water	7	6	8	8	6	5	6	5	5	4	4	4	69
3. Swamp or Pond	16	18	19	20	14	11	9	8	7	7	11	14	154
4. Deep Well	10	11	11	11	10	5	5	4	3	5	6	22	103
5. Shallow Well (Outside the house lot)	82	90	94	93	86	75	65	37	30	30	45	50	777
6. Shallow Well (Inside the house lot)	11	12	10	10	9	10	7	6	6	7	10	10	108

Table D-3-31 Number of Households by Source of Domestic Water
II. Nong Lumphuk Sub-Project (unit : households)

Water Source	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
A. Drinking Water													
1. Rain Water	29	24	11	12	35	45	51	52	52	51	42	35	439
2. River Water	1	1	3	3	1	-	-	-	-	-	-	1	10
3. Swamp or Pond	16	17	22	23	13	9	6	5	5	6	10	13	145
4. Deep Well	1	2	3	3	2	1	-	-	-	-	-	-	12
5. Shallow Well (Outside the house lot)	7	9	13	13	5	3	1	1	1	1	5	5	64
6. Shallow Well (Inside the house lot)	9	10	10	8	6	5	5	5	5	5	6	9	83
B. Other Domestic Water													
1. Rain Water	5	4	-	-	13	26	27	28	30	29	23	13	198
2. River Water	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Swamp or Pond	24	22	24	26	21	16	16	14	13	14	17	21	228
4. Deep Well	4	5	5	5	5	3	2	2	2	2	2	4	41
5. Shallow Well (Outside the house lot)	17	17	18	18	15	11	11	12	11	11	13	14	168
6. Shallow Well (Inside the house lot)	13	14	14	12	10	9	9	9	9	9	10	13	131

Table D-3-32 Number of Households by Source of Domestic Water
III. Huai Phlu Sub-Project (3-1. Upper stream) (unit : households)

Water Source	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
A. Drinking Water													
1. Rain Water	14	9	4	5	27	35	43	48	48	46	33	24	336
2. River Water	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Swamp or Pond	1	1	1	1	1	1	-	-	-	-	-	1	7
4. Deep Well	1	1	1	1	-	-	-	-	-	-	1	1	6
5. Shallow Well (Outside the house lot)	22	26	28	34	20	15	9	5	5	6	10	16	196
6. Shallow Well (Inside the house lot)	10	13	15	14	5	2	1	-	-	-	6	8	74
B. Other Domestic Water													
1. Rain Water	2	-	-	-	11	16	25	30	32	32	21	15	184
2. River Water	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Swamp or Pond	2	2	2	2	2	2	2	2	2	2	2	2	24
4. Deep Well	1	1	1	1	1	1	1	1	1	1	1	1	12
5. Shallow Well (Outside the house lot)	27	28	28	28	25	23	16	13	11	11	13	16	239
6. Shallow Well (Inside the house lot)	19	19	19	19	14	12	10	8	8	8	16	17	169

Table D-3-33 Number of Households by Source of Domestic Water
III. Huai Phlu Sub-Project (3-2. Lower stream) (unit : households)

Water Source	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
A. Drinking Water													
1. Rain Water	17	12	5	5	23	30	36	38	39	38	30	23	296
2. River Water	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Swamp or Pond	-	-	-	-	-	-	-	-	-	-	-	-	-
4. Deep Well	-	1	1	1	-	-	-	-	-	-	-	-	3
5. Shallow Well (Outside the house lot)	16	19	26	20	15	8	3	1	1	3	6	11	129
6. Shallow Well (Inside the house lot)	8	9	9	9	4	4	3	2	1	1	6	7	63
B. Other Domestic Water													
1. Rain Water	-	-	-	-	9	11	19	26	29	26	17	8	145
2. River Water	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Swamp or Pond	4	4	4	4	3	3	3	3	3	3	4	4	42
4. Deep Well	2	2	2	3	3	2	2	2	2	2	2	2	26
5. Shallow Well (Outside the house lot)	24	24	24	24	22	21	14	10	8	10	12	18	211
6. Shallow Well (Inside the house lot)	12	12	12	12	7	7	7	4	4	4	9	11	101

Table D-3-34 Number of Households by Source of Domestic Water
III. Huai Phlu Sub-Project (Total)

(unit : households)

Water Source	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
A. Drinking Water													
1. Rain Water	31	21	9	10	50	65	79	86	87	84	63	47	632
2. River Water	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Swamp or Pond	1	1	1	1	1	1	-	-	-	-	-	1	7
4. Deep Well	1	2	2	2	-	-	-	-	-	-	1	1	9
5. Shallow Well (Outside the house lot)	38	45	54	54	35	23	12	6	6	9	16	27	325
6. Shallow Well (Inside the house lot)	18	22	24	23	9	6	4	2	1	1	12	15	137
B. Other Domestic Water													
1. Rain Water	2	-	-	-	20	27	44	56	61	58	38	23	329
2. River Water	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Swamp or Pond	6	6	6	6	5	5	5	5	5	5	6	6	66
4. Deep Well	3	3	3	4	4	3	3	3	3	3	3	3	38
5. Shallow Well (Outside the house lot)	51	52	52	52	47	44	30	23	19	21	25	34	450
6. Shallow Well (Inside the house lot)	31	31	31	30	21	19	17	12	12	12	25	28	269

Table D-3-35 Inventory of Livestock and Poultry

(unit : head, head/farm)

Sub-Project	a) Baffalo		b) Cattle		c) Hogs		d) Chickens		e) Ducks	
	head	head/farm	head	head/farm	head	head/farm	head	head/farm	head	head/farm
I. Lam Plai Mat Sub-Project										
1-1. Upper stream	114	(2.9)	2	(0.1)	15	(0.4)	369	(9.5)	20	(0.5)
1-2. Midstream	190	(3.8)	8	(0.2)	15	(0.3)	705	(14.1)	128	(2.6)
1-3. Lower stream	178	(3.6)	14	(0.3)	21	(0.4)	616	(12.3)	52	(1.0)
Total	482	(3.5)	24	(0.2)	51	(0.4)	1,690	(12.2)	200	(1.4)
II. Nong Lumphuk Sub-Project	68	(1.1)	4	(0.1)	17	(0.3)	998	(16.1)	18	(0.3)
III. Huai Phlu Sub-Project										
3-1. Upper stream	80	(1.6)	7	(0.1)	-	(-)	863	(17.3)	123	(2.5)
3-2. Lower stream	134	(3.3)	28	(0.7)	38	(0.9)	537	(13.1)	365	(8.9)

Table D-3-36 Inventory of Capital Investment

(unit : Number, Number/house)

Items	I. Lam Plai Mat Sub-Project						II. Nong Lumphuk Sub-Project		III. Huai Phlu Sub-Project			
	1-1. Upper stream		1-2. Midstream		1-3. Lower stream				3-1. Upper stream		3-2. Lower stream	
1. House (Dwelling)	39	(1.0)	50	(1.0)	50	(1.0)	63	(1.0)	50	(1.0)	43	(1.0)
2. Warehouse for Paddy	30	(0.8)	33	(0.9)	45	(0.9)	39	(0.6)	23	(0.5)	32	(0.8)
3. Shed for Animals	13	(0.3)	30	(0.6)	34	(0.7)	16	(0.3)	15	(0.3)	27	(0.7)
4. Tractors (4 wheel)	-	(-)	-	(-)	-	(-)	4	(0.1)	-	(-)	-	(-)
5. Puddling Machine	2	(0.1)	2	(0.0)	1	(0.0)	11	(0.2)	2	(0.0)	-	(-)
6. Truk	-	(-)	-	(-)	-	(-)	3	(0.0)	4	(0.1)	2	(0.0)
7. Irrigation Pump	2	(0.1)	1	(0.0)	2	(0.0)	6	(0.1)	1	(0.0)	2	(0.0)
8. Sprayer	1	(0.0)	1	(0.0)	-	(-)	-	(-)	3	(0.1)	1	(0.0)
9. Animal Cart	12	(0.3)	14	(0.3)	13	(0.3)	2	(0.0)	10	(0.2)	15	(0.4)
10. Push Cart	1	(0.0)	9	(0.2)	4	(0.1)	12	(0.2)	5	(0.1)	3	(0.1)
11. Plow (animal)	48	(1.2)	83	(1.7)	87	(1.7)	27	(0.4)	46	(0.9)	71	(1.7)
12. Harrow (animal)	34	(0.9)	49	(2.0)	48	(1.0)	21	(0.3)	38	(0.8)	42	(1.0)

Table D-3-37 Non-farm Cash Income, 1982/83

(unit : ฿/year/house)

Items	I. Lam Plai Mat Sub-Project			II. Nong Lumphuk Sub-Project	III. Huai Phlu Sub-Project	
	1-1. Upper stream	1-2. Midstream	1-3. Lower stream		3-1. Upper stream	3-2. Lower stream
1. Other Farm Occupation	4,398	3,358	3,148	4,309	4,807	1,783
2. Non-farm Occupation	853	951	2,112	1,775	983	1,057
3. Work Animals *1	25	-	-	-	60	-
4. Farm Machineries *2	92	-	-	7,666	969	244
5. Interest Earned *3	26	240	35	387	240	183
6. Cottage Industry *4	-	192	28	6	6	7
7. Receipt of gifts *5	67	252	873	546	218	56
8. Others *6	1,279	550	266	1,670	2,396	1,100
Total	6,740	5,543	6,462	16,359	9,679	4,430

Note : *1 ... Lending work animals to others.
*2 ... Lending farm machines and/or accessories to others.
*3 ... Interest earned on money loaned to others.
*4 ... Earning from cottage industry.
*5 ... Receipt of gifts from relatives and others.
*6 ... Including the earnings from trading, fishery and others.

D.4. FARMING INPUTS AT PRESENT

Table D-4-1. Farming Inputs for Paddy Production

(At presen)

Item		Planted Area	Lam Plai Mat *	Nong Lum Puk	Huai Phlu *	Total
1. Planted ates		ha	8,799	399	581	9,719
2. Farming Inputs						
(1) Labou						
		(day)	(68.1)	(63.3)	(73.8)	(68.2)
- Family		x1,000day	599	21	43	663
		(day)	(13.6)	(24.0)	(16.0)	(14.1)
- Hired		x1,000day	120	8	9	137
		(day)	(81.7)	(87.3)	(89.8)	(82.4)
- Total		x1,000day	719	30	52	801
(2) Animal / Machinery						
- Animal		(day)	(11.9)	(19.4)	(17.6)	(16.3)
		x1,000day	141	7	10	158
- Tractor &		(day)	(2.8)	(11.8)	(-)	(3.0)
Hand Tractor		x1,000day	25	4	-	29
(3) Seeds		(kg)	(37.6)	(36.8)	(36.5)	(37.5)
		ton	331	12	21	364
(4) Fertiligers						
		(kg)	(15.3)	(19.8)	(14.4)	(15.4)
- 16 - 20 - 0		ton	135	7	8	150
		(kg)	(0.8)	(-)	(-)	(0.1)
- 20 - 20 - 0		ton	7	-	-	7
		(kg)	(0.8)	(0.6)	(-)	(0.1)
- Manure		ton	7	-	-	7
(5) Pesticides		(฿)	(1.07)	(-)	(10.9)	(1.5)
		x฿1,000	9	-	6	15

Note : (1) The figures in the patenthesis show those per hectare.
(2) * Excluding the area of "Lower Stream".

Surce : Farm Economic Survey

Table D-4-2 Labor Requirement of Crop Farming and Supply
(At Present)

(unit: Thousand man-day)

Crop		Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Total
1.P-1: Lam Plai Mat														
(1) Rice	11.82	1.2	17.7	89.8	150.1	184.4	62.7	49.6	29.6	203.3	144.2	62.7	1.2	996.4
(2) Cassava	8.60	27.5	116.1	56.8	124.7	55.9	41.3	71.4	74.8	21.5	14.6	92.0	104.1	800.7
(3) Maize	5.90	5.9	22.4	46.6	70.8	35.4	70.2	42.5	26.0	58.4	0	0	12.4	390.6
Total	26.32	34.6	156.2	193.2	345.6	275.7	174.2	163.5	130.4	283.2	158.8	154.7	117.7	2,187.7
(4) Supply		----- 479.8 thousand man-day per month = 7,381 farm household x 2.6 man x 25 days -------												
2.P-5: Nong Lumphuk														
(1) Rice	0.69	0.1	1.0	5.2	8.8	10.8	3.7	2.9	1.7	11.9	8.4	3.7	0.1	58.3
(2) Cassava	0.78	2.5	10.5	5.1	11.3	5.1	3.7	6.5	6.8	2.0	1.3	8.3	9.4	72.5
(3) Maize	0.56	0.6	2.1	4.4	6.7	3.4	6.7	4.0	2.5	5.5	0.6	0.0	1.2	37.7
Total	2.03	3.7	13.6	14.7	26.8	19.3	14.1	13.4	11.0	19.4	10.3	12.0	10.7	168.5
(4) Supply		------ 49.1 thousand man-day per month = 755 farm household x 2.6 man x 25 days ---------												
3.C-3: Thai Phlu														
(1) Rice	1.00	0.1	1.5	7.6	12.7	15.6	5.3	4.2	2.5	17.2	12.2	5.3	0.1	84.3
(2) Cassava	2.78	8.9	37.5	18.4	40.3	18.1	13.3	23.1	24.2	7.0	4.7	29.8	33.6	258.8
(3) Maize	0.25	0.3	1.0	2.0	3.0	1.5	3.0	1.8	1.1	2.5	0	0	0.5	16.6
Total	4.03	9.3	40.0	28.0	56.0	35.2	21.6	29.1	27.8	26.7	16.9	35.1	34.2	359.7
(4) Supply		------ 58.6 thousand man-day per month = 901 farm household x 2.6 man x 25 days ---------												

Table D-5-1 Number of Groups and the Members

G : Nos. of group M : Nos. of total members

Group	P-1 Direst Diversion from Dam G	P-1 Direst Diversion from Dam M	P-1 Pa Kham Diversion Weir G	P-1 Pa Kham Diversion Weir M	P-1 Total G	P-1 Total M	P-5 G	P-5 M	P-3 G	P-3 M
1. Farmers' Association	3	21	12	185	15	206	-	-	-	-
2. Home Economic group	4	132	2	50	6	182	-	-	1	24
3. BAAC Group	4	56	1	10	5	66	2	23	-	-
4. Youth Farmers' Group	2	50	3	61	5	111	-	-	-	-
5. Woman Group	1	40	14	217	15	257	-	-	-	-
6. Youth Group	-	-	1	30	1	30	-	-	1	5
7. Agricultural Cooperative	5	106	23	302	28	408	-	-	1	16
8. Other groups	1/ 1	35	-	-	1	35	2/ 1	20	1	25

Note : 1/ ... Sericulture group
2/ ... Chicken raising group

Source : Dept. of Agricultural Extension 1982

D. 6. AGRICULTURE PRODUCTION AND FARM INPUTS (WITH PROJECT)

D.6.1. Farmers' Intention Survey

(1) Objectives and methods

Farm households in the Project Area is classified into three types in term of farm management type namely "Rice Main", "Rice + Upland Crops" and "Upland Crops Main", according to 1978 Agricultural Census. It is considered that this Project should be formulated with including farmers' opinion on their farm management and improving their living standard. Their opinion would be different each other, depending upon various factors like type of farm management, farm size, family members' component, amount of non-farm income etc. Therefore, in order to understand farmers' intention on their farm management the Farmers' Intention Survey has been conducted by Study Team of RID and JICA, taking following method.

(a) Sample farmers was taken randomly in each sub-project in the number below;

Sub-Project		Nos. of Sample Farmers	
P-1:	Lam Plain Mat	39	(upstream 13, Mid & downstream 26)
P-5:	Nong Lum Puk	10	
C-3:	Huai Phlu	30	
	Total	79	

(b) Based on the questionaire forms which is shown below, interviewing was made during September - October 1983.

(2) Summary of Results

The summary of the results is shown in Table D-6-1.

No. of sample : -

Sheet No.1

I General Information

1. Name of Farmer / Age : (Surname) (Given Name) (Age)

2. Residense Address : (Muban) (Tambon) (Amphoe) (Changwat)

3. Farm Size and Tenure (1982/83) :

(Unit : rai)

Land Items	Nos. of Parcels	Farm Size by Tenure			Planted Area		
		Total	Owned	Rented	Total	Wet & Year Round	Dry Season
(a) Paddy Field							
(b) Upland Field							
(c) Orchard							
(d) Others							
(e) Total							

4. Planted Area and Harvested Area of Main Crops :

(Unit : rai)

Items	Paddy Field			Other Crop	Upland Field (1982/83)				
	Wet Season Rice				Wet Season Crops		Dry Season Crops		Year Round
	(1982/83)	(1981/82)	(1980/81)	( )	( )	( )	( )	( )	( )
(a) Planted Area									
(b) Damaged Area									
(c) Harvested Area									
(d) Cause of Damage									

Sheet No.2

5. Number of Farm Labor and Draft Animals for Wet Season Rice Cultivation:

Items	Farm Labor						Working Animal					
	Total		Full Time		Part Time		Total		Water Buffalo		Cattle	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
(a) Owned												
(b) Hired												
(c) Total												

(1) ---- Planting Season, (2) ---- Harvesting Season

II Information about Self-sufficiency of Home Consumption Rice and Other Crops

1. Are you self-sufficient in rice for home consumption in the past five years ?

(a) Sufficient in all of the five years.
- ☐ (i) "Yes"
- ☐ (ii) "No"

(b) In-sufficient in all of the five years.
- ☐ (i) "Yes"
- ☐ (ii) "No"

(c) In-sufficient in particular years.
- ☐ (i) "Yes" → Specify the years:
- ☐ (ii) "No"

2. Are you self-sufficient in field crops/ vegetables for home consumption in the last five years (1977/78 - 1982/83) ?

(a) Sufficient in all of the five years.
- ☐ (i) "Yes"
- ☐ (ii) "No"

(b) In-sufficient in all of the five years.
- ☐ (i) "Yes" → Specify the crops: _____
- ☐ (ii) "No"

(c) In-sufficient in particular years.
- ☐ (i) "Yes" → Specify the years: _____
- ☐ (ii) "No"

III Information about Major Constraints to Rice Cultivation

1. Have you suffered from drought damages to rice cultivation in the past five years ?

(a) Suffered from drought damages in all of the five years.
- ☐ (i) "Yes" → Specify the average damaged area: _____ rai/year
- ☐ (ii) "No"

(b) Suffered from drought damages in particular years.
- ☐ (i) "Yes" → Specify the year and damaged area:
- ☐ (ii) "No"

Year/Month	Damaged Area
	rai
	rai
	rai

(c) Not suffered from drought damages in any of the five years.
- ☐ (i) "Yes"
- ☐ (ii) "No"

2. Have you suffered from flood damages to rice cultivation for last five years (1977/78 to 1982/83)

(a) Suffered from flood damages in all of the five years.
- ☐ (i) "Yes" → Specify the average damaged area: _____ rai/year
- ☐ (ii) "No"

(b) Suffered from flood damage in particular years.
- ☐ (i) "Yes" → Specify the year and damaged area:
- ☐ (ii) "No"

Year/Month	Damaged Area	Flood Depth
	rai	m
	rai	m
	rai	m

(c) Not suffered from flood damages in any of the five years.
- ☐ (i) "Yes"
- ☐ (ii) "No"

3. Do you have any problems other than drought and flood damages to rice cultivation ?
Please indicate one of the main problems.

(a) It is not possible to buy fertilizers and other input materials due to insufficient money.
- ☐ (i) "Yes" → Specify the input materials which you want to apply if you have enough money: _____
- ☐ (ii) "No"

(b) Limited area for rice cultivation.
- ☐ (i) "Yes"
- ☐ (ii) "No"

(c) Lack of draft animals.
- ☐ (i) "Yes"
- ☐ (ii) "No"

(d) Inadequate supply of quality seeds.
- ☐ (i) "Yes" → Specify the varieties: _____
- ☐ (ii) "No"

(e) Inadequate extension services for rice cultivation.

☐ (i) "Yes" → Specify what kind of services you want to have:

☐ (ii) "No"

(f) Other problems

☐ (i) "Yes" → Specify the problems: _____

☐ (ii) "No"

IV Information about Farming Practices of Rice Cultivation

1. What varieties do you plant at present ? Please indicate major varieties, the area coverage and the transplanting time in normal year.

Varieties	Area Coverage	Transplanting Time
1.	%	
2.	%	
3.	%	
4.	%	
5. Others	%	

2. What is the source of seeds, the seed rate and the type of seedbed ?

(a) Source of seeds

☐ (i) Government certified seeds: _____ %

☐ (ii) Other farmers' seeds : _____ %

☐ (iii) Self supply : _____ %

(b) Type of seedbed

☐ (i) Wet bed, striped bed

☐ (ii) Wet bed, broadcasted

☐ (iii) Dry bed

☐ (iv) Others Specify:

(c) Seed rate

☐ (i) Seed rate per rai of seedbed: _____ kg/rai of seedbed

☐ (ii) Possible transplanting area per rai of seedbed: _____ rai

3. Do you apply fertilizer in seedbed ?

☐ (i) "Yes" → Specify the rate and kind of fertilizer: _____ kg/rai (kind:)

☐ (ii) "No"

4. Dou you apply pesticides in seedbed ?

☐ (i) "Yes" → Specify the rate and kind of pesticides: _____ kg/rai (kind:)

☐ (ii) "No"

5. What is the method of land preparation ?

☐ (i) Number of plowing : _____ passings/time x _____ time

☐ (ii) Number of harrowing: _____ passings/time x _____ time

6. What is the method of transplanting ?

☐ (i) Straight row

☐ (ii) Random

☐ (iii) Direct seeding

7. Do you apply any organic manure in main field ?

☐ (i) "Yes" → Specify kind of manure:

☐ (ii) "No" → Specify the reason :

8. Do you apply chemical fertilizer in main field ?

☐ (i) Basal only : _____ kg/rai (kind:)

☐ (ii) Topdressing only: _____ kg/rai (kind:)

☐ (iii) Both : _____ kg/rai (kind:)

☐ (iv) No application

9. What is the frequency and method of weeding ?

☐ (i) Manual only : _____ time

☐ (ii) Mechanical only : _____ time

☐ (iii) Chemical only : _____ time

☐ (iv) Combination : _____ time

☐ (v) Other method

☐ (vi) No weeding

10. Do you apply pesticides in main field ?

☐ (i) "Yes" → Specify how many times: _____ times

☐ (ii) "No" Kind of pests to control: _____

11. What is the water source and irrigation practices to raise rice ?

☐ (i) Only intake rain water from upstream area through ditches / cut portion of dikes

☐(ii) Other water source and irrigation practices :
Specify them : _____

12. What is the method of threshing ?

☐ (i) Stamping by water buffalo / cattle

☐(ii) Other method : _____

V Information about Plan to Improve Farm Management

1. How do you plan to increase your family income ?

(a) To increase cash income mainly from rice cultivation.

☐ (i) "Yes" → Specify the method : _____

☐(ii) "No"

(b) To increase cash income mainly from crops other than rice.

☐ (i) "Yes" → Specify the kind of crops : _____

☐(ii) "No"

(c) To increase income mainly raising livestock/ poulty.

☐ (i) "Yes" → Specify the kind of animals : _____

☐(ii) "No"

(d) To increase wage income from farm works.

☐ (i) "Yes" → Specify the kind of works : _____

☐(ii) "No"

(e) To increase wage income from non-farm works.

☐ (i) "Yes" → Specify the kind of works : _____

☐(ii) "No"

(f) Other plans.

☐ (i) "Yes" → Specify : _____

(g) No idea

☐(ii) "No"

Specify one of the main plan to increase income

☐(a), ☐(b), ☐(c), ☐(d), ☐(e)

2. What types of rice varieties do you want to plant in wet season if your paddy fields would be fully irrigated by an irrigation project ?

(a) Improved local varieties like Khao Dawk Mali 105 and RD 15 only.

☐ (i) "Yes" → Specify the major varieties and area coverage :

☐(ii) "No"

Variety (%)	Variety (%)	Variety (%)
( )	( )	( )

(b) High yielding varieties like RD 23 and RD 7 only.

☐ (i) "Yes" → Specify the major varieties and area coverage :

☐(ii) "No"

Variety (%)	Variety (%)	Variety (%)
( )	( )	( )

(c) Both types of varieties.

☐ (i) "Yes" → Specify the major varieties and area coverage :

☐(ii) "No"

Variety (%)	Variety (%)	Variety (%)
( )	( )	( )

(d) Local varieties (traditional varieties) only.

☐ (i) "Yes" → Specify the major varieties and area coverage :

☐(ii) "No"

Variety (%)	Variety (%)	Variety (%)
( )	( )	( )

3. What kind of second crops do you want to plant after harvesting wet season rice if irrigation water would be available in ten percent of the wet season rice cropping area ?

(a) Vegetables only.

☐ (i) "Yes" → Specify the kind of crops :

☐(ii) "No"

Kind	Kind	Kind

(b) Field crops only.

☐ (i) "Yes" → Specify the kind of crops :

☐ (ii) "No"

Kind	Kind	Kind

(c) Dry season rice only

☐ (i) "Yes" → Specify the varieties :

☐ (ii) "No"

Variety	Variety	Variety

(d) Combined crops of vegetables, field crops and rice.

☐ (i) "Yes" → Specify the kind of crops and area coverage :

☐ (ii) "No"

Crops	Area Coverage	Major Kind of Crops
Vegetables	%	
Field Crops	%	
Rice	%	

(e) No crop at all.

☐ (i) "Yes"

☐ (ii) "No"

4. What is the most indispensable items to improve your farm management hereafter (Indicate only two items)

(a) Irrigation water supply.

☐ (i) "Yes"

☐ (ii) "No"

(b) Construction/Improvement of roads

☐ (i) "Yes" Specify the kinds of roads: ☐ Fields to residences ☐ Residences to Amphoes

☐ (ii) "No"

(c) Supply of quality seeds.

☐ (i) "Yes"

☐ (ii) "No"

(d) Strengthening of agricultural extension services.

☐ (i) "Yes"

☐ (ii) "No"

(e) Other item.

☐ (i) "Yes" → Specify the item

☐ (ii) "No"

VI Information about Institutional Aspects to Develop Irrigation Facilities at On-farm Level

1. Under the situation that Government cannot afford to construct whole irrigation facilities up-to at on-farm level, do you think that it is possible to construct irrigation facilities at on-farm level on farmers' own account, as one of FAI Group Project or Tambon Project?

☐ (i) "Yes"

☐ (ii) "No" → Specify the reason:

2. Do you think that it is possible for the members of beneficiaries organizations to make operation and maintenance of the irrigation facilities at on-farm level collectively through collecting water charges/labor services ?

☐ (i) "Yes"

☐ (ii) "No" → Specify the reason:

3. Are there any conflicts to take water for cultivation in your Muban?

☐ (i) "Yes" Specify the conflicts : _____

☐ (ii) "No"

4. Do you think that it is possible for the members of beneficiaries organizations to make resolution of the conflicts to take irrigation water unequally between the upstream areas and the downstream areas of the irrigation system, sometimes beyond Muban and Tambon area?

☐ (i) "Yes"

☐ (ii) "No" Specify the reason:

5. Do you think what is the best phase of construction work to establish the beneficiaries organization for the successful construction and O&M of the irrigation facilities at on-farm level?

(a) Before construction work of main irrigation systems ☐ (i) "Yes" ☐ (ii) "No"

(b) Along with construction work of main irrigation systems ☐ (i) "Yes" ☐ (ii) "No"

(c) After construction work of main irrigation systems ☐ (i) "Yes" ☐ (ii) "No"

6. Basically, how do you think about ideal scheme to establish beneficiaries organizations for the construction and also O&M of the irrigation facilities at on-farm level?

(a) Start initially at main turnout level (about 50 ha) then merger of strong groups to form an organization at lateral canal level. ☐ (i) "Yes" ☐ (ii) "No"

(b) Establish the organizations at the higher level at lateral level at initial stage. ☐ (i) "Yes" ☐ (ii) "No"

7. Fundamentally, are you possible to amortize the loans for the construction of irrigation facilities at on-farm level if the assumed amount of yearly repayment is about ฿ 100 per rai? If impossible, how much can you reply? ☐ (i) "Yes" ☐ (ii) "No" → How much you can repay per rai? : ฿ /rai

8. Please make any comments about this survey Comments: _____

Table D-6-1 Summary on Farmers' Intension Survey

Sub-Project	I. General Information: 1. Cultivated area & cropped area: Total of Cultivated area (ha)	Area of Paddy field: Area, Owned & Rented (ha)	Planted, Wet & Year-round (ha)	Planted, Dry (ha)	Area of upland field: Area, Owned & Rented (ha)	Planted, Wet & Year-round (ha)	Planted, Dry (ha)	I. General Information: 2. Planted & harvested area of wet season rice: 1982/83 Planted	1982/83 Harvested	1981/82 Planted	1981/82 Harvested	1980/81 Planted	1980/81 Harvested	II. Self Sufficiency: 1. Rice (a)	(b)	(c)	2. Other crops (a)	(b)	(c)	III. Major Constraints to Rice Cultivation: 1. Drought damage (a)	(b)	(c)	2. Flood damage (a)	(b)	(c)	3. Others damage (a)	(b)	(c)	(d)	(e)	(f)
1.P-1:Lam Plai Mat																															
- Upsream (N=13)	2.52	1.77	1.65	-	0.75	0.54	-	1.65	1.43	1.58	1.14	1.46	1.10	5	6	4	2	10	1	2	6	5	2	-	11	5	5	1	-	3	1
- Mid & Downstream (N=26)	4.12	3.19	2.39	-	0.93	0.93	-	2.39	2.16	2.20	1.31	2.80	2.47	11	6	9	18	8	-	4	20	2	1	1	24	9	14	3	3	2	1
Total (N=39=100%)	3.58	2.82	2.22	-	0.77	0.70	-	2.22	1.97	1.98	1.25	2.19	1.86	14	12	13	20	18	1	6	26	7	3	1	35	14	19	4	3	5	2
2.P-5:Nong Lumphuk (N=10=100%)	4.48	1.57	1.38	-	2.91	2.91	-	1.38	1.06	1.26	0.80	1.34	1.04	6	2	2	3	6	1	1	7	2	-	3	7	5	2	2	1	-	1
3.C-3:Huai Phlu																															
- Upsream (N=14)	5.42	3.05	2.16	-	2.37	2.31	-	2.16	1.81	1.78	1.59	2.10	0.64	6	3	5	2	7	4	1	6	6	-	3	11	2	8	4	4	2	1
- Mid & Downstream (N=16)	3.17	2.76	1.54	-	0.41	0.41	-	1.54	1.19	0.95	0.81	1.67	1.35	6	4	6	3	12	-	7	5	3	1	3	11	1	9	6	5	-	-
Total (N=30=100%)	5.12	3.84	1.76	-	1.28	1.12	-	1.76	1.44	1.28	1.12	1.92	1.44	12	7	11	5	19	4	8	11	9	1	6	22	3	17	10	9	2	1

(Cont'd)

IV. Information of Existing Farming Practices

Sub-Project	1. Area coverage by variety		2.(a) Source of seed bed			2.(b) Type of seed bed		2. (c) Seed rate		3. Application of fertilizer in seed bed		4. Application of pesticides in seed bed		5. Nos. of plowing & harrowing	
	Recommended (%)	Local (%)	(a)	(b)	(c)	(a)	(b)	Seed rate (kg/ha)	Possible planted area per ha of bed (ha)	(i)	(ii)	(i)	(ii)	Plowing Pass x time	Harrowing Pass x time
1. P-1:Lam Plai Mat															
- Upstream (N=13)	7.0	93.0	-	-	13	4	9	61	15.9	5	8	3	10	1∿2 x 1∿2	2∿3 x 1∿2
- Mid & Donwstream (N=26)	29.0	71.0	-	1	25	16	10	79	11.8	18	8	13	13	1∿2 x 1∿2	1∿3 x 1∿2
Total (N=39=100%)	21.5	78.5	-	1	38	20	19	74	12.8	23	15	16	23	1∿2 x 1∿2	2∿3 x 1∿2
2. P-5:Nong Lumphuk (N=10=100%)	4.5	95.5	-	-	10	3	7	60	11.6	-	8	-	8	1∿2 x 1∿2	1∿3 x 1∿2
3. C-3:Huai Phlu															
- Upsream (N=14)	28.1	71.9	1	1	12	3	11	81	13.6	4	10	4	11	1∿2 x 1∿2	2∿3 x 1
- Mid & Downstream (N=16)	78.8	21.2	3	2	11	1	15	54	10.3	14	2	-	16	1∿2 x 1∿2	1∿3 x 1
Total (N=30=100%)	57.0	42.0	4	3	23	4	26	67	12.0	18	12	4	27	1∿2 x 1∿2	1∿3 x 1

(Cont'd)

IV. Information on Existing Farming Practices (Cont'd)

Sub-Project	6. Method of Planting			7. Organic manure application		8. Chemical fertilizer application in main field			9. Method and frequency of welding						10. Pesticides application in main field		11. Kind of water source & irrigation practices		12. Method of threshing	
	(i)	(ii)	(iii)	(i)	(ii)	(i)	(ii)	(iii)	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(i)	(ii)	(i)	(ii)	(i)	(ii)
1. P-1:Lam Plai Mat																				
- Upstream (N=13)	-	12	1	2	11	-	-	7	9	-	-	-	-	4	1	12	9	4	1	12
- Mid & Downstream (N=26)	4	20	2	5	21	-	19	2	9	-	-	-	-	17	6	20	22	4	8	18
Total (N=39=100%)	4	32	3	7	32	-	19	11	18	-	-	-	-	21	7	32	31	8	9	30
2. P-5:Nong Lumphuk (N=10=100%)	-	10	-	1	9	-	-	3	5	-	-	-	1	4	-	10	7	3	2	7
3. C-3:Huai Phlu																				
- Upstream (N=14)	-	14	-	-	14	1	2	-	7	-	-	-	-	7	4	10	11	3	1	13
- Mid & Downstream (N=16)	1	15	-	1	15	3	4	1	9	-	-	1	-	6	-	16	16	-	-	16
Total (N=30=100%)	1	29	-	1	29	4	6	1	16	-	-	1	-	13	4	26	27	3	1	29

(Cont'd)

V. Information on Intention to Improve Farm Management

Sub-Project	1. Way to increase family income							2. Varieties of wet season rice "With Irrigation Project"				3. Kind of Second crops "With Irrigation Project"					4. Most indispensable items to improve farm management				
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
1. P-1:Lam Plai Mat																					
- Upstream (N=13)	6	3	-	2	1	1	-	4	3	2	4	2	-	9	2	-	10	5	5	4	-
- Mid & Downstream (N=26)	14	4	2	10	-	-	-	4	6	10	6	3	-	19	4	-	24	4	9	14	
Total (N=39=100%)	20	7	2	12	1	1	-	8	9	12	10	5	-	28	6	-	34	9	14	18	-
2. P-5:Nong Lumphuk (N=10=100%)	5	1	-	-	1	1	2	1	3	3	2	2	-	5	3	-	7	3	2	4	-
3. C-3:Huai Phlu																					
- Upstream (N=14)	5	6	2	-	-	1	-	4	5	2	3	5	-	6	3	-	10	1	7	4	1
- Mid & Downstream (N=16)	5	6	4	-	-	-	1	9	6	-	3	5	3	7	1	-	14	8	7	1	1
Total (N=30=100%)	10	12	6	-	-	1	1	13	11	2	6	10	3	13	4	-	24	9	14	5	2

(Cont'd)

VI Information on Intention to Improve Farm Management (Cont'd)

Sub-Project	1. Possibility to develop on-farm facilities (a)	(b)	2. Possibility to establish O & M organization (a)	(b)	3. Existance of any conflicts on irrigation water (i)	(ii)	4. Possibility of arrangement equal water (i)	(ii)	5. Best Phase of establishment of O & M (a)	(b)	(c)	6. Stage to establish O & M (a)	(b)	7. Possibility of amortization for construction (i)	(ii)
1. P-1:Lam Plai Mat															
- Upatream (N=13)	13	-	13	-	8	5	12	1	2	1	10	7	6	12	1 ฿50/rai
- Mid & Downstream (N=26)	26	-	26	-	3	23	26	-	2	24	-	25	1	25	1 ฿50/rai
Total (N=39=100%)	39	-	39	-	11	28	38	1	4	25	10	32	7	37	2 ฿50/rai
2. P-5:Nong Lumphuk (N=10=100%)	10	-	10	-	5	5	10	-	1	4	5	8	2	9	1 ฿50/rai
3. C-5:Huai Phlu															
- Upstream (N=14)	12	1	12	1	3	11	14	-	4	4	6	11	4	10	4 ฿50~50/rai
- Mid & Downstream (N=16)	16	-	16	-	4	12	14	2	1	7	6	6	-	13	3 ฿50~50/rai
Total (N=30=100%)	28	1	28	1	7	33	28	2	5	11	12	17	4	23	7 ฿50~50/rai

6.2. Calculation of Cropping Area for Dry Season Field Crops

Table D-6-2 Calcultation of Cropping Area by Dry Season Field Crops

Items	a) Ground-nut	b) Mung bean	c) Tomato	d) Baby Corn	e) Shallot	f) Chili	Total
(1)Labor Requirement*1 (man-days/120 rai)	1,735	1,173	5,837	2,031	2,179	40,602	
(2)Labor Supply*2 (man-days/month/ 120 rai)	----------	----------	---------- 1,800	----------	----------	----------	
(3)Capacity of Labor Supply (2)/(1)	1.031	1.534	0.308	0.886	0.826	0.044	4.629
(4)Percentage Capacity of Labor Supply(3)'	22.3	33.1	6.7	19.1	17.8	1.0	100.0
(5)Area by Crops of *3 Equal Labor Input(rai) (4) x 120 rai	26.7	39.8	8.0	23.0	21.4	1.1	120.0
(6)Per Capita Productivity by Crops(฿/man-day)	62.7	40.6	52.1	65.7	125.8	43.7	(average) 65.1
(7)Per Capita Productivity Weight (6)' (Average = 1.00)	0.96	0.62	0.80	1.01	1.93	0.67	1.00
(8)Land Productivity by Crops, NPV(฿/ha)	6,930	2,723	16,504	7,396	15,280	92,327	(average) 23,527
(9)Land Productivity Weight (8)' (Average = 1.00)	0.30	0.12	0.70	0.31	0.65	3.92	1.00
(10) = (5) x (7)	25.7	24.8	6.4	23.2	41.4	0.8	122.2
(11)Proposed Cropping Area With Large Weight of Per Capita Productivity(10)' = Alternative (1)	25.3	24.3	6.3	22.8	40.6	0.8	120.0
(12) = (5) x (9)	7.9	4.6	5.6	7.2	13.9	4.5	43.7
(13)Proposed Cropping Area With Large Weight of Land Productivity(12) = Alternative(2)	21.7	12.6	15.4	19.8	38.2	12.3	120.0

Note: *1 ---Average Size of Muban Cooperative Service Unit.

*2 ---Average number of farm household per 120 rai (19.2 ha) of one unit is about 60.
Labor supply per a farm household is considered 30 man-days per month (1.5 persons x 20 days = 30 man-day)

*3 ---Equal labor input for crop production by farm is important to harvest the marketable products.

Table D-6-3 Labor Requirement for 120 rai (19.2 ha) of Dry Season Field Crops in the Muban Cooperative Service Unit

(Unit: man-days)

Crops	a) Ground nut	b) Mung-bean	c) Tomato	d) Baby corn	e) Shallot	f) Chili
Area (rai)	120	120	120	120	120	120
NPV (,000฿)	133	52	317	142	294	1,773
Sep.	0	0	0	0	0	0
Oct.	0	0	0	0	0	101.8
Nov.	0	0	217.0	0	0	328.3
Dec.	136.3	30.7	929.3	21.1	501.1	1,290.2
Jan.	424.3	422.4	1,234.5	366.7	326.4	1,927.7
Feb.	134.4	169.9	1,213.4	637.4	211.2	6,201.6
Mar.	96.0	357.1	1,205.8	720.0	176.6	6,781.4
Apr.	714.2	193.9	1,036.8	286.1	963.8	6,574.1
May	240.0	0	0	0	0	6,681.6
Jun.	0	0	0	0	0	6,424.3
Jul.	0	0	0	0	0	4,291.2
Aug.	0	0	0	0	0	0
Total	1,735.2	1,173.1	5,836.8	2,031.3	2,179.1	40,602.2

Table D-6-4 Labor Requirement for 120 rai (19.2 ha) of Dry Season Field Crops in the Muban Cooperative Service Unit

(Unit: man-days)

- Alternative (1) -

Crops *1	a) Ground nut	b) Mung-bean	c) Tomato	d) Baby corn	e) Shallot	f) Chili	Total	Monthly Labor Balance *2 (%)
Area (rai)	25.3	24.3	6.3	22.8	40.6	0.8	120.0	
NPV (,000฿)	28	11	17	25	99	12	191	
Sept.	0	0	0	0	0	0	0	-
Oct.	0	0	0	0	0	0.7	0.7	0.4
Nov.	0	0	11.4	0	0	2.2	13.6	0.7
Dec.	28.7	6.2	48.8	4.0	169.5	8.6	265.8	14.8
Jan.	89.5	85.9	64.8	69.7	110.4	12.9	433.2	24.1
Feb.	28.3	34.4	63.7	121.1	71.5	41.3	360.3	20.0
Mar.	20.2	72.6	63.3	136.8	59.7	45.2	397.8	22.1
Apr.	150.6	39.4	54.4	54.4	326.1	43.8	668.7	37.2
May	50.6	0	0	0	0	44.5	95.1	5.3
Jun.	0	0	0	0	0	42.8	42.8	2.4
Jul.	0	0	0	0	0	28.6	28.6	1.6
Aug.	0	0	0	0	0	0	0	-
Total	367.9	238.5	306.4	386.0	737.2	270.6	2,306.6	

Note: *1 --- Prepared by giving a larger weight to the crop with a higher NPV per man-day. (per capita productivity)

*2 --- Total of monthly labor supply in the average size of Muban Cooperative Service Unit is estimated 1,800 man-days.

Table D-6-5 Labor Requirement for 120 rai (19.2 ha) of Dry Season Field Crops in the Muban Cooperative Service Unit

(Unit: man-days)

- Alternative (2) -

Crops	a)Ground nut	b)Mung-bean	c) Tomato	d)Baby corn	e) Shallot	f) Chili	Total	Monthly Labor Balance*2 (%)
*1(%)	(18.1)	(10.5)	(12.8)	(16.5)	(31.8)	(10.3)	(100)	
Area(rai)	21.7	12.6	15.4	19.8	38.2	12.3	120	
NPV(,000฿)	24	6	41	21	94	182	367	
Sep.	0	0	0	0	0	0	0	-
Oct.	0	0	0	0	0	10.4	10.4	0.6
Nov.	0	0	27.8	0	0	33.7	61.5	3.4
Dec.	24.6	3.2	119.3	3.5	159.5	132.2	442.3	24.6
Jan.	76.7	44.7	158.4	60.5	103.9	197.6	641.8	35.7
Feb.	24.3	17.9	155.7	105.2	67.2	635.7	1,006.0	55.9
Mar.	17.4	37.8	154.7	118.8	56.2	695.1	1,080.0	60.0
Apr.	129.2	20.5	133.1	47.2	306.8	673.8	1,310.6	72.8
May	43.4	0	0	0	0	684.9	728.3	40.5
Jun.	0	0	0	0	0	658.5	658.5	36.6
Jul.	0	0	0	0	0	439.8	439.8	24.4
Aug.	0	0	0	0	0	0	0	-
Total	315.6	124.1	749.0	335.2	693.6	4,161.7	6,379.2	

Note: *1 --- Prepared by giving a larger weight to the crop with a higher NPV per rai. (land productivity.)

*2 --- Total of monthly labor supply in the average size of Muban Cooperative Service Unit is estimated 1,800 man-days.

D.6.3. Target Yield

Target Yield and Farm Inputs

(1) Target Yield of Wet Season Rice

The target yield of wet season rice is estimated as follows, based on the experimental yield of Surin Rice Experiment Station:

(a) Experimental yield (1979 Surin Rice Experiment Station):

Variety	Unit Yield	Fertilizer Dosage(N-P-K)
- Photo-sensitive Locally improved	3.2 ton/ha (512 kg/rai)	75 kg - 37.5 kg/ha
- Non-photo-sinsitive High yielding	3.7 ton/ha (587 kg/rai)	93.5 - 37.5 - 25 kg/ha

Source: See Table D-6-6.

(b) Estimated Yield by Land Class

The above experimental yield is considered to be the yield corresponding to the third class land because the soil of the experimental station belongs to the third class land. The yield rate by land class is estimated in the basis of the third class yield as follows:

Yield Rate by Land Class

Land Class	Rating (%)	Unit Yield(ton/ha) Non-Photo Sensitive	Unit Yield(ton/ha) Photo Sensitive
Potential	(100)	4.92	4.26
1st	100 - 90 (95)	4.68	4.05
2nd	90 - 80 (85)	4.18	4.62
3rd	80 - 70 (75)	3.70	3.20
4th	70 - 60 (65)	3.20	2.77

Although the yields at farmer's level is usually as low as 60 to 80 percent of the experimental yield, the target yield at farmer's level in this study was not reduced from the said yield because potential yield of 4.46 ton/ha is considered to be too low in comparison with the experimental yields in the melbouring rice experiment station in Pimai.

The weighted average yield of respective land class in each Sub-Project is shown in Table . The average yield of whole Sub-Project in the Lam Plai Mat Basin and in the Lam Chi Noi Basin is 3.3 ton/ha and 3.4 ton/ha respectively.

(2) Target yield of Dry Season Field Crops

The target yield of dry season field crops are estimated as follows based on the experimental yield of "UNDP Kalasin Experimental and Demonstration Farm for Irrigated Agriculture" and the estimated target yield by Department of Agricultural Extension.

Projected Yield of Dry Season Field Crops

(unit: ton/ha)

Land Class	Groundnut	Mungbean	Tomato	Baby Corn	Shallot	Chili
Potential	3.0	1.2	31.0	0.6	6.2	14.0
1st Class	2.7	1.1	28.0	0.5	5.5	13.0
2nd Class	2.4	1.0	25.0	0.4	5.0	12.0
3rd Class	2.2	0.9	23.0	0.3	4.5	11.0
4th Class	2.0	0.8	20.0	0.2	4.1	10.0

Source: Dept. of Agricultural Extension,
FAO/UNDP Irrigated Agriculture Development Project in Kalasin, Thailand.

(3) Yield Increase of the Irrigation Water Supply only for Nursery

(a) Estimate on the increase of planting area

The average of the planting area to the holding area of wet season rice for past ten years in the changwat Buriram was estimated at 77.0 percent. On the other hand, the average of highest area for three years is estimated 88.7 percent. It is assumed that 77.0 percent of the average of planting area could be increased to 88.7 percent if the irrigation water will be supplied to nursery and the seedlings will be prepared every year for transplanting readly.

The possible increase of planting area in percent is set at 10 percent for its conservative estimate.

(b) Estimate on the yield increase

According to the data in Table , the maximum yield of wet season rice is attained in the transplanting time of early August for photosensitive varieties because the proper duration of vegetative period is ensured. If the yield difference between the that planted in August and mean yield of those planted in July and September, the yield of August planting is larger about 12 percent to compare with the mean yield of July and September planting. It is assumed wet season rice can be transplanted at right time, that is considered to be from Mid July to Mid August, if irrigation water would be supplied for nursery. Then the increase of yield is conservatively estimated at five percent, considering about 50 percent of the planting area of seeding raised with irrigation water supply.

Table D-6-6 Experimental Yield of Rice at Surin, Rice Experiment Station

(Unit : kg of paddy/ha)

Variety	Year	$N-P_2O_5-K_2O$ (kg/ha) 0-0-0	0-37.5-25.0	37.5-37.5-25.0	75.0-37.5-25.0	112.5-37.5-25.0
1. Photo sensitive						
- Khao Dawk Mali 105	1978	2,381	2,588	3,081	2,975	2,869
	1979	2,456	2,869	3,200	3,162	2,644
- RD 6	1978	2,388	2,794	2,981	2,963	2,738
	1979	2,375	2,819	2,969	2,644	2,675
Average	1978	2,385	2,691	3,031	2,969	2,804
	1979	2,416	2,844	3,084	2,903	2,660
	(two years)	2,400	2,668	3,058	2,936	2,732
2. Non-photo sensitive						
- RD 1	1978	2,013	2,300	2,782	3,081	2,844
	1979	3,769	3,288	3,669	3,869	4,438
- RD 7	1978	2,563	2,450	2,944	3,119	3,069
	1979	2,763	3,344	3,506	3,344	3,994
- RD 11	1978	2,050	2,513	3,106	3,150	3,181
	1979	3,569	2,950	4,138	3,769	4,025
Average	1978	2,209	2,421	2,944	3,117	3,031
	1979	3,367	3,194	3,771	3,661	4,152
	(two years)	2,788	2,808	3,358	3,389	3,592

Source : "Annual Research Report on Rice Fertilization Experiment 1978 - 1979"
Note : Comparing to the yield data of adjacent Rice Experiment stations like Pimai and Nakhon Ratchasima stations, above data are lower.

Table D-6-7 Projected Yield of Wet Season Paddy
(With Project)

Land Class/Variety	Target Yield (ton/ha)	P-1 Direct Diversion from Dam Area (ha)	%	P-1 Pa Kham Diversion Weir Area (ha)	%	P-1 Total Area (ha)	%	P-5 Area (ha)	%	C-3 Area (ha)	%
1. R1		166	8.5	200	2.8	366	4.0	83	27.7	118	16.8
- Non Photo-sensitive	4.7										
- Photo-sensitive	4.0										
2. R2		1,396	71.6	4,569	63.9	5,965	65.5	32	10.7	391	55.8
- Non Photo-sensitive	4.2										
- Photo Sensitive	3.6										
3. R3		218	11.2	2,367	33.1	2,585	28.4	185	61.6	141	20.1
- Non Photo-sensitive	3.7										
- Photo-sensitive	3.2										
4. R6		170	8.7	14	0.2	184	2.0	-	-	50	7.3
- Non Photo-sensitive	3.2										
- Photo-sensitive	2.8										
5. Total Area		1,950	100.0	7,150	100.0	9,100	100.0	30.0	100.0	700	100.0
6. Weighted Average Yield by Area											
- Non Photo-sensitive		4.1ton/ha		4.0ton/ha		4.0ton/ha		4.0ton/ha		4.1ton/ha	
- Photo-sensitive		3.5ton/ha		3.5ton/ha		3.5ton/ha		3.5ton/ha		3.5ton/ha	

Table D-6-8 Effect of Transplanting Time and Mode of Nitrogen Application on Yield of Paddy(kg/ha)

Location	Trt.	Transplanting time 1st July	1st Aug.	1st Sept.	Trt. mean	Pertinent inf. from ANON, Source of variation	F
	T_1	2,493	3,095	3,224	2,933	Whole plot	
Sakon	T_2	3,550	3,404	3,138	3,364	Month	8.49
Nakhon	T_4	1,953	2,743	2,028	2,241	Sub-plot	
						Trt	19.15
	Month	2,665	3,081	2,797	2,848	Trt. X Month	2.49 (NS)
	T_1	2,760	2,894	3,227	2,961	Whole plot	
Khon	T_2	2,987	3,499	3,116	3,200	Month	7.84
Kaen	T_4	1,645	2,430	2,107	2,061	Sub-plot	
						Trt	26.76
	Month	2,464	2,941	2,816	2,740	Trt. X Month	1.24 (NS)
Mean		2,565	3,011	2,807	2,794		

Source: Jisuke Takahashi, Proceedings: FAO/THAILAND National Workshop on Research and Development of Rainfed Crop Production.

Table D-6-9 Present and Projected Yields

(unit : ton/ha)

Crop	Present					With Project (Target)				
	P-1:Lam Plai Mat			P-5: Nong Lumphuk	C-3: Huai Phlu	P-1:Lam Plai Mat			P-5: Nong Lumphuk	C-3: Huai Phlu
	Direct Diversion from Dam	Pa Kham Diversion Weir	Total			Direct Diversion from Dam	Pa Kham Diversion Weir	Total		
Wet Season Paddy										
(1) Rice, Photo-Sensitive, Rainfed	1.26	1.35	1.33	1.42	1.21	1.32	1.42	1.40	1.49	1.21
(2) Rice, Photo-Sensitive, Irrigated	-	-	-	-	-	3.50	3.50	3.50	3.50	3.50
(3) Rice, Non-Photo-Sensitive, Irrigated	-	-	-	-	-	4.10	4.00	4.00	4.00	4.10
Dry Season Field Crops										
(1) Groundnuts	-	-	-	-	-	2.4	2.4	2.4	2.4	2.4
(2) Mungbean	-	-	-	-	-	1.0	1.0	1.0	1.0	1.0
(3) Tomatoes	-	-	-	-	-	25.0	25.0	25.0	25.0	25.0
(4) Baby Corn	-	-	-	-	-	0.4	0.4	0.4	0.4	0.4
(5) Shallot	-	-	-	-	-	5.0	5.0	5.0	5.0	5.0
(6) Chili	-	-	-	-	-	12.0	12.0	12.0	12.0	12.0

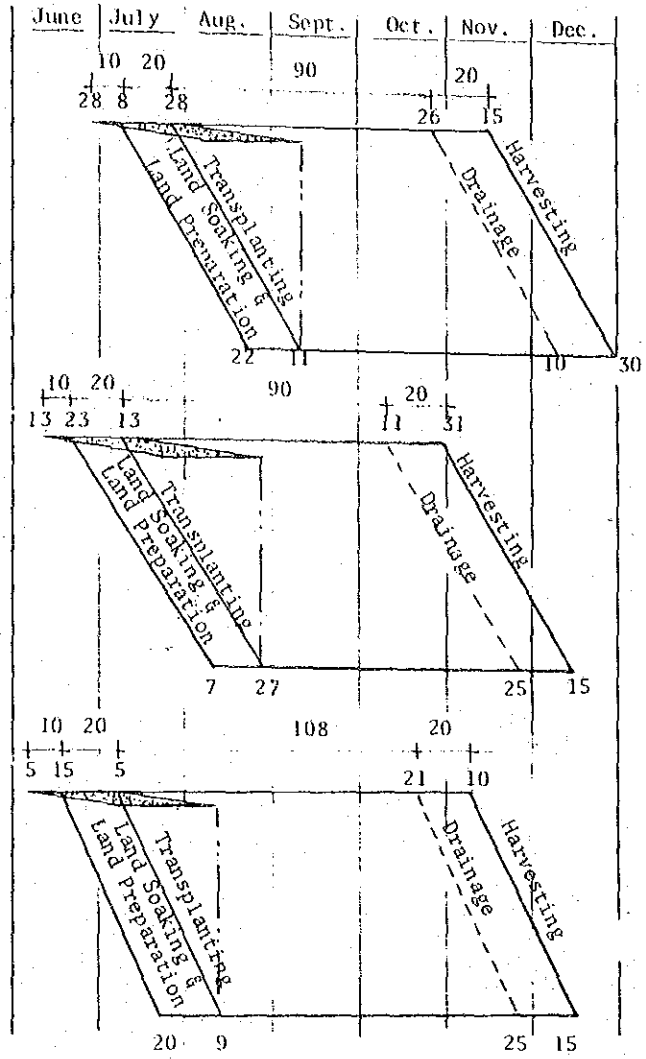
Table D-6-10 Planted (%), Harvested (%), and Yield, with Irrigation Water Supply for Nurseries

Sub-Project	1. Without Project			2. With Project		
	Planting Area (%) (1)	Harvesting Area (%) (2)	Yield (tons/ha) (3)	Planting Area (%) (4)=(1)x1.1	Harvesting Area (%) (4)x(2)/(1)	Yield (tons/ha) (3)x1.05
I. Lam Plai Mat						
1-1. Upper stream	72.3	60.9	1.26	79.5	67.0	1.32
1-2. Midstream	76.0	63.4	1.35	83.6	69.7	1.42
Total	75.2	62.9	1.33	82.7	69.2	1.40
II. Nong Lumphuk	72.2	65.7	1.42	84.9	72.3	1.49
III. Huai Phlu	73.4	70.0	1.21	80.7	77.0	1.27

Note : Rice production benefits from constantly supply of nursery are considered as followed; (1) With the Project, ten percent of planting area of paddy outside the irrigable area will enlarge, (2) and five percent of paddy yield will increase.

Table D-6-11 Cropping Calendar and Water Requirement of Paddy

A. Cropping Calender



B. Water Requirement

(unit : mm on 30-year average)

	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1. Non-Photosensitive Paddy								
Field Water Requirement	0.1	91.2	155.4	156.3	195.5	167.9	52.8	819.2
Average Irrigation Requirement	0.1	59.6	65.1	3.3	58.2	128.4	0.0	314.6
Diversion Water Requirement	0.2	102.8	112.1	5.7	100.3	221.4	0.0	542.6
2. Non-Photosensitive Paddy								
Field Water Requirement	5.7	139.0	150.6	165.8	197.5	120.5	13.9	793.4
Average Irrigation Requirement	3.2	150.4	26.8	9.5	59.5	62.1	0.0	266.5
Diversion Water Requirement	5.5	181.7	46.2	16.4	102.6	107.1	0.0	459.5
3. Photosensitive Paddy								
Field Water Requirement	75.9	158.8	169.8	171.8	198.2	144.7	18.1	937.3
Average Irrigation Requirement	49.9	104.0	25.4	9.6	59.7	78.7	3.1	330.4
Diversion Water Requirement	86.0	179.3	43.8	16.6	102.9	135.7	5.3	569.6

Table D-6-12 Cropping Patterns and Production

Crop	Lam Plai Mat				Nong Lumphuk				Huai Phlu			
	Harvested Area		Production		Harvested Area		Production		Harvested Area		Production	
	Present (ha)	Future (ha)	Present (ton)	Future (ton)	Present (ha)	Future (ha)	Present (ton)	Future (ton)	Present (ha)	Future (ha)	Present (ton)	Future (ton)
Wet Season												
(1) Rice, Irrigated												
- Non-photo sensitive	-	4,368	-	17,472	-	143	-	568	-	297	-	1,218
- Photo sensitive	-	4,368	-	15,288	-	142	-	497	-	297	-	1,040
(2) Rice, Rainfed												
- Inside the Irrigation Area	6,089	251	8,098	353	210	11	299	16	519	86	628	104
- Outside the Irrigation Area	1,271	1,398	1,690	1,957	79	87	112	130	34	39	41	47
Total	7,360	10,385	9,788	35,070	289	383	411	1,211	533	719	669	2,409
Dry Season												
(1) Field Crops												
- Groundnut	-	145	-	348	-	5	-	13	-	7	-	17
- Mungbean	-	83	-	83	-	4	-	4	-	4	-	4
- Tomato	-	102	-	2,550	-	4	-	93	-	5	-	125
- Baby Corn	-	132	-	53	-	5	-	2	-	6	-	3
- Shallot	-	255	-	1,270	-	9	-	46	-	12	-	62
- Chili	-	83	-	996	-	3	-	36	-	4	-	48
Total	-	800	-	5,300	-	30	-	194	-	38	-	259

Note: The case of "Future" is based on the possible irrigation area in the water balance in 1952 to 1981.

Table D-6-13 Labour Requirement, Rice (Non-Photosensitive)

Operation	W/O Project		Ⓐ W/Project		Ⓜ W/Project	
	Man-day	Animal-day	Man-day	Animal-day	Man-day	Machinery
1. Seed-bedding						
a. Land Preparation/Sowing			1.2	1.2	0.7	-
b. Care of Seedings			1.5	-	1.5	-
Sub-total			2.7	1.2	2.2	-
2. Land Preparation						
a. Cleaning/Bund Mending			3.0	-	3.0	-
b. Plowing			(1x)5.0	5.0	(1x)1.9	1.9
c. Breaking/Harrowing			(2x)2.2	2.2	(2x)1.4	1.4
d. Final Harrowing/Leveling			(2x)1.8	1.8	0.8	0.8
Sub-total			12.0	12.0	7.1	7.1
3. Planting						
a. Pulling/Deliver of Seedlings			7.5	0.5	7.2	0.2
b. Furrowing/Planting/Thinning			20.0	-	20.0	-
Sub-total			27.5	0.5	27.2	0.2
4. Fertilizing						
a. Basal Fertilizers			1.5	0.4	1.2	0.1
b. Top-dressing			1.5	0.4	1.2	0.1
Sub-total			3.0	0.8	2.4	0.2
5. Pest Control			6.0	4.5	2.0	0.5
6. Cultivation/Weeding			12.0	-	12.0	-
7. Irrigation/Drainage			5.0	-	5.0	-
8. Harvesting						
a. Reaping/Plucking/Bundling			16.0	-	16.0	-
b. Hauling/Piling			3.4	1.7	2.5	0.8
c. Threshing/Winnowing			9.0	2.6	6.9	0.5
Sub-total			28.4	4.3	25.4	1.3
9. Post Harvesting						
a. Drying			-	-	-	-
b. Sacking/Piling/Delivery			3.5	1.3	2.7	0.5
Sub-total			3.5	1.3	2.7	0.5
10. Total			100.1	23.8	86.0	6.6

Remarks: Ⓐ ... With animal, Ⓜ ... With machinery

Table D-6-14 Labour Requirement, Rice (Photosensitive)

(Unit: day/ha)

Operation	W/O Project		Ⓐ W/Project		Ⓜ W/Project	
	Mna-day	Animal-day	Man-day	Animal-day	Man-day	Machinery
1. Seed-bedding						
a. Land Preparation/Sowing	1.2	1.0	1.2	1.2	0.7	-
b. Care of Seedings			1.5	-	1.5	-
Sub-total	1.2	1.0	2.7	1.2	2.2	-
2. Land Preparation						
a. Cleaning/Bund Mending			3.0	-	3.0	-
b. Plowing			(1x)5.0	5.0	(1x)1.9	1.9
c. Breaking/Harrowing	10.4	10.4	(2x)2.2	2.2	(2x)1.4	1.4
d. Final Harrowing/Leveling			(2x)1.8	1.8	0.8	0.8
Sub-total	10.4	10.4	12.0	12.0	7.1	7.1
3. Planting						
a. Pulling/Deliver of Seedlings	29.4	1.3	7.5	0.5	7.2	0.2
b. Furrowing/Planting/Thinning			20.0	-	20.0	-
Sub-total	29.4	1.3	27.5	0.5	27.2	0.2
4. Fertilizing						
a. Basal Fertilizers	0.3	0.3	1.5	0.4	1.2	0.1
b. Top-dressing			1.5	0.4	1.2	0.1
Sub-total	0.3	0.3	3.0	0.8	2.4	0.2
5. Pest Control	0.1	0.1	6.0	4.5	2.0	0.5
6. Cultivation/Weeding	1.0	-	12.0	-	12.0	-
7. Irrigation/Drainage	6.1	-	5.0	-	5.0	-
8. Harvesting						
a. Reaping/Plucking/Bundling	29.4		16.0	-	16.0	-
b. Hauling/Piling			3.4	1.7	2.5	0.8
c. Threshing/Winnowing	4.6	0.2	9.0	2.6	6.9	0.5
Sub-total	34.0	0.2	28.4	4.3	25.4	1.3
9. Post Harvesting						
a. Drying	1.8	-	-	-	-	-
b. Sacking/Piling/Delivery			3.5	1.3	2.7	0.5
Sub-total	1.8	-	3.5	1.3	2.7	0.5
10. Total	84.3	13.3	100.1	23.8	86.0	6.6

Remarks: Ⓐ ... With animal power, Ⓜ ... With Machinery

Table D-6-15 Labour Requirement, Groundnut

(Unit : man-day/ha)

Operation	Ⓐ W/Project		Ⓜ W/Project		Remarks
	Man-day	Animal-day	Man-day	Machinery	
1. Seed-bedding					
a. Land Preparation/Sowing	-	-	-	-	
b. Care of Seedings	-	-	-	-	Ⓐ ; With animal power
Sub-total	-	-	-	-	
2. Land Preparation					Ⓜ ; With machinery
a. Cleaning/Bund Mending	3.0	-	3.0	-	
b. Plowing	(1x)5.0	5.0	(1x)1.9	1.9	
c. Breaking/Harrowing	(2x)2.2	2.2	(2x)1.4	1.4	
d. Final Harrowing/Leveling	(2x)1.8	1.8	(2x)0.8	0.8	
Sub-total	12.0	9.0	7.1	4.1	
3. Planting					
a. Pulling/Deliver of Seedlings	-	-	-	-	
b. Furrowing/Planting/Thinning	10.0	0.5	9.7	0.2	
Sub-total	10.0	0.5	9.7	0.2	
4. Fertilizing					
a. Basal Fertilizers	1.5	0.5	1.2	0.2	
b. Top-dressing	-	-	-	-	
Sub-total	1.5	0.5	1.2	0.2	
4. Pest Control	(2x)5.0	3.0	2.5	0.3	
6. Cultivation/Weeding	14.5	5.0	11.5	2.0	
7. Irrigation/Drainage	(4x)4.0	-	4.0	-	
8. Harvesting					
a. Reaping/Plucking/Bundling	31.7	-	21.7	1.5	
b. Hauling/Piling	6.2	3.1	1.5	1.0	
c. Threshing/Winnowing	30.3	1.6	30.2	1.5	
Sub-total	*68.2	*4.7	*53.4	*4.0	
9. Post Harvesting					
a. Drying	-	-	-	-	
b. Sacking/Sorting/Delivery	-	-	-	-	
Sub-total	-	-	-	-	
10. Total	115.2	22.7 (Draft Animal = 19.7)	66.2	10.8	

Note : * ... Including the labor requirement of "Post Harvesting"

Table D-6-16 Labour Requirement, Mungbean

(Unit : man-day/ha)

Operation	Ⓐ W/Project		Ⓜ W/Project		Remarks
	Man-day	Animal-day	Man-day	Machinery	
1. Seed-bedding					
a. Land Preparation/Sowing	-	-	-	-	
b. Care of Seedings	-	-	-	-	Ⓐ ; With animal power
Sub-total	-	-	-	-	
2. Land Preparation					Ⓜ ; With machinery
a. Cleaning/Bund Mending	3.0	-	3.0	-	
b. Plowing	(1x)5.0	5.0	(1x)1.9	1.9	
c. Breaking/Harrowing	(2x)2.2	2.2	(2x)1.4	1.4	
d. Final Harrowing/Leveling	(2x)1.8	1.8	(2x)0.8	0.8	
Sub-total	12.0	9.0	7.1	4.1	
3. Planting					
a. Pulling/Deliver of Seedlings	-	-	-	-	
b. Furrowing/Planting/Thinning	7.5	0.5	7.5	-	
Sub-total	7.5	0.5	7.5	-	
4. Fertilizing					
a. Basal Fertilizers	1.5	0.5	1.2	0.2	
b. Top-dressing	-	-	-	-	
Sub-total	1.5	0.5	1.2	0.2	
4. Pest Control	(2x)4.5	3.0	3.0	0.6	
6. Cultivation/Weeding	15.0	2.0	13.5	1.0	
7. Irrigation/Drainage	(3x)2.0	-	2.0	-	
8. Harvesting					
a. Reaping/Plucking/Bundling	12.5	-	12.5	-	
b. Hauling/Piling	2.0	1.5	1.5	1.0	
c. Threshing/Winnowing	12.0	1.0	7.0	1.5	
Sub-total	*24.5	*2.5	*21.0	*2.5	
9. Post Harvesting					
a. Drying	-	-	-	-	
b. Sacking/Sorting/Delivery	-	-	-	-	
Sub-total	-	-	-	-	
10. Total	67.0	17.5 (Draft Animal = 14.5)	55.3	5.5	

Note : * ... Including the labor requirement of "Post Harvesting"

Table D-6-17 Labour Requirement, Tomato

(Unit: man-day/ha)

Operation	(A) W/Project, Future		(M) W/Project, Future		Remarks
	Man-day	Animal-day	Man-day	Machinery	
1. Seed-bedding					
a. Land Preparation/Sowing	2.0	1.0	1.8	0.8	
b. Care of Seedings	18.0	-	18.0	-	(A); With animal power
Sub-total	20.0	1.0	19.8	0.8	
2. Land Preparation					(M); With machinery
a. Cleaning/Bund Mending	3.0	-	3.0	-	
b. Plowing	(1x)5.0	5.0	(1x)1.9	1.9	
c. Breaking/Harrowing	(2x)2.2	2.2	(2x)1.4	1.4	
d. Final Harrowing/Leveling	(2x)1.8	1.8	(2x)0.8	0.8	
Sub-total	12.0	9.0	7.1	4.1	
3. Planting					
a. Pulling/Deliver of Seedlings	-	-	-	-	
b. Furrowing/Planting/Thinning	35.0	2.0	35.0	-	
Sub-total	35.0	2.0	35.0	-	
4. Fertilizing					
a. Basal Fertilizers	1.5	0.5	1.0	0.2	
b. Top-dressing	1.5	0.5	1.0	0.1	
Sub-total	3.0	1.0	2.0	0.3	
5. Pest Control	(15x)47.0	45.0	27.0	9.0	
6. Cultivation/Weeding	20.0	5.0	17.0	2.0	
7. Irrigation/Drainage	(15x)15.0	-	(15x)15.0	-	
8. Harvesting					
a. Reaping/Plucking/Bundling	105.0	-	105.0	-	
b. Hauling/Piling	30.0	15.0	22.0	7.0	
c. Threshing/Winnowing	-	-	-	-	
Sub-total	135.8	15.0	127.0	7.0	
9. Post Harvesting					
a. Drying	-	-	-	-	
b. Sacking/Sorting/Delivery	30.0	15.0	22.0	7.0	
Sub-total	30.0	15.0	22.0	7.0	
10. Total	317.0	93.0	271.9	30.2	

Table D-6-18 Labour Requirement, Baby Corn

(Unit: man-day/ha)

Operation	Ⓐ W/Project, Future		Ⓜ W/Project, Future		Remarks
	Man-day	Animal-day	Man-day	Machinery	
1. Seed-bedding					
a. Land Preparation/Sowing	-	-	-	-	
b. Care of Seedings	-	-	-	-	
Sub-total	-	-	-	-	
2. Land Preparation					
a. Cleaning/Bund Mending	3.0	-	3.0	-	
b. Plowing	(1x)5.0	5.0	(1x)1.9	1.9	
c. Breaking/Harrowing	(1x)2.2	2.2	(2x)1.4	1.4	
d. Final Harrowing/Leveling	(3x)1.8	1.8	0.8	0.8	
Sub-total	12.0	9.0	7.1	4.1	
3. Planting					
a. Pulling/Deliver of Seedlings	-	-	-	-	
b. Furrowing/Planting/Thinning	15.0	-	15.0	-	
Sub-total	15.0	-	15.0	-	
4. Fertilizing					
a. Basal Fertilizers	1.5	0.5	1.2	0.2	
b. Top-dressing	-	-	-	-	
Sub-total	1.5	0.5	1.2	0.2	
5. Pest Control	(2x)7.5	6.0	(2x)3.3	0.6	
6. Cultivation/Weeding	(2x)14.5	2.0	(3x)13.5	1.0	
7. Irrigation/Drainage	(4x)7.0	-	7.0	-	
8. Harvesting					
a. Reaping/Plucking/Bundling	*55.0	*5.0	*51.7	*1.7	
b. Hauling/Piling	-	-	-	-	
c. Threshing/Winnowing	-	-	-	-	
Sub-total	55.0	5.0	51.7	1.7	
9. Post Harvesting					
a. Drying	-	-	-	-	
b. Sacking/Piling/Delivery	-	-	-	-	
Sub-total	-	-	-	-	
10. Total	112.5	22.5	98.8	7.6	

* ; Including labor requirement for hauling/piling and sacking/delivery

Ⓐ ; With animal power

Ⓜ ; With machinery

Table D-6-19 Labour Requirement, Shallot

(Unit: man-day/ha)

Operation	Ⓐ W/Project, Future		Ⓜ W/Project, Future		Remarks
	Man-day	Animal-day	Man-day	Machinery	
1. Seed-bedding					
a. Land Preparation/Sowing	-	-	-	-	
b. Care of Seedings	-	-	-	-	
Sub-total	-	-	-	-	
2. Land Preparation					
a. Cleaning/Bund Mending	3.0	-	3.0	-	
b. Plowing	(1x)5.0	5.0	(1x)1.9	1.9	
c. Breaking/Harrowing	(3x)2.2	2.2	(2x)1.4	1.4	
d. Final Harrowing/Leveling	(2x)1.8	1.8	(2x)0.8	0.8	
Sub-total	12.0	9.0	7.1	4.1	
3. Planting					
a. Pulling/Deliver of Seedlings	-	-	-	-	
b. Furrowing/Planting/Thinning	15.0	2.5	13.8	1.2	
Sub-total	15.0	2.5	13.8	1.2	
4. Fertilizing					
a. Basal Fertilizers	1.5	0.5	1.2	0.2	
b. Top-dressing	1.5	0.5	1.2	0.2	
Sub-total	3.0	1.0	2.4	0.4	
5. Pest Control	7.0	6.0	2.8	0.6	
6. Cultivation/Weeding	14.5	5.0	12.0	2.5	
7. Irrigation/Drainage	(10x)10.0	-	(10x)10.0	-	
8. Harvesting					
a. Reaping/Plucking/Bundling	*60.0	*4.2	*57.2	*1.4	
b. Hauling/Piling	-	-	-	-	
c. Threshing/Winnowing	-	-	-	-	
Sub-total	60.0	4.2	57.2	1.4	
9. Post Harvesting					
a. Drying	-	-	-	-	
b. Sacking/Piling/Delivery	-	-	-	-	
Sub-total	-	-	-	-	
10. Total	121.5	27.7	105.3	6.1	

* ; Including labor requirement for hauling/piling and drying/piling/delivery

Ⓐ ; With animal power

Ⓜ ; With machinery

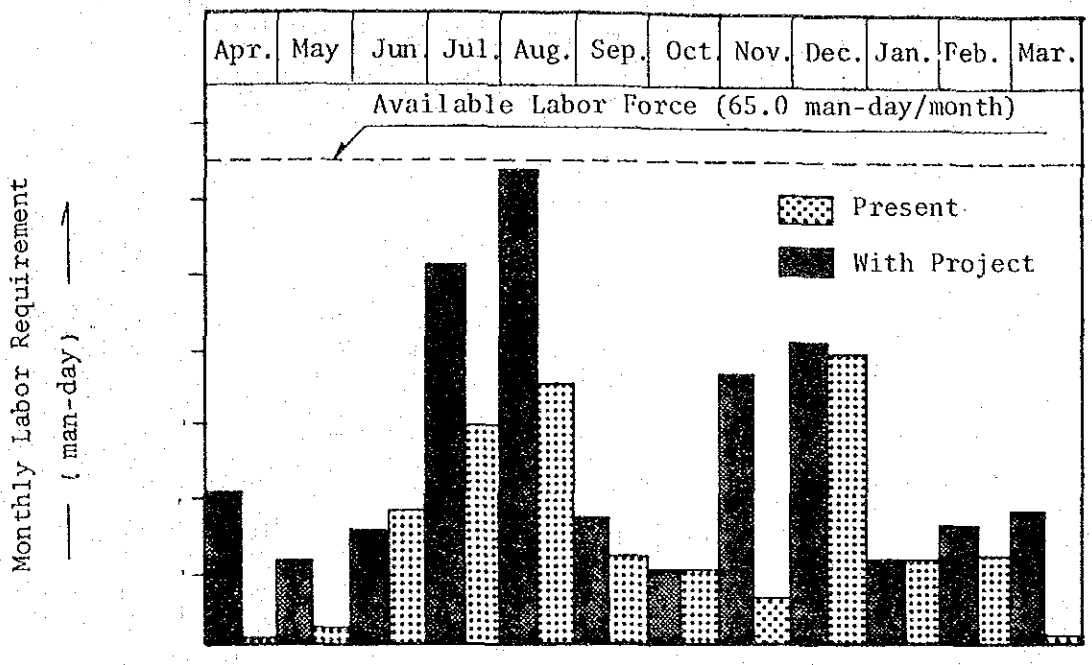
Table D-6-20 Labour Requirement, Chili

(Unit : man-day/ha)

Operation	Ⓐ W/Project		Ⓜ W/Project		Remarks
	Man-day	Animal-day	Man-day	Machinery	
1. Seed-bedding					
a. Land Preparation/Sowing	2.0	1.0	1.8	0.8	
b. Care of Seedings	18.0	-	18.0	-	
Sub-total	20.0	1.0	19.8	0.8	Ⓐ ; With animal power
2. Land Preparation					
a. Cleaning/Bund Mending	3.0	-	3.0	-	Ⓜ ; With machinery
b. Plowing	(1x)5.0	5.0	(1x)1.9	1.9	
c. Breaking/Harrowing	(2x)2.2	2.2	(2x)1.4	1.4	
d. Final Harrowing/Leveling	(2x)1.8	1.8	(2x)0.8	0.8	
Sub-total	12.0	9.0	7.1	4.1	
3. Planting					
a. Pulling/Deliver of Seedlings	-	-	-	-	
b. Furrowing/Planting/Thinning	35.0	2.0	35.0	-	
Sub-total	35.0	2.0	35.0	-	
4. Fertlilizing					
a. Basal Fertilizers	1.5	0.5	1.0	0.2	
b. Top-dressing	1.5	0.5	1.0	0.1	
Sub-total	3.0	1.0	2.0	0.3	
5. Pest Control	(10x)31.3	31.3	18.0	6.0	
6. Cultivation/Weeding	20.0	5.0	17.0	2.0	
7. Irrigation/Drainage	(45x)45.0	-	(45x)45.0	-	
8. Harvesting					
a. Reaping/Plucking/Bundling	1,800.0	-	1,800.0	-	
b. Hauling/Piling	118.0	10.0	104.0	7.0	
c. Threshing/Winnowing	-	-	-	-	
Sub-total	1,918.0	10.0	1,904.4	7.0	
9. Post Harvesting					
a. Drying	-	-	-	-	
b. Sacking/Sorting/Delivery	30.0	10.0	22.0	7.0	
Sub-total	30.0	10.0	22.0	7.0	
10. Total	2,114.7	69.3 (Draft Animal = 38.0)	2,070.3	28.9	

Figure D-6-1. Farm Labor Balance, with Project

- Rice Only (Average Size Farmer) -



- Rice + Major Field Crops (Average Sige Farmer) -

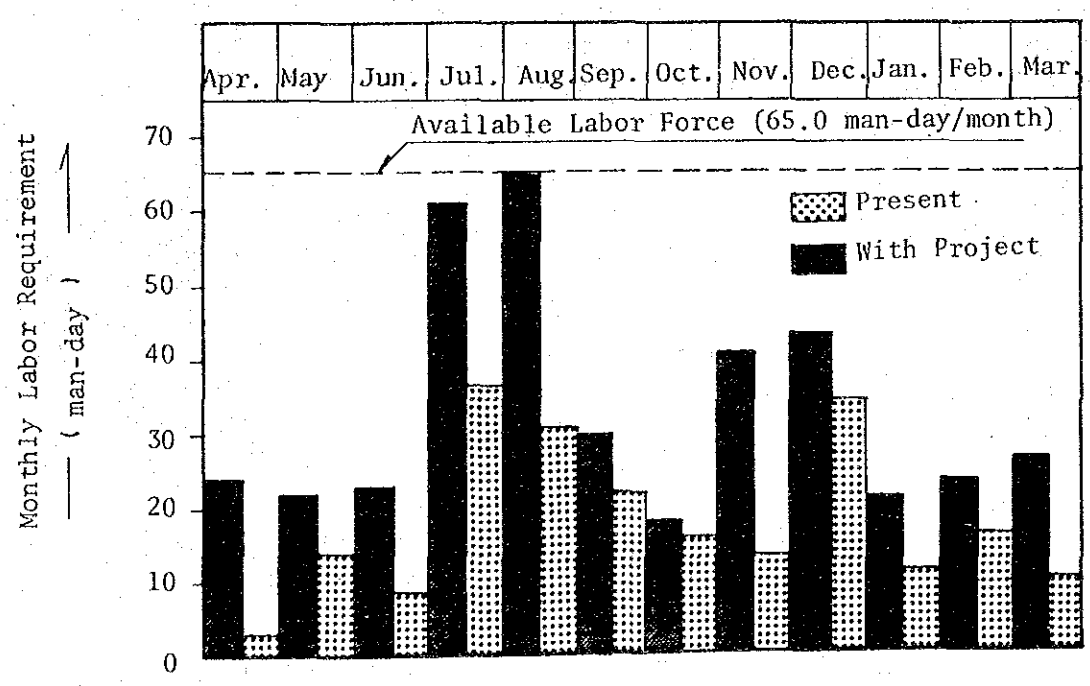


Table D-6-21 Farm Labor Balance per Hectare

(Unit : man-day)

Item		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
(1) Rice,with Irrigation														
-Non Photosensitive	(A)			2.5	19.7	30.7	8.2	4.8	23.2	11.0				100.1
	(M)			1.9	16.8	27.0	7.0	3.8	17.3	8.5				82.3
-Photosensitive	(A)			2.9	21.1	29.6	8.5	4.6	12.1	21.1	0.2			100.1
	(M)			2.1	18.1	25.9	7.2	3.5	9.2	16.1	0.2			82.3
(2) Rice,Rainfed	(A)	0.1	1.5	7.6	12.7	15.6	5.3	4.2	2.5	17.2	12.2	5.3	0.1	84.3
(3) Field Crops,with Irrigation														
-Groundnut	(A)	51.4	17.3							7.7	25.1	8.0	5.7	110.5
	(M)	23.0	7.7							6.7	18.6	6.0	4.2	66.2
-Mungbean	(A)	10.3								2.0	24.5	9.6	20.1	67.0
	(M)	9.3								1.2	19.4	8.2	17.2	55.3
-Tomato	(A)	57.9							10.3	46.2	66.2	68.4	68.0	317.0
	(M)	50.2							9.5	40.7	55.8	58.0	57.7	271.9
-Baby corn	(A)	15.4								1.3	21.2	35.4	39.2	112.5
	(M)	14.4								0.9	17.1	30.8	35.6	98.8
-Shallot	(A)	51.4								29.0	19.0	12.5	9.6	121.5
	(M)	49.0								23.1	14.9	9.5	8.8	105.3
-Chili	(A)	342.2	348.0	334.6	223.5			5.3	17.1	67.2	100.4	323.0	353.2	2,114.7
	(M)	336.8	342.5	329.0	219.8			5.3	16.1	59.9	95.9	317.3	347.7	2,070.3
(4) Field Crops,without Irrigation														
-Cassava	*(A)	3.2	13.5	6.6	14.5	6.5	4.8	8.3	8.7	2.5	1.7	10.7	12.1	93.1
-Maize	(A)	1.0	3.8	7.9	12.0	6.0	19.9	7.2	4.4	9.9			2.1	66.2

Remarks : (A) with animal power
(M) with mechanization

Note * Mixture of draft animal and mechanization.

Table D-6-22 Farm Labor Balance, "Rice only"

(Unit: man-day)

Item	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
1 At Present													
(1)Requirement 1/	0.2	2.6	12.9	21.6	26.5	9.0	7.1	4.3	29.2	20.7	9.0	0.2	143.3
(2)Supply 2/	←					65.0						→	780.0
(3)Balance	64.8	62.4	52.1	43.4	38.5	56.0	57.9	60.7	35.8	44.3	56.0	64.8	636.7
2 With Project													
(1)Requirement 3/	20.2	11.3	15.4	49.4	63.7	17.5	9.8	36.5	39.6	10.5	15.8	16.9	306.6
(2)Supply 2/	←					65.0						→	780.0
(3)Balance	44.8	53.7	49.6	15.6	1.3	47.5	55.2	28.5	25.4	54.5	49.2	48.1	473.4

Note : 1/ Refer to the result of "Farm Economic Survey"

2/ 2.6 man-day x 25days = 65.0 man-day

3/ Based on the following conditions;

(1) Planted area by crop (ha);

	At Present	With Project
-Rice	1.73	2.19
-Dry season field crops in paddy field		
-Groundnut	-	0.06
-Mungbean	-	0.03
-Tomato	-	0.04
-Baby corn	-	0.05
-Shalot	-	0.10
-Chili	-	0.03

(2) Area coverage of "Animal power" and mechanization

	At Prezent	With Project
Animal power	100%	67%
Mechanization	0%	33%

Table D-6-23 Farm Labor Balance ,"Rice + Major Field Crops"

(Average farm Sige)

(Unit: man-day)

Item	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
1 At Present													
(1)Requirement 1/	2.9	13.8	8.6	36.4	32.6	21.9	16.1	12.3	34.3	20.7	16.2	9.8	225.6
(2)Suppy 2/	←					65.0						→	780.0
(3)Balance	62.1	51.2	56.4	28.6	32.4	43.1	48.9	52.7	30.7	44.3	48.8	55.2	554.4
2 With Project													
(1)Requirement 3/	23.7	22.6	23.5	61.6	65.5	29.3	18.3	41.6	43.4	11.1	23.0	25.6	389.2
(2)Supply 2/	←					65.0						→	780.0
(3)Balance	41.3	42.4	41.5	3.4	-0.5	35.7	46.7	23.4	21.6	53.9	42.0	39.4	390.8

Note : 1/ Refer to the result of "Farm Economic Surry"

2/ 2.6 man-day x 25 days = 65.0 man-day

3/ Based on the following conditions;

(1) Planted area by crop (ha);

	At Present	With Project
-Rice	1.58	2.00
-Major field crops		
-Cassara	0.70	0.70
-Maige	0.50	0.50
-Dry season fieldcrops		
-Groundnut	-	0.06
-Mungbean	-	0.03
-Tomato	-	0.04
-Baby Corn	-	0.05
-Shalot	-	0.10
-Chili		0.03

(2) Area corerage of "Animal power" and mechanization

	At Present	With Project
Animal power	100%	67%
Mechanization	0%	33%

Table D-6-24 Farm Inputs Requirement

(With Project)

Crop	Seed (kg/ha)	Composed (kg/ha)	Chemical Fertilizers: Urea (45-0-0) (kg/ha)	Ammosul (21-0-0) (kg/ha)	TSP (0-45-0) (kg/ha)	MP (0-0-60) (kg/ha)	Compost (ton/ha)	Pesticides: Amount	Pesticides: Kind	Man Power (man/day)	Draft Animal (day)
1. Rice, Wet Season											
- Improved (Photo-sensitive)	40	157 (16-20-0)	44	-	-	43	1.0	L, 1.5	Furadan 2F (22.3%)	100.1	19.7
- Improved (Non-photo-sensitive)	40	192 (16-20-0)	84	-	-	43	1.0	L, 1.5	- do -	100.1	19.7
2. Groundnut	125	100 (15-15-15)	-	-	-	-	(Gypsum) 0.28	G, 6.0 kg L, 0.5	Aldrex Malathion 50%	110.5	19.7
3. Mungbean	25	150 (15-15-15)	-	-	-	-	4.0	G, 18.0 kg L, 0.5	Furadan 3G Malathion 50%	67.0	16.5
4. Vegetabies											
- Tomato	0.2	250 (15-15-15)	12	208	-	-	10.0	L, 3.0 W.P, 28.5 G, 33	Malathion 50% etc. Wettable Sulfur etc. Furadan 3G	317.0	38.0
- Baby Corn	36	320 (16-20-0)	-	-	-	-	6.0	F, 1.0	M'bush	112.5	16.5
- Shalot	375	400 (15-15-15)	-	120	-	-	18.0	L, 2.5 W.P, 5.0	Sumithion etc. Zineb	121.5	21.7
- Chili	400cc	500 (15-15-15)	100	-	-	-	10.0	L, 3.0	Sevin 85 etc.	2147	330

Note : L ... Liquid, G ... Granular, W.P ... Wettable Powder

D.6.6: Farm Practices and Inputs Requirement

Figure D-6-2. Farm Practices and Inputs Requirement, Wet Season Rice, Non Photo-sensitive

(With Project, In Future)

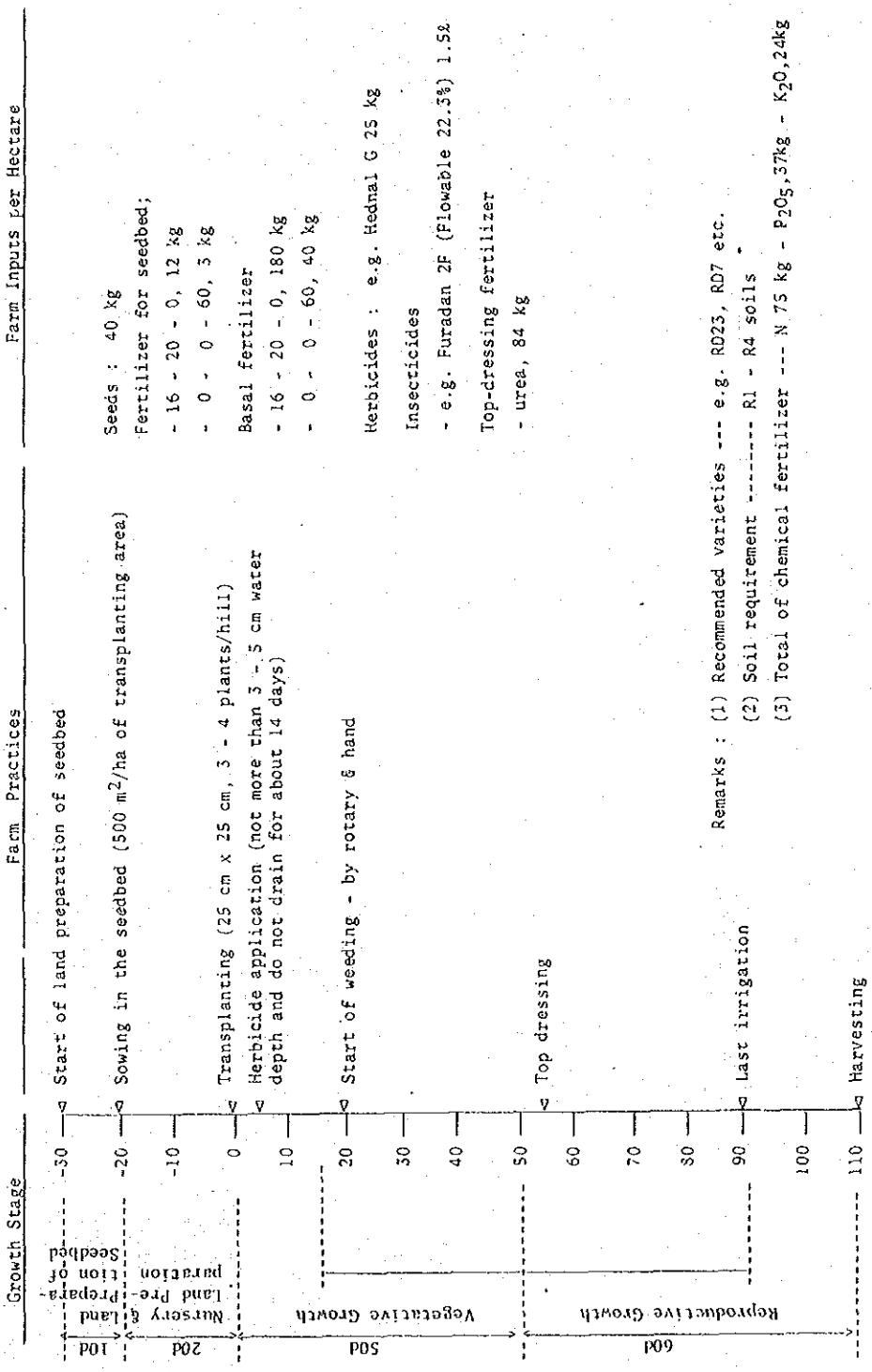
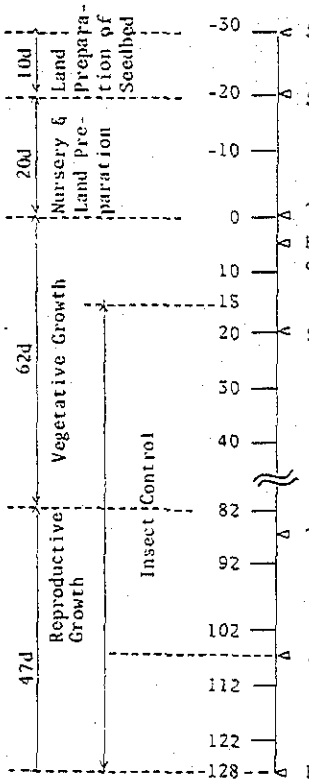


Figure D-6-3. Farm Practices and Inputs Requirement, Wet Season Rice, Photosensitive

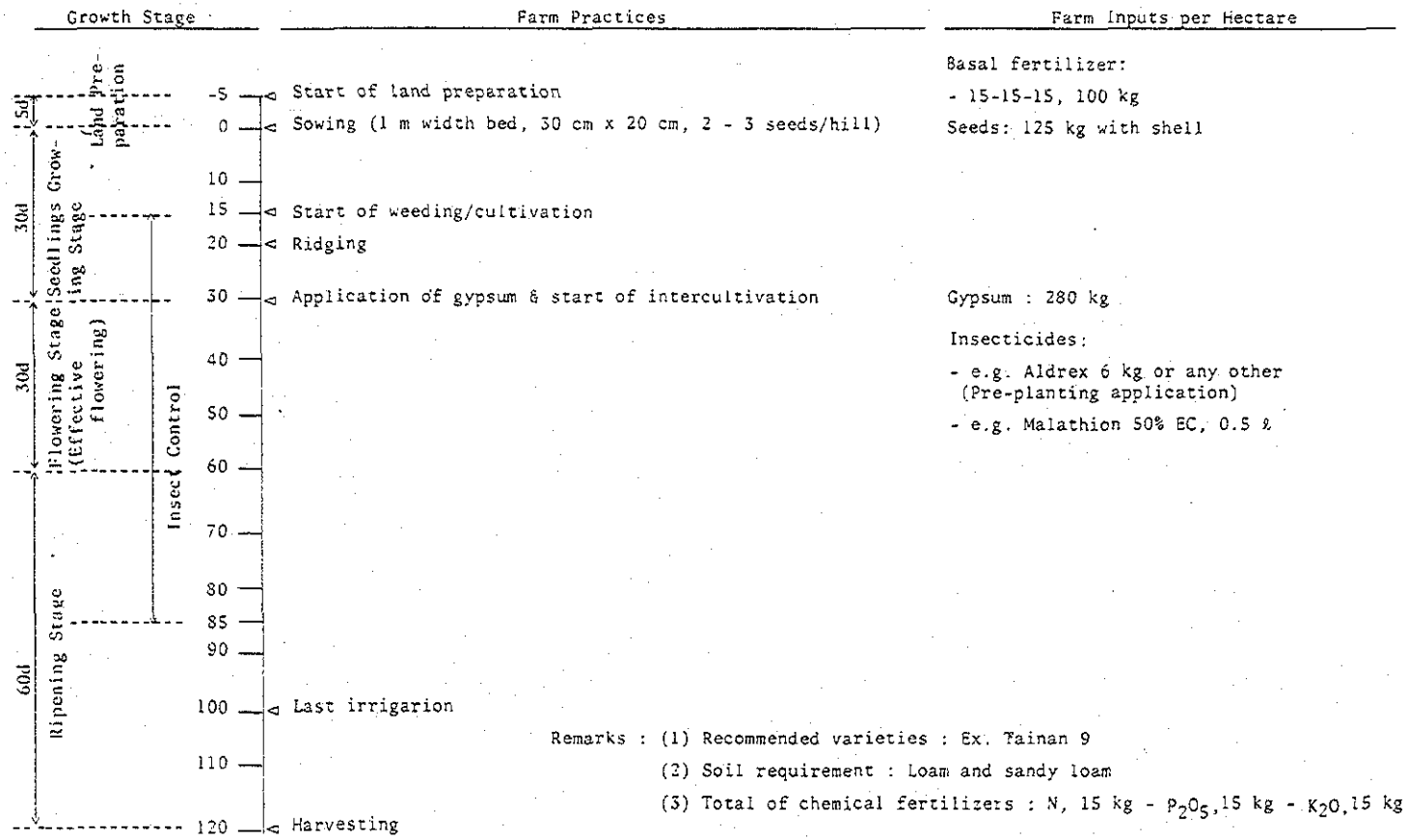
(With Project, in Future)



Farm Practices	Farm Inputs per Hectare
Start of land preparation of seedbed	
Sowing in the seedbed (500 m^2/ha of transplanting area)	Seeds : 40 kg Fungicides for seed treatment: Ditane M-45 or any other, 1.5 kg
Transplanting (25 cm x 25 cm, 3 - 4 plants/hill)	Fertilizer for seedbed - 16-20-0, 12 kg - 0-0-60, 3 kg
Herbicide application (not more than 3 - 5 cm water depth and do not drain for about 14 days)	
Start of weeding - by rotary & hand	Basal fertilizer - 16-20-0, 125 kg - 0-0-6, 40 kg - Azolla Herbicides : e.g. Hednal G 25 kg Insecticides - e.g. Puradan 2F (Flowable 22.3%) 0.5 ℓ
Top dressing	Top dressing fertilizer: - 45-0-0, 44 kg
Last irrigation	
Harvesting	

Remarks : (1) Recommended varieties --- e.g. RD15, Khao Dawk Mali
(2) Soil requirement -------- R1 - R4 Soils
(3) Total of chemical fertilizers --- N, 40 kg - P_2O_5, 25 kg - K_2O, 24 kg

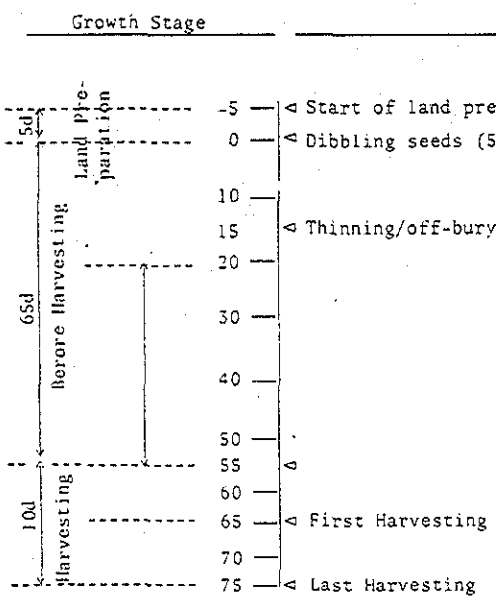
Figure D-6-4. Farm Practices and Inputs Requirement, Groundnut
(With Project, In Future)



Remarks : (1) Recommended varieties : Ex. Tainan 9
(2) Soil requirement : Loam and sandy loam
(3) Total of chemical fertilizers : N, 15 kg - P_2O_5,15 kg - K_2O,15 kg

Figure D-6-5. Farm Practices and Inputs Requirement, Mungbean

(With Project, In Future)



Farm Inputs per Hectare

Basal fertilizer:

- 15-15-15, 150 kg
- Compost/Organic manure, 12 ton/3 croppings

Seeds: 25 kg

Insecticides:

- e.g. Furadan 3G, 18 kg (Pre-planting application)
- e.g. Malathion EC, 0.5 ℓ

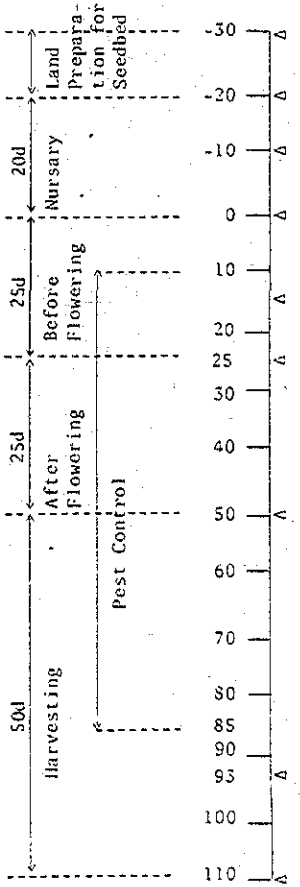
Remarks : (1) Recommended varieties : u thong 1

(2) Soil requirement : CL - SiCL, PH more than 6.5

(3) Total of chemical fertilizer : N, 23 kg - P_2O_5,23 kg - K_2O,23 kg

Figure D-6-6. Farm Practices and Inputs Requirement, Tomato

(With Project, In Future)



Farm Practices

- -30: Start of land preparation for seedbed (25 m^2)
- -20: Sowing in seedbed
- -10: Start of land preparation
- 0: Transplanting (75 cm x 40 cm, 3,300 hills/ha)
- 10: Start of weeding
- 25: Top dressing/off-burying
- 50: Start of harvesting
- 93: Last irrigation
- 100: Last harvesting

Farm Inputs per Hectare

Fertilizer for seedbed:
- Gypsum, 30kg
- Urea, 12.5 kg
- Animal manure

Seeds: 200 g

Basal fertilizer:
- 15-15-15, 125 kg
- Ammonium sulfate, 208 kg
- Animal manure/Compost, 12 ton

Top-dressing fertilizer:
- 15-15-15, 125 kg

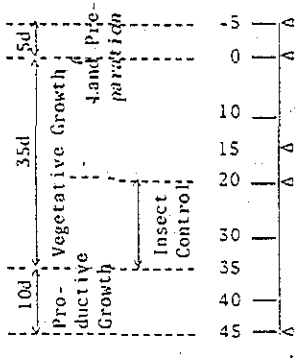
Insecticides:
- e.g. Furadan 3G 33 kg (Pre-planting application)
- e.g. Lannate WP 3 kg
- e.g. Malathion EC 3.0 ℓ

Fungicides:
- e.g. Difoltan WP, 7.5 kg
- e.g. Benlate WP, 3 kg
- e.g. Terrachrol, 3.0 kg
- Wettable Sulfur 12 kg

Remarks : (1) Recommended varieties; e.g. VF 134-1-2
(2) Soil requirement; SiCL - L
(3) Total of chemical fertilizer requirement; N, 103 kg - P_2O_5, 536 kg - K_2O, 36 kg

Figure D-6-7. Farm Practices and Inputs Requirement, Baby Corn

(With Project)



Growth Stage	Farm Practices	Farm Inputs per Hectare
-5	Start of land preparation	Basal fertilizer: 16-20-0, 320 kg
0	Sowing (75 cm x 25 cm, 2 - 3 seeds/hill)	Compost, Seeds: 36 kg
10		Insecticides: e.g. M'bush, 1.0 ℓ
15	Thinning	
20	Weeding/off-burying	
30		
35		
40		
45	Harvesting	

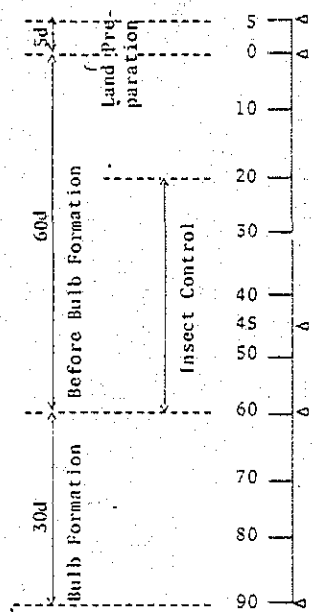
Remarks : (1) Recommended varieties: e.g. Tanya 1

(2) Soil requirement: CL - L

(3) Total of chemical fertilizer requirement: N,51 kg - P_2O_5,64 kg - K_2O,0

Figure D-6-8. Farm Practices and Inputs Requirement, Shallot

(With Project)



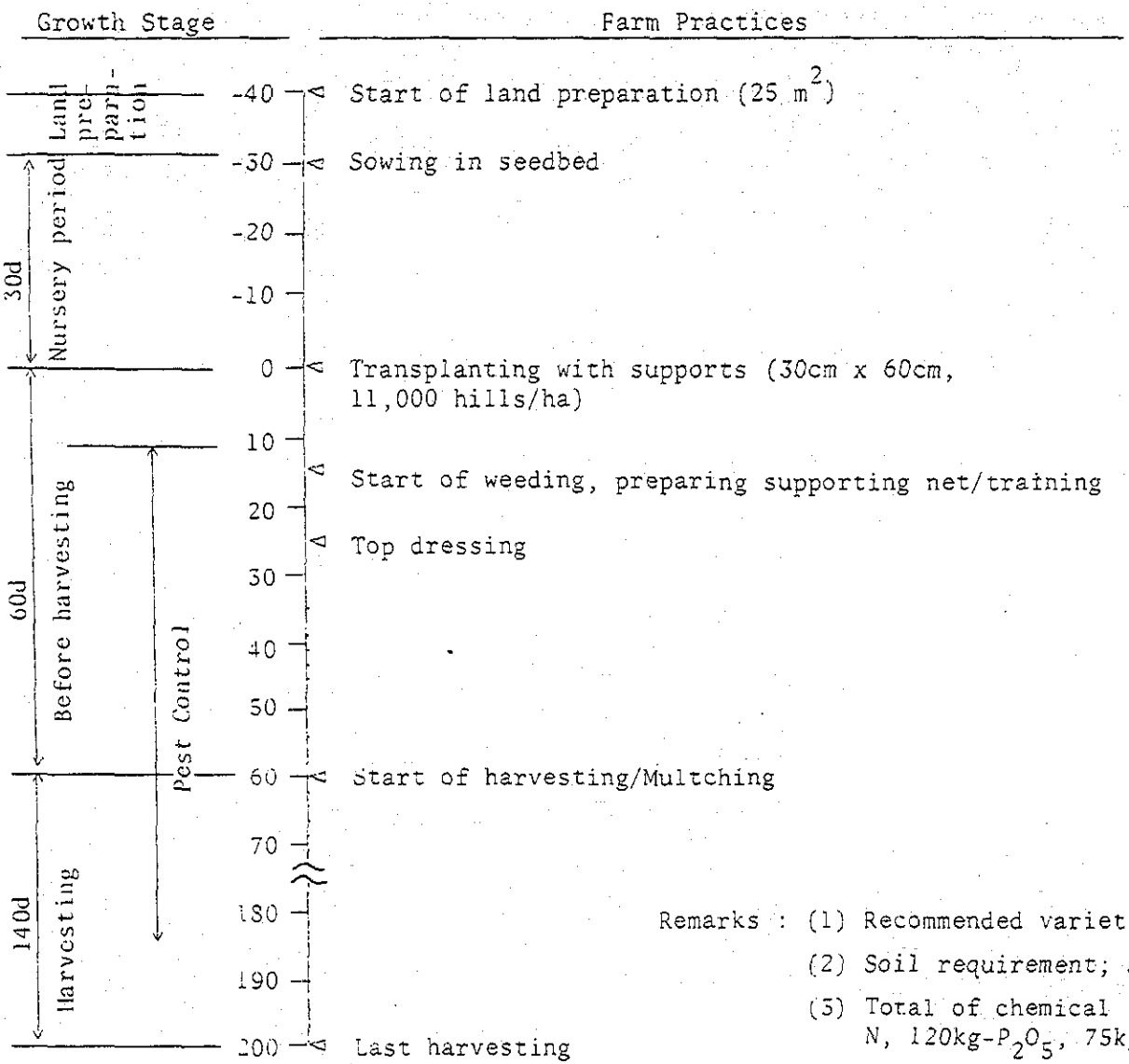
Growth Stage		Farm Practices	Farm Inputs per Hectare
5d Land Preparation	5	Start of land preparation	Basal fertilizer: - 15-15-15, 400 kg - Amimal manure/Compost, 18 ton
	0	Sowing (25 cm x 10 cm in 1 m width bed)/Mulching with rice straw	Seeds: 375 kg
	10	(before sowing, cut the root of seed bulbs, and also one third of the bulbtips cross-wise)	Fungicides for seeds soaking: - e.g. Elation EC 25%, 1.5 ℓ
60d Before Bulb Formation / Insect Control	20		
	30		
	40		
	45	Side dressing/off-burying	Side-dressing: - Ammonium sulfate: 120 kg
	50		Insecticides: - e.g. Sumithion EC, 1.0 ℓ
	60	Last irrigation	Fungicides: - e.g. Zineb WP 72% 5.0 kg
30d Bulb Formation	70		
	80		
	90	Harvesting	

Remarks : (1) Recommended varieties: e.g. Sisakat Variety

(2) Soil requirement: loamy soils with organic matter

(3) Total of chemical fertilizer requirement: N,86 kg - P_2O_5,68 kg - K_2O, 68 kg

Figure D-6-9. Farm Practices and Inputs Requirement, Chili
(With Project)



Remarks : (1) Recommended varieties; Local
(2) Soil requirement; SiCL - L
(3) Total of chemical fertilizer requirement;
N, 120kg-P_2O_5, 75kg-K_2O, 75kg

Table D-6-25 Number of Cattle and Buffaloes Raised in the Project Area

Sub-Project/Sub-System	Whole Area of the Concerned Mubans				Excluding the Mubans which Has no Village Pond			
	Cattle		Buffaloes		Cattle		Buffaloes	
	1983	Target	1983	Target	1983	Target	1983	Target
P-1:Lam Plai Mat Sub-Project	2,586	2,586	11,231	13,522	2,161	2,154	10,101	13,711
Direct Diversion from Dam	679	679	2,547	3,012	288	281	1,528	2,388
1-1 Sra Ta Khian	435	435	1,335	1,557	144	137	743	1,123
1-2 Soeng Sang	244	244	1,212	1,455	144	144	785	1,265
Pa Kham Diversion Weir	1,907	1,907	8,684	10,510	1,873	1,873	8,573	11,323
1-3 Pa Kham	1,077	1,077	2,253	2,734	1,077	1,077	2,253	2,853
1-4 Nong Bua	244	235	2,811	3,371	190	190	2,700	3,260
1-5 Thai Charoen	606	606	3,620	4,405	606	606	3,620	5,210
P-5:Nong Lumphuk Sub-Project	132	132	395	479	132	132	395	465
2-1 Nong Lumphuk	132	132	395	479	132	132	395	465
C-3:Huai Phlu Sub-Project	146	146	1,316	1,607	118	118	1,114	1,405
3-1 Right Bank	117	117	688	809	102	102	548	669
3-2 Left Bank	29	29	628	798	16	16	566	736

Note : 1/ ... Estimated by the increasing rate of "the number of buffaloes in case of the whole Area of the concerned Mubans." in each Sub-System.

Table D-6-26 Estimated Amount of TDN to be Increased

Sub-System	Area of Paddy Field	Harvested Area (%)	Harvested Area (ha)	Production of Rice Straw (ton/ha)	Production of Rice Straw (ton)	Production of TDN (%)	Production of TDN (ton)	TDN to be Increased Whole (ton)	TDN to be Increased 60% (ton)
1-1. Sra Ta Khian					5,050	37.8	1,909	833	500
- With Irrigation	940	(100)	940	4.3	4,042				
- Wihtout Irrigation	420	(80)	336	3.0	1,008				
1-2 Soeng Sang					5,759		2,177	1,054	632
- With Irrigation	1,010	(100)	1,010	4.3	4,343				
- Without Irrigation	590	(80)	472	3.0	1,416				
1-3 Pa Kham					8,984		3,396	1,317	790
- With Irrigation	2,000	(100)	2,000	4.3	8,600				
- Without Irrigation	160	(80)	128	3.0	384				
1-4 Nong Bua					8,490		3,209	1,229	737
- With Irrigation	1,740	(100)	1,740	4.3	7,482				
- Without Irrigation	420	(80)	336	3.0	1,008				
1-5 Thai Charoen					15,695		5,933	3,489	2,093
- With Irrigation	3,410	(100)	3,410	4.3	14,663				
- Without Irrigation	430	(80)	344	3.0	1,032				
2-1 Nong Lumphuk					1,542		583	159	95
- With Irrigation	300	(100)	300	4.3	1,290				
- Without Irrigation	120	(70)	84	3.0	252				
3-1 Huai Phlu, Right Bank					1,329		502	265	159
- With Irrigation	289	(100)	289	4.3	1,242				
- Without Irrigation	42	(70)	29	3.0	87				
302 Huai Phlu, Left Bank					1,779		672	374	224
- With Irrigation	411	100	411	4.3	1,767				
- Without Irrigation	6	70	4	3.0	12				
Total	12,085		11,640		47,829	37.8	18,381	8,720	5,232
- With Irrigation	10,100	(100)	10,100	4.3	42,699				
- Without Irrigation	2,188	(79)	1,733	3.0	5,130				

Table D-6-27 Expected Number of Buffalo to be Increased from Incremental of Rice Straw

Sub-Project	Amount TON to be Increased (ton)	Nos. of Buffalo to be Increased 1/
P-1:Lam Plai Mat Sub-Project	4,752	3,611
Direct Diversion from Dam	1,132	860
1-1 Sra Ta Khian	500	380
1-2 Soeng Sang	632	480
Pa Kham Diversion Weir	3,620	2,751
1-3 Pa Kham	790	600
1-4 Nong Bua	737	560
1-5 Thai Charoen	2,093	1,591
P-5:Nong Lumphuk	95	72
2-1 Nong Lumphuk	95	72
C-3:Huai Phlu Sub-Project	383	291
3-1 Right Bank	159	121
3-2 Left Bank	224	170

Note : Estimated in the basis of the TDN requirement at 0.76 head per ton of TDN (see Table).

D.7. WATER BASED MUBAN DEVELOPMENT PLAN

Table D-7-1 Population and Household

Item	Unit	P-1: Lam Plai Mat Direct Diversion from Dam	P-1: Lam Plai Mat Pa Kham Diver from Dam	P-1: Lam Plai Mat Total	P-5: Nong Lumphuk	C-3 Huai Phlu
1. Population Density per km2 1/		50	97	70	50	145
2. Total Population 2/		16,640	32,743	49,383	4,262	4,382
3. Total Population by Sex, Age 3/						
-Men, under 14 years	%	19.7	19.7	19.7	19.1	21.1
15 ∿ 19		5.4	8.0	6.9	8.5	6.0
20 ∿ 59		19.3	21.3	20.5	20.2	18.9
Over 60 years		1.3	1.3	1.3	0.8	0.9
Sub-Total		45.7	50.3	48.4	48.6	46.9
-Women, under 14 years		24.3	18.2	20.7	22.0	24.3
15 ∿ 19		8.5	9.2	8.9	10.1	8.2
20 ∿ 59		21.5	20.1	20.7	19.1	19.9
Over 60 years		0.0	2.2	1.3	0.2	0.6
Sub-Total		54.3	49.7	51.6	51.4	53.0
-Total		100.0	100.0	100.0	100.0	100.0
4. Population Increase from 1970 to 1980 4/	%	6.4	6.0	6.2	6.4	7.1
5. Nos. of Total Households 5/		2,754	5,977	8,731	766	804
6. Average of Family Size 6/		6.0	5.5	5.7	5.6	5.5
7. Nos. of Farm Household 7/		2,558	5,069	7,627	686	685

Note: 1/ = 2/ ÷ 4/

Source: 1/, 4/ ----- The figures show the data for the concerned Amphoes with the Sub-Project, NSO Population and Housing Census, 1970 and 1980.

2/, 7/ ----- The figures show the population and Nos. of households in the concerned Mubans in 1983, the Concerned Amphoe Offices with Sub-Projects.

3/ -------- Study Teams's Farm Economic Survey, 1983.

Table D-7-2 Economic Active Population in Buriram

Item	Male	Female	Total
1. Total of workable population 1/	100.0	100.0	100.0
2. Economic active			
- Agriculture	73.0	73.3	73.2
- Quarrying	0.0	0.0	0.0
- Manufacturing/Construction/Electricity	0.1	0.5	0.9
- Commerce and Others	7.0	4.0	4.7
Total	80.0	77.8	78.8
3. Non-economic active			
- Student	11.7	9.6	10.6
- Housewives and others	8.3	12.6	10.6
Total	20.0	22.2	21.2

Note: * ----- Total population of 11 years of age and over.

Source: 1980 Population and Housing Census, NSO.

Table D-7-3 Population by Type of Economic Activity

- Non-Municipal Area in Briram -

	Economic Active				Non-Econimic Active			
	Employed	Looking for Work	Waiting for Farm Season	Total	Student	Others	Total	Total 1/
Male	115,466	6,859	144,255	(77.7%) 266,580	40,963	35,510	76,473	(100.0) 351,434
Female	89,063	4,007	118,938	(59.3%) 212,008	34,355	103,527	137,882	(100.0) 357,690
Total	204,529	10,866	263,193	(69.1%) 478,588	75,318	139,037	214,355	(100.0) 709,124

Note : 1/ ... Total of population 11 years of age and over

Source : 1980 Population and Housing Census, NSO

Table D-7-4 Occupation of Economically Active Population by Industry, 1980

(Non-Municipal Area in Buriram)

(unit : persons, %)

	Occupied	Agri-culture	Quarrying	Manufac-turing	Construc-tion	Electri-city	Commerce	Transport Communi-cation	Ser-vice	Currency	Un-known	Total Popu-lation 1/
Male	280,468	256,518	233	3,153	1,551	155	4,625	2,244	8,753	64	3,172	351,434
Female	278,372	262,225	109	1,347	371	25	7,290	70	4,540	22	2,373	357,690
Total	558,840	518,743	342	4,500	1,922	180	11,915	2,314	13,293	86	5,545	709,124

Note : 1/ ... Total population 11 years of age and over

Source : 1980 Population and Housing Census, NSO

Table D-7-5 Nurseries Area, Population and Nos. of Cattle & Buffalo

Sub-system	Net Irrigable Area (1) (ha)	Nurseries Area of Rice: For Inside Service Area (2) (ha)	Nurseries Area of Rice: For Outside Service Area (3) (ha)	Nurseries Area of Rice: Total (4) (ha)	Dry Season Field Crop Area (5)	Population for Water Supply (6)	Nos. of Cattle & Buffalo for Water Supply: Cattle (7)	Buffalo (8)	Total (9)	Village Pond (10) (ha)
P-1: Lam Plai Mat Sub-Project	9,100	456 (683)	152	605	800	53,400	2,161	13,500	15,661	(31) 45.6
Direct Diversion from Dam	1,950	98 (147)	76	171	170	13,200	288	2,500	2,588	(10) 12.0
1-1 Sra Ta Khian	940	47 (71)	32	79	90	7,400	144	1,100	1,244	(5) 6.4
1-2 Soeng Sang	1,010	51 (76)	44	92	80	5,800	144	1,200	1,344	(5) 5.6
Pa Kham Diversion Dam Weir	7,150	358 (536)	76	434	630	40,200	1,873	11,200	13,073	(21) 33.6
1-3 Pa Kham	2,000	100 (150)	12	112	220	14,300	1,077	2,800	3,877	(6) 11.2
1-4 Nong Bua	1,740	87 (130)	32	119	180	11,300	190	3,200	3,390	(4) 8.8
1-5 Thai Charoen	3,410	171 (256)	32	203	230	14,600	606	5,200	5,806	(11) 15.6
P-5: Nong Lumphuk Sub-Project	300	15 (23)	9	27	60	5,700	132	400	532	(2) 4.8
2-1 Nong Lumphuk	300	15 (23)	9	27	60	5,700	132	400	532	(2) 4.8
C-3: Huai Phlu Sub-Project	700	35 (53)	3	38	40	3,100	118	1,400	1,518	(7) 6.4
3-1 Right Bank	289	14 (22)	2	16	20	3,000	102	700	802	(4) 3.2
3-2 Left Bank	411	21 (31)	1	22	20	3,100	16	700	716	(3) 3.2

Note: 1/ ... The figures in the parenthesis show the areas for off-irrigation under the proposed rotational irrigation

2/ ... The figures in the parenthesis show the number of village pond.

Table D-7-6 Water Supply Plan for Domestic Use, Livestock and Fish Culture

Item	Requirement per day	Supply Period
1. Domestic Use		
- For Drinking	5 ℓ per capita 1/	December to 20th, May
- For Other Use	40 ℓ per capita 1/	
2. Livestock		
- For Drinking		
Buffalo	50 ℓ per capita 1/	December to 20th, May
Cattle	57 ℓ per capita 1/	
- Bathing of Buffalo	8 mm of evaporation (3 m^2 bathing pond/three head)	
3. Fish Culture	Evaporation and other water loss (14,000 fly per hectare of fish pond)	Throughout year except for off-irrigation period (Apr. 23th to May 22nd)

Table D-7-7. Muban-wise Basic Data for Scale of Muban Pond (1)

Sub-Projects & Sub-Systems	Total Households *1	Total Population *1	Farm Households *2	Area for Paddy Wet Season (ha) =Area of *3 With Project (W.P.)	Scale of Muban Pond(ha) (Nos. of Pond)		Population of Water Supply =Person in future	Area for Dry Season Field Crop =Area of With Project	Beneficial Paddy Field by Village (ha)			
									Total	Inside the Project Area *4		Outside the Project Area *5
I. P-1:Lam Plai Mat Sub-Project												
1-1. Sra Ta Khian Sub-System	1,434	8,708	1,329	940	(5)	6.4	7,400	90	1,380	(905)	960	420
1-2. Soeng Sang Sub-System	1,320	7,932	1,229	1,010	(5)	5.6	5,800	80	1,440	(807)	850	590
1-3. Pa Kham Sub-System	2,001	10,642	1,688	2,000	(6)	11.2	14,300	220	2,730	(2,424)	2,570	160
1-4. Nong Bua Sub-System	2,121	11,235	1,800	1,740	(4)	8.8	11,300	180	2,600	(2,100)	2,180	420
1-5. Thai Charoen Sub-System	1,855	10,870	1,581	3,410	(11)	13.6	14,600	230	3,210	(2,626)	2,780	430
Total	8,731	49,387	7,627	9,100	(31)	45.6	53,400	800	11,360	(8,860)	9,540	2,020
II. P-5:Nong Lumphuk Sub-Project	766	4,262	686	300	(2)	4.8	5,700	30	690	(540)	570	120
III. C-3:Huai Phlu Sub-Project												
3-1. Area of Right Canal	465	2,863	403	289	(4)	3.2	3,000	20	350	(289)	308	42
3-2. Area of Left Canal	490	2,523	406	411	(3)	3.2	3,100	20	440	(411)	434	6
Total	955	5,386	694	700	(7)	6.4	6,100	40	790	(700)	742	48

Note : *1 ... Based on the 1985 population and housing data by village of Amphoe office related.
*2 ... Based on the rate of farm households by village of NSO's 1978 Agricultural Census.
*3 ... Based on the 1982 village level data of Department of Agricultural Extension.
*4 ... Area of With Project
*5 ... Area of Without Project

Table D-7-7 Village Wize Projection of Muban Pond Scale (3)

Sub-Systems & Tambon	Muban Code No.	Muban Name	Total Households (1)	Total Population (2)	Farm Households (3)	Paddy Wet Season (ha) (4)	Scale of Muban Pond (ha) Scale Calculated (5) *1	Scale of Muban Pond (ha) Proposed (6) *2	Area for Upland Dry Season (ha) (7)	Beneficial Paddy Field by Village (ha) Total (8)	Inside the Project Area (9)		Outside the Project Area (10)
1-2. Soeng Sang Sub-System													
Non Sonmun	1	1. Non Sombun	290	1,835	265	155	4.9	1.6	29	340	(155)*3	164*4	176
	4	2. Nong Kra Thum	295	1,770	277	113	-	-	-	118	(113)	118	-
	2	3. Khok Noi	310	1,845	287	180	-	-	-	188	(180)	188	-
	5	4. Wang Khla	120	741	120	159	2.0	0.8	12	350	(159)	168	182
	3	5. Non Samran	175	989	164	95	2.7	1.6	17	211	(95)	101	110
Sra Ta Khian	3	6. Khok Sung	Including in Sra Ta Khian Sub-System			31	-	-	-	-	-	-	-
	2	7. Nong Hin				44	-	-	-	-	-	-	-
	5	8. Nong Chai Nam	69	364	66	73	1.0	0.8	8	162	(73)	77	85
	8	9. Mai	Including in Sra Ta Khian Sub-System			35	-	-	-	-	-	-	-
	1	10. Sra Ta Khian				43	-	-	-	-	-	-	-
	4	11. Khok Mai Tai	61	388	52	52	1.0	0.8	14	71	(32)	34	37
Soeng Sang	1	12. Soeng Sang	Including in Nong Lumphuk Sub-System			50	-	-	-	-	-	-	-
		Sub-total	1,320	7,932	1,229	1,010	11.6	5.6	80	1,440	(807)	850	590

Note: *1, *2, *3, *4 --- See...Village Wize Projection of Muban Pond Scale (2)

Table D-7-7 Muban-wise Basic Data for Scale of Muban Pond (2)

Sub-Systems & Tambon	Muban Code No.	Muban Name	Total Households (1)	Total Population (2)	Farm Households (3)	Paddy Wet Season (ha) W.P. (4)	Scale of Muban Pond (ha) Scale Calculated (5)=(2)x0.00268 *1	Scale of Muban Pond (ha) Proposed (6) *2	Area for Upland Dry Season (ha) (7)	Beneficial Paddy Field by village (ha) Total (8)	Inside the Project Area (9)	Outside the Project Area (10)
I. P-1:Lam Plai Mat Sub-Project												
1-1. Sra Ta Khian Sub-System								(Improvement)			*3	*4
Non Sombun	6	1. Rat Phattana	410	2,295	389	137	6.2	2.4	36	198	(137)	145	53
Sra Ta Khian	3	2. Khok Sung	90	575	76	95	1.5	0.8	7	206	(126)	133	73
	7	3. Bu Ngiu	82	459	68	19	1.2	0.8	6	27	(19)	20	7
	2	4. Nong Hin	105	720	105	135	1.9	0.8	12	293	(179)	190	103
	8	5. Mai	95	566	82	108							
	1	6. Sra Ta Khian	165	930	156	131	4.0	1.6	29	519	(317)	335	184
Kut Bot	4	7. Khok Tao Lek	} Including in Nong Lumphuk Sub-Project			108	-	-	-	-	-	-	-
	5	8. Nong Lumphuk				82	-	-	-	-	-	-	-
	2	9. Tha Yian	112	755	90	33	-	-	-	36	(33)	36	-
	1	10. Kut Bot	310	2,052	302	73	-	-	-	80	(73)	80	-
	8	11. Khok Chot	65	356	61	19	-	-	-	21	(19)	21	-
		Sub-total	1,434	8,708	1,329	940	14.8	6.4	90	1,380	(903)	960	420

Note : *1 ... 1.34 x 5 $^{kg@capita}$ ÷ 2,500 $^{kg@ha}$
1.34 = Population growth rate after ten years in the rural area of Buri Ram (Source : Population Census)
5$^{kg@capita}$ = Target of fish consumption pre capita
2,500$^{kg@ha}$ = Fish target yield of Muban Pond per hectare.
*2 ... Proposed scale of Muban Pond was made a decision by the difficulty of land acquisition in or close by the village and necessary pond scale (around 10 rai) for inland fish culture.
*3 ... Area of With Project
*4 ... Area of Without Project

Necessary Pond Scale

Type of Pond	Scale Calculated	Proposed Scale
Type I	Less than 2.3 ha	0.8ha(5rai)
Type II	2.4 - 5.1	1.6 (10)
Type III	Over than 5.2	2.4 (15)

Table D-7-7 Muban-wise Basic Data for Scale of Muban Pond (4)

Sub-Systems & Tambon	Muban Code No.	Muban Name	Total Households (1)	Total Population (2)	Farm Households (3)	Paddy Wet Season (ha) (4)	Scale of Muban Pond (ha) Scale Calculated (5) *1	Scale of Muban Pond (ha) Proposed (6) *2	Area for Upland Dry Season (ha) (7)	Beneficial Paddy Field by Village (ha) Total (8)	Beneficial Paddy Field by Village (ha) Inside the Project Area (9)	Beneficial Paddy Field by Village (ha) Outside the Project Area (10)
1-3. Pa Kham Sub-System												
Khok Mamuang	6	1. Khok Khao Ya Kha	Including in Nong Bua Sub-System			225	-	-	-	240	(223) *3 / 240 *4	-
	3	2. Khok Mamuang				213	-	-	-	-	-	-
	5	3. Bu Ya				331	-	-	-	-	-	-
	4	4. Mamaung Wan					-	-	-	-	-	-
	2	5. Thep Samaki				81	-	-	-	-	-	-
	1	6. Thep Phattana					-	-	-	-	-	-
Pa Kham	15	7. Nong Khanon	126	597	107							
	5	8. Khok Suk Samran	292	1,733	248	207	6.2	2.4	46	477	(385) 408	69
	9	9. Khok Wan	214	1,160	181	394	4.4	1.6	33	455	(394) 417	38
	17	10. Thai Charoen	92	499	78							
	4	11. Khong Phra Sai	174	772	147	100	5.2	2.4	51	483	(406) 430	53
	12	12. Noi Pattana	97	489	82	219						
	16	13. Non Sanga	140	666	118							
	2	14. Pa Kham	214	1,280	181	64	4.6	1.6	32	430	(407) 430	-
	13	15. Nong Krat	93	447	79	29						
	1	16. Pa Kham	147	852	122	54	4.2	1.6	24	369	(346) 369	-
	11	17. Pa Kham	14-	718	117	25						
	14	18. Som Payang	168	802	140	31						
	3	19. Khok Ngiu	104	627	88	29	5.8	1.6	34	276	(263) 276	-
		Sub-Total	2,001	10,642	1,688	2,000	28.4	11.2	220	2,730	(2,424) 2,570	160

Note: *1, *2, *3, *4 --- See...Village Wize Projection of Muban Pond Scale (2)

Table D-7-7 Muban-wise Basic Data for Scale of Muban Pond (5)

Sub-Systems & Tambon	Muban Code No.	Muban Name	Total Households (1)	Total Population (2)	Farm Households (3)	Paddy Wet Season (ha) (4)	Scale of Muban Pond(ha) Scale Calculated (5) *1	Scale of Muban Pond(ha) Proposed (6) *2	Area for Upland Dry Season (ha) (7)	Beneficial Paddy Field by Village (ha) Total (8)	Beneficial Paddy Field by Village (ha) Inside the Project Area (9)		Beneficial Paddy Field by Village (ha) Outside the Project Area (10)
1-4. Nong Bua Sub-System													
Khok Muang	6	1. Khok Khao Ya Kha	257	1,489	219	96	-	-	-	102	(96) *3	102 *4	-
	3	2. Khok Mamuang	123	652	104	91	5.2	2.4	42	940	(777)	823	117
	5	3. Bu Ya	108	738	92								
	4	4. Mamuang Wan	116	553	98	142							
	2	5. Thep Samaki	100	480	85								
	1	6. Thep Pattana	318	2,010	270	70	6.7	2.4	23	186	(151)	117	69
Nong Bua	6	7. Ta Lat Yae	139	744	118	193							
	7	8. Don Tai	74	417	63								
	5	9. Don Nang Ngam	268	1,095	227	260	6.0	(Improvement) 2.4	74	610	(455)	480	130
	3	10. Nong Bua	162	690	137	183	-	-	-	195	(185)	195	-
	4	11. Bo Thong	105	592	90	70	-	-	-	74	(70)	74	-
	2	12. Khok Klang	145	750	123	162	4.7	1.6	41	495	(370)	391	104
	1	13. Nong Nam Khum	206	1,025	174	208							
Pa Kham	15	14. Nong Khanon	Including in Pa Kham Sub-System			178	-	-	-	-	-	-	-
	5	15. Khok Suk Samran											
	4	16. Khong Phra Sai				87	-	-	-	-	-	-	-
		Sub-Total	2,121	11,235	1,800	1,740	22.6	8.8	180	2,600	(2,100)	2,180	420

Note: *1, *2, *3, *4 --- See...Village Wize Projection of Muban Pond Scale (2)

Table D-7-7 Muban-wise Basic Data for Scale of Muban Pond6)

Sub-Systems & Tambon	Muban Code No.	Muban Name	Total Households (1)	Total Population (2)	Farm Households (3)	Area of Paddy Wet Season (ha) (4)	Scale of Muban Pond(ha) Scale Calculated (5) *1	Scale of Muban Pond(ha) Proposed (6) *2	Area for Upland Dry Season (ha) (7)	Beneficial Paddy Field by Village (ha) Total (8)	Inside the Project Area (9)	Outside the Project Area (10)
1-S. Thai Charoen Sub-System												
Thai Charoen	5	1. Khok Prasat	127	757	108	333	2.0	0.8	6	407	(333) *3 / 353 *4	54
	2	2. Thanon Hak	78	518	66	92	1.4	0.8 (Improvement)	9	113	(92) / 97	16
	7	3. Nong Samet	93	478	79	108						
	1	4. Thai Charoen	130	1,105	110	234	4.3	1.6	27	418	(342) / 362	56
	9	5. Non Sawan	91	479	77	280						
	3	6. Khok Loi	174	925	147		6.7	2.4 (Improvement)	58	563	(461) / 488	75
	6	7. Khok Sung	90	507	76	181						
	10	8. Khok Sangar	99	564	84							
	8	9. Phang Sri	61	294	52	83	3.3	1.6	41	238	(195) / 206	32
	4	10. Khok Sombun	196	925	166	112						
Pa Kham	2	11. Pa Kham	Including in Pa Kham Sub-System			216	-	-	-	-	- / -	-
	1	12. Pa Kham				181	-	-	-	-	- / -	-
	13	13. Nong Krat				98	-	-	-	-	- / -	-
	14	14. Sam Payang				104	-	-	-	-	- / -	-
	11	15. Pa Kham				86	-	-	-	-	- / -	-
	3	16. Khok Ngiu				99	-	-	-	-	- / -	-
Chum Saeng	21	17. Tung Saen Tong	73	458	63	29	1.2	0.8	12	35	(29) / 31	4
	4	18. Nong Ta Si	160	1,040	138	168	2.8	1.6	26	206	(168) / 178	28
	20	19. Nong Na	67	359	58	134	1.0	0.8	9	164	(134) / 142	22
	10	20. Khok Yang	53	335	46	266	0.9	0.8	7	325	(266) / 282	43
	19	21. Nong Wa	145	861	124	108	3.8	1.6	35	227	(186) / 197	30
	8	22. Nong Khun At	92	578	79	78						
	12	23. Khok Makha	77	394	66	230	1.8	0.8	19	514	(420) / 444	70
	13	24. Krasang	49	293	42	190						
		Sub-Total	1,855	10,870	1,581	3,410	29.2	13.6	249	3,210	(2,626) / 2,780	430

Note: *1, *2, *3, *4 --- See...Village Wize Projection of Muban Pond Scale (2)

Table D-7-7 Muban-wise Basic Data for Scale of Muban Pond (7)

Sub-Systems & Tambon	Muban Code No.	Muban Name	Total Households (1)	Total Population (2)	Farm Households (3)	Area of Paddy Wet Season (ha) (4)	Scale of Muban Pond(ha) Scale Calculated (5) *1	Scale of Muban Pond(ha) Proposed (6) *2	Area for Upland Dry Season (ha) (7)	Beneficial Paddy Field by Village (ha) Total (8)	Inside the Project Area (9)		Outside the Project Area (10)
II. P-5:Nong Lumphuk Sub-Project													
Kut.Bot	4	1. Khok Tao Lek	194	1,289	180	66							
	3	2. Nong Lumphuk	127	674	114	50	5.3	2.4	8	414	(306)*3	323*4	91
								(Improvement)					
Soeng Sang	1	3. Soeng Sang	229	1,183	194	106	6.2	2.4	14	276	(234)	247	29
	4	4. Sap	216	1,116	198	78			8				
Total of Sub-Project			766	4,262	686	300	11.5	4.8	30	690	(540)	510	120
III. C-3:Huai Phlu Sub-Project													
3-1. Area of Right Canal													
Nong Mai Ngam	6	1. Sai Tri 9	136	724	131	21	1.9	0.8	2	23	(21)	22	1
Bung Charoen	1	2. Bung Charoen	125	849	104	130	2.3	0.8	9	173	(130)	139	34
	12	3. Sai Tri 9	53	286	44	8	0.8	0.8	5	9	(8)	8	1
	2	4. Bung Kao	60	345	50	63	0.9	0.8	4	73	(63)	67	6
	3	5. Sai Tri 5.6	91	659	74	67	-	-	-	72	(67)	72	-
		Sub-Total	465	2,863	403	289	5.9	3.2	20	350	(289)	308	42
3-2. Area of Left Canal													
Nong Mai Ngam	2	1. Nong Mai Ngam Kao	263	1,339	218	113	3.6	1.6	7	121	(113)	120	1
	4	2. Sai Tri 11	93	490	77	80	1.3	0.8	8	86	(80)	85	1
	5	3. Khok Wat	49	239	41	62	-	-	-	66	(62)	66	-
Bung Charoen	5	4. Nong Pru	85	455	70	156	1.2	0.8	5	167	(156)	163	4
		Sub-Total	490	2,523	406	411	6.1	3.2	20	440	(411)	434	6
Total of Sub-Project			955	5,386	809	700	12.0	6.4	40	790	(700)	742	48

Note: *1, *2, *3, *4 --- See...Village Wize Projection of Muban Pond Scale (2)

Table D-7-8 Size of Irrigation Sub-Systems, Dry Season Field Crop Area and Nurseries Areas Outside Sub-System

Sub-System	Net Irrigable Area A. (ha)	Nos. of Muban Concerned 1/		Nos. of Total Farm Households by Type in the Mubans with Village Ponds: Total	Rice Main (%)	Rice + Upland (%)	Others (%)	Assumed Dry Season Field Crop Area: Nos. of Households B. 2/	Area & Area Coverage C. 3/ (ha)	X=C/A (%)	Average Size per Muban (ha)	Assumed Nursery Area of Wet Season Paddy, Outside the Sub-System: Total Paddy Field in Concerned Muban D. (ha)	Outside Service System E.=D.- A. (ha)	Nurseries Area F. (ha)	Y.=F/A (%)	Average Size per Muban (ha)
P-1: Lam Plai Mat Sub-Project	9,100	(52)	60	6,555	42	39	19	2,540	800	8.8	14.5	11,360	2,020	152	1.7	2.4
Direct Diversion from Dam	1,950	(11)	16	1,932	14	42	44	521	170	8.9	12.1	2,820	1,010	76	4.0	4.0
1-1 Sra Ta K Han	940	(6)	9	1,073	9	51	40	279	90	9.6	11.3	1,380	420	32	3.4	2.9
1-2 Soeng Sang	1,010	(5)	7	859	21	31	48	242	80	8.3	13.3	1,440	590	44	4.6	5.5
Pa Kham Diversion Weir	7,150	(41)	44	4,623	54	37	9	2,019	630	9.4	15.4	8,540	1,010	76	1.1	1.7
1-3 Pa Kham	2,000	(13)	13	1,688	42	46	12	695	220	11.0	16.9	2,730	160	12	0.6	0.9
1-4 Nong Bua	1,740	(10)	13	1,345	54	38	8	548	180	10.3	18.0	2,600	420	32	1.8	2.5
1-5 Thai Charoen	3,410	(18)	18	1,580	67	27	6	776	230	6.7	12.8	3,210	430	32	0.9	1.8
P-5:Nong Lumphuk Sub-Project	300	(4)	4	686	9	59	36	102	30	10.0	7.5	690	120	9	3.0	2.3
2-1 Nong Lumphuk	300	(4)	4	686	9	59	36	102	30	10.0	7.5	690	120	9	3.0	2.3
C-3:Huai Phlu Sub-Project	700	(7)	9	694	9	34	57	136	40	4.2	5.7	790	48	3	0.4	0.3
3-1 Right Bank	289	(4)	5	329	6	39	55	65	20	1.7	5.0	350	42	2	0.7	0.4
3-2 Left Bank	411	(3)	4	365	12	30	58	73	20	5.7	6.7	440	6	1	0.2	0.3

Note : 1/ ... The figures in the parenthesis show the number of Mubans that have the proposed village ponds.
2/ ... Nos.of "Rice Main" Farm Households x 60% + Nos.of "Rice + Upland" Farm Households x 40% (P-5: 20%)
3/ ... B x 0.32 ha (2 rai per Farm Household)

Source : Nos. of farm households ... Amphoe Offices in the Project Area (As of 1983)
Nos. of farm households by type ... 1987 Agricultural census (P-5: revised by Farm Economic Survey of Study Team)