

APPENDIX F. AGRICULTURE

F. AGRICULTURE

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Fig. 2.7-1

Cropping Season of Main Crops in the Study Area

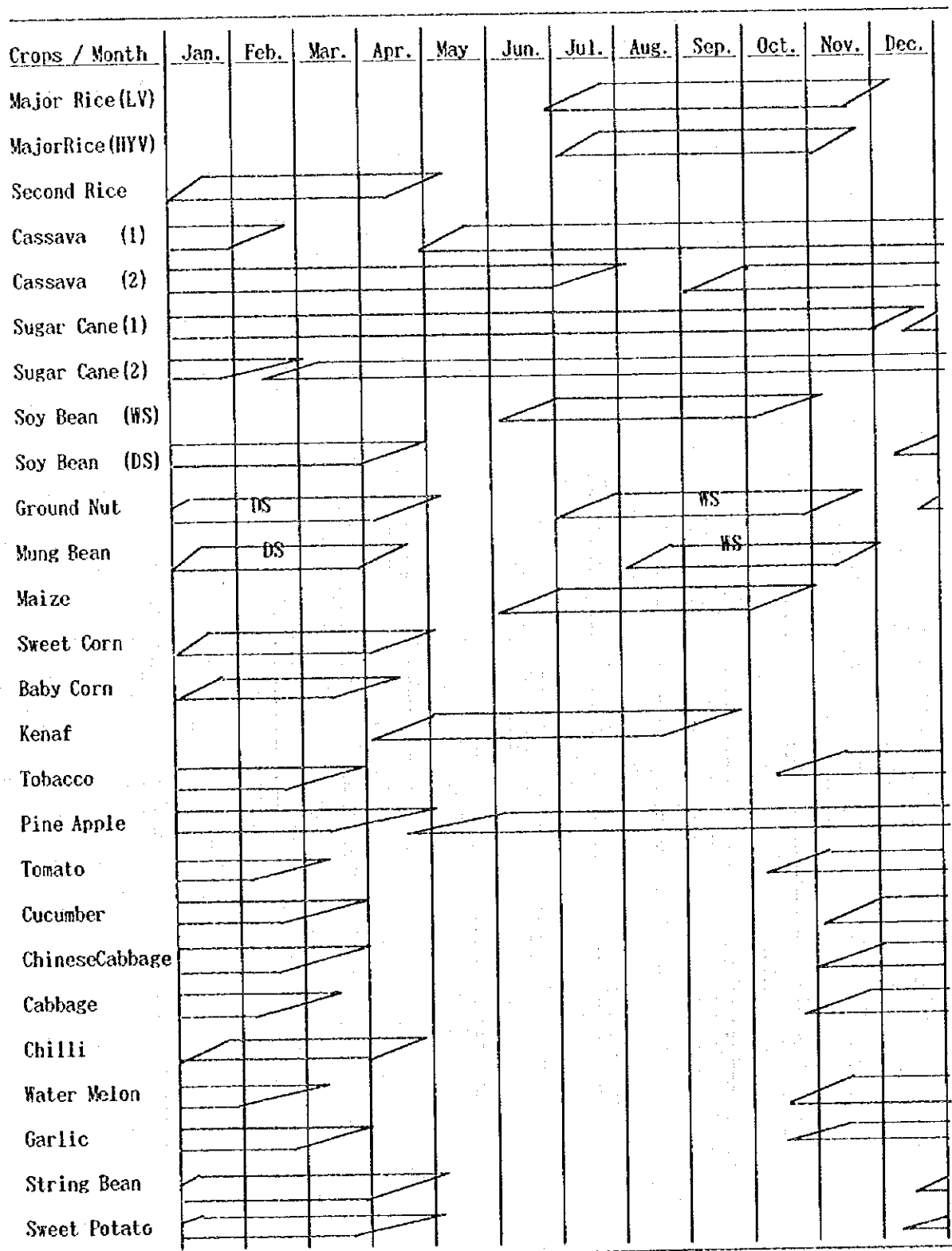


Table 2.7-2 Planted Area of Main Crops in the Study Area of Udon Thani (1993/94)

Amphoe in Study Area	(Unit:rai)										
	Glutinous rice	Nong-gluti- nous rice	Cassava	Sugar cane	Maize	Soybean	Cotton	Jute	kenaf	Mung bean	
Muang U. T.	102,944	33,223	13,163	8,604	0	155	0	0	70	0	
Kut Chap	72,833	11,287	21,254	3,569		12			0		
Ban Phu	166,908	42,018	39,419	12,841	41		9	5	3		
Phen	166,908	49,126	1,048	1,851				45	95	212	
Sang Khom	24,603	32,297	199	370				8	25	15	
Phibul Rak	29,969	16,320	1,851	1,243					27		
Kumphawapi	6,716	2,456	589	4,811	0	1	0	2	311	0	
Thong Fon	4,220	2,778	148	209	0	0	0	0	10	0	
Ban Dung	48,720	17,898	3,238	2,457	9	0	0	685	1,600	0	
Nong Wua So	18,320	7,708	58,922	1,237	0	529	0	0	9	0	
Nong Han	71,151	24,163	2,654	9,780	14	0	0	69	149	0	
Nam Som	5,929	743	13,500	2,252	16,205	617	793	0	0	0	
Study Area Total	719,222	240,018	155,985	49,223	16,270	1,313	802	814	2,299	227	
Study Area (ha)	115,075	38,403	24,958	7,876	2,603	210	128	130	368	36	
StudyA/TotalChan	58.5	65.1	53.8	11.9	20.5	38.3	15.7	36.8	14.9	100.0	

Source: Udon Thani Agricultural Extension Office.

Table 2.7-3 Planted Areas of Main Crops in the Study Area of Nong Khai and Nong Bua Lamphu (1993/94)

Nong Khai													
Name of Amphoe	Non-glutinous Rice	Glutinous Rice	Fruits Trees	Pine Apple	Sugarcane Factory	Baby Cone	Vegetable	Cassava	Soybean (WS, DS)	Tobacco			
Muang N.K.	44,014	112,567	6,178	36	25	0	2,950	250	50	7,362			
Tha-Bo	22,524	86,815	2,858	0	400	1,870	4,513	300	15	4,327			
Si Chiangmai	7,978	21,771	8,374	1,426	1,465	312	3,356	25,860	0	1,092			
Sra Khrai	9,090	27,280	8	0	180	300	206	300	0	1,140			
Phon Phisei	40,036	168,914	14,522	9,198	2,210	36	2,388	44,277	3,407	238			
Sang Khom	34	5,182	6,626	13	0	13	50	1,142	1,644	2			
Study Area Totl	123,676	422,529	38,566	10,673	4,280	2,531	13,463	72,129	5,116	14,161			
Study Area (ha)	19,788	67,605	6,171	1,708	685	405	2,154	11,541	819	2,266			
Whole Chag.rai	224,121	940,824	182,359	20,862	11,837	2,602	26,695	258,780	8,685	16,457			
W. Chang. (ha)	35,859	150,532	29,177	3,388	1,894	416	4,271	41,405	1,390	2,633			
Nong Bua Lamphu													
Amphoe in Study Area	Non-glutinous Rice	Glutinous Rice	Fruits & Perennial	Maize	Sugarcane (Factory)	Kenaf & Jute	Cotton	Cassava	Soybean (Wet S)	Mungbean (Wet S)			
Muang NBL	1,128	3,853	352	97	39	23	123	658	47	129.1			
Na Klang	17,464	73,309	14,209	1,626	922	203	2,080	20,164	677	1,282.3			
SuwanKhuha	25,134	71,501	8,069	40,168		50	1,658	31,360	455	0			
K A. NaWang	1,143	2,429	0	2,184	331	0	54	211	0	2			
StudyArea Totl	26,262	151,093	22,630	44,074	1,292	276	3,915	52,393	1,178	1,413.6			
Study Area (ha)	4,202	24,175	3,621	7,052	207	44	626	8,383	189	226.2			
Whole Chan.rai	192,041	627,624	64,040	97,679	34,813	5,947	3,212	68,735	1,892	25			
Who. Chag. (ha)	30,727	100,420	10,246	15,629	5,570	952	514	10,998	303	4			

Source : Nong Khai & Nong Bua Lamphu Agricultural Extension Office.

Tab 2.7-6 Changes in the Average Yield of Main Crops in the Study Area

CROPS	CHANGWAT	(Unit:kg/ha)										Ave.	STD.	C V (%)
		1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95						
Glutinous Rice	Nong Khai			2,094	2,206	2,384	2,427					2,278	135	5.9
	Udon Thani	2,375	2,219	2,581	2,075	2,299	2,115	2,258				2,275	123	5.4
	NongBuaLamphu	2,375	2,294	2,494	2,294	2,556	1,631					2,274	214	9.4
Non-glutinous Rice	Nong Khai			2,227	2,273	2,356	2,634					2,373	158	6.7
	Udon Thani	1,817	1,978	2,249	1,746	2,240	2,041	2,105				2,025	153	7.5
	NongBuaLamphu	2,125	2,388	2,506	2,094	2,513	2,558					2,364	170	7.2
Sugar Cane	Nong Khai			63,170	57,356	64,936	68,881					63,586	3,323	5.2
	Udon Thani	41,569	50,081	58,306	55,306	51,375	55,331	61,038				53,287	4,810	9.0
	NongBuaLamphu			55,438	54,544	54,125	27,050	53,750				48,981	8,773	17.9
Cassava	Nong Khai			12,161	12,225	10,723	9,297					11,102	1,092	9.8
	Udon Thani	14,844	13,494	14,875	15,313	12,444	12,527	13,416				13,845	999	7.2
	NongBuaLamphu			14,531	14,338	15,400	12,631	12,500				13,880	1,052	7.6
Maize	Nong Khai			2,193	3,031	2,575	2,844					2,661	277	10.4
	Udon Thani	1,906	1,869	3,044	2,263	3,188	2,856	1,906				2,433	511	21.0
	NongBuaLamphu			2,488	2,506	3,913	2,144	4,806				3,171	950	30.0
Soy bean	Nong Khai			1,275	1,361	1,481	1,563					1,420	102	7.2
	Udon Thani	1,119	1,019	1,206	1,169	1,288	1,325	1,113				1,177	82	7.0
	NongBuaLamphu			1,531	1,038	1,269	1,375	1,513				1,345	153	11.4
Mung bean	Nong Khai													
	Udon Thani	575	731	806	888	1,369	831	1,044				892	180	20.1
	NongBuaLamphu			850	875	819	750	1,256				910	138	15.2

Notes: 1) Source: Agricultural statistics of each Changwat.

2) Yield of crops in Nong Bua Lamphu are not in the study area but in whole changwat.

Table 2.7-7 Changes in the Total Production of Main Crops in the Study Area

Crops	Study area	(Unit: ton)												Ave.	STD.	C V (%)
		1998/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00			
Glutinous Rice	Nong Khai			158,158	129,707	155,770	137,501							145,284	12,030	8.3
	Udon Thani	330,940	345,026	479,770	293,961	385,919	237,007	337,646						344,324	50,784	14.7
	NongBuaLamphu	47,359	54,725	63,703	56,470	64,450	41,710	58,447						54,736	6,805	12.4
Non-glutinous Rice	Nong Khai			40,436	77,231	46,245	44,580							52,123	14,650	28.1
	Udon Thani	74,431	92,761	104,807	90,411	108,737	77,826	107,528						93,786	11,347	12.1
	NongBuaLamphu	11,937	16,202	20,099	13,227	21,009	9,486	17,046						15,327	3,777	24.6
Sugar Cane	Nong Khai			53,408	30,100	11,018	47,204							35,433	14,874	42.0
	Udon Thani	921,645	228,448	369,392	396,231	518,390	596,507	61,038						441,664	203,300	46.0
	NongBuaLamphu			135,759	77,200	80,050	20,044	33,667						69,344	33,991	49.0
Cassava	Nong Khai			159,518	160,681	138,593	110,042							142,209	17,891	12.6
	Udon Thani	404,612	287,031	373,011	257,155	385,047	356,165	226,224						327,035	60,199	18.4
	NongBuaLamphu			34,722	55,643	44,310	24,985	84,619						48,856	17,020	34.8
Maize	Nong Khai			221	154	179	5							140	67	48.2
	Udon Thani	4,987	9,076	9,707	1,703	9,177	1,047	12,523						6,889	3,694	53.6
	NongBuaLamphu			15,277	9,902	14,839	3,916							8,787	5,463	62.2
Soy Bean	Nong Khai			403	947	552	2,136							1,010	563	55.8
	Udon Thani	1,364	3,350	1,526	835	1,102	249	1,409						1,405	591	42.1
	NongBuaLamphu			2,437	1,241	1,616	1,325	1,494						1,623	326	20.1
Mung Bean	Nong Khai															
	Udon Thani	47	173	129	46	217	3	36						93	69	73.7
	NongBuaLamphu			875	650	631	424	296						575	172	29.9

Source : Agricultural Statistics of Each Changwat

Table 2.7-8 Number of holdings reporting the use of machinery and equipment for agriculture and the number owned by the holder in Udon Thani (1988 May, include Nong Bua Lamphoe)

Type of machines, equipment, transport equipment	No. of Owned	No. of holdings reporting
MACHINE and EQUIPMENTS	45,464	93,963
Tractor	4,621	26,370
Power tiller	12,026	39,226
Water pump	23,518	20,186
Engine operated	9,977	11,132
Hand operated	13,541	9,054
Seeder	26	26
Fertilizer thrower	116	480
Sprayer	5,025	5,745
Tresher	131	1,930
TRANSPOR EQUIPMENT	26,510	159,505
Truck	6,369	73,632
Motorcycle	3,029	3,204
Engine operated boat		56
Non-engine operated boat	17	332
Cart	12,052	14,995
Local farm truck	5,043	67,286

Source: Statistical Reports of Changwat Udon Thani 1992 Ed.

Table 2.7-9 Number of Agricultural Machines in Nong Khai Province (1991-1993)

Agricultural machines	1991	1992	1993
Tractor	272	407	431
road rolles	2	2	3
Farm's Vehicles	358	431	451
Automobile's Trailers	4	44	44
Others		11	11

Sources: Statistical Reports of Changwat Nong Khai, 1994 Ed.

Table 2.7-10 Number of Livestock in Each Amphoe of the Study Area
(Unit: head)

Udon Thani	Buffaloe	Cattle	Swine	Chicken	Duck	Goose
Muang Udon Thani	21,160	12,813	15,308	335,965	32,359	
Kut Chap	8,317	4,398	4,170	73,403	23,204	
Kumphawapi	1,318	866	610	4,589	2,444	
Thung Fon	1,329	663	440	6,500	2,327	
Ban Dung	5,473	2,650	1,715	20,864	5,917	
Ban Phu	12,706	6,995	4,909	125,295	31,770	
Phen	24,833	12,411	3,572	136,080	30,973	
Sang Khom	6,483	5,643	1,243	33,072	15,464	
Nong Wua So	5,512	9,104	1,702	79,810	9,567	
Nong Han	13,284	10,883	3,598	54,455	13,879	
Nam Som	637	991	247	11,973	4,853	
Phibul Rak	6,747	1,960	834	26,958	10,001	
Study Area Total	107,799	69,379	38,348	908,965	182,758	
Nong Khai	Buffaloe	Cattle	Swine	Chicken	Duck	Goose
Muang Nong Khai	15,714	11,450	4,810	316,097	44,180	
Tha Bo	8,892	3,540	5,967	66,675	13,410	
Si Chiang Mai	4,001	6,347	1,404	34,942	9,496	
Sang Khom	299	314	106	2,314	851	
Phon Phisai	24,487	12,286	5,300	83,636	25,401	
Sra Khrai	Included in Muang Nong Khai					
Study Area Total	53,393	33,938	17,586	503,664	93,338	
Nong Bua Lamphu	Buffaloe	Cattle	Swine	Chicken	Duck	Goose
Muang N. B. L.	1,183	361	474	6,712	617	18
Na Klang	7,831	6,695	8,111	24,248	4,349	463
Suwanna Khuha	6,754	5,643	6,681	49,585	20,710	69
King A. Na Wang	Included in Muang N. B. L.					
Study Area Total	15,768	12,699	15,266	80,545	25,676	550
Total Study Area	176,960	116,015	71,201	1,493,174	301,772	550

Source : Agricultural Statistics of Changwat.

Table 2.7-11 Number of Fresh Water Cult ure Houses, Ponds, Areas and Productivity in Nong Khai (1993)

Changwat Amphoe Nong Khai	No. of House hold	No. of Ponds	Total Area (rai)	Area/ house (rai)	Capture Production (kg)	Yield Capture (kg/rai)
Muang N. K.	648	1,000	1,863.0	2.9	1,514,000	812.7
Tha Bo	907	1,548	1,854.5	2.0	977,000	526.8
Si ChiangMai	542	1,026	1,311.1	2.4	458,850	350.0
Sang Khom	76	98	94.0	1.2	17,698	188.3
Phon Phisai	675	1,108	1,417.8	2.1	1,318,000	929.6
Pak Khat	28	45	40.3	1.4	761,400	
Bung Kan	272	355	374.8	1.4	75,000	200.1
So Phisai	84	87	112.5	1.3	11,500	102.2
Phon Charoen	23	25	47.7	2.1	108,650	2277.8
Seka	56	56	58.8	1.1	2,130	36.2
Bung Khong Long	9	9	11.0	1.2	97,000	8818.2
K. A. SiWilai	40	40	42.3	1.1	71,600	1692.7
K. A. Bung Khla	11	11	10.0	0.9	10,460	1046.0
Changwat Total	3,371	5,408	7,237.7	2.1	5,423,288	749.3
Study Area						
Changwat Amphoe Nong Khai	No. of House hold	No. of Ponds	Total Area (rai)	Area/ house (rai)	Capture Production (kg)	Yield Capture (kg/rai)
Muang N. K.	648	1,000	1,863.0	2.9	1,514,000	812.7
Tha Bo	907	1,548	1,854.5	2.0	977,000	526.8
Si ChiagMai	542	1,026	1,311.1	2.4	458,850	350.0
Sang Khom	14	19	18.0	1.3	3,398	188.8
Phon Phisai	481	790	1,010.9	2.1	939,734	929.6
Study Area Total	2,592	4,383	6,057.5	2.34	3,892,982	642.6

Source : Statistical Reports of Changwat Nong Khai 1994 Ed.

Table 2.7-12 Number of Pond and House of Fishery in the Study Area of Udon Thani
1. 1993

Changwat/Amphoe Udon Thani	Fishery in the pond			Fishery in paddy			Total fishery			
	No. of House	No. of Pond	Area (rai)	Area/H (rai)	No. of House	No. of Pond	Area (rai)	No. of House	No. of Pond	Area (rai)
Muang U. T.	494	940	676.8		35	35	273.9	529	975	733.8
Kut Chap	148	238	276.2	1.87	1	1	6.8	149	239	333.2
Ban Phu	359	499	561.2	1.56	15	15	57.0	374	514	618.2
Phen	238	262	311.2	1.31				238	262	368.2
Sang Khom	38	47	23.1	0.61	1	1	6.0	39	48	80.1
Phibul Rak	57	30	15.2	0.27				57	30	72.2
Kumphawapi	15	24	26.6		0	0	2.4	15	24	83.6
Thung Fon	15	25	25.7		0	0	0.0	15	25	82.7
Ban Dung	40	67	68.9		0	0	1.9	40	68	125.9
Nong Wua So	81	153	39.8		0	0	0.0	81	153	96.8
Nog Han	251	410	463.6		18	18	153.6	269	427	520.6
Nam Som	19	26	26.7		0	0	0.0	19	26	83.7
Study Area Total	1,756	2,720	2,515.1	1.34	70	70	501.6	1,826	2,790	3,199.1

2. 1994

Muang U. T.	511	960	712.8		47	47	244.4	558	1,007	769.8
Kut Chap	148	238	276.2	1.87	1	1	6.8	149	239	333.2
Ban Phu	359	499	561.2	1.56	15	15	57.0	374	514	618.2
Phen	238	262	311.2	1.31				238	262	368.2
Sang Khom	38	47	23.1	0.61	1	1	6.0	39	48	80.1
Phibul Rak	57	30	15.2	0.27				57	30	72.2
Kumphawapi	16	25	26.9				2.5	16	25	83.9
Thung Fon	87	120	74.6					87	120	131.6
Ban Dung	121	162	87.0		1	1	20.7	122	163	144.0
Nong Wua So	81	153	39.8					81	153	96.8
Nog Han	254	415	464.5		18	18	153.6	272	433	521.5
Nam Som	45	41	26.3					45	41	83.3
Study Area Total	1,955	2,952	2,618.8	1.34	83	83	491.0	2,038	3,035	3,302.8

Source : Udon Thani commercial office.

Table 3.5-1 Promising and Suitable Crops in each Field

The areas to introduce the promising crops in the Study Area are followings ;

- (1) Dry season paddy field under irrigation to increase the area and kinds of crops,
- (2) Upland field to introduce the new crops substituting the traditional crops,
- (3) Fallow and vacant land to utilize more effectively.

Field	Groups of Crops	Name of Crops
Dry season Paddy	Leguminous crops	Soybean, Mungbean, Groundnut,
	Green Manure Crops	Sesbania Rostrata etc.
	Cereal & Industrial Crops	Sweet corn, Baby corn, Fragrant rice, tomato Tobacco, Asparagus, (Second rice) etc.
	Vegetables (General Use)	Cucumber, Cabbage, String beans, Lettuce, Chinese Cabbage, Asparagus, Water melon,
	(for spicy crops)	Garlic, Shallot, Chilli, Onion etc.
	(for rural industry)	Tomato, Babycorn, Asparagus, Egg plant
	(for seed production)	Cucumber, Cantaloupe, Egg plant,
Upland Field	Annual Crops	Maize, Soy bean, Sunflower for oil, Sugar cane, Cotton, Kenaf, Jute, etc.
	Green Manure Crops	Stylothantes spp. etc.
	Fruit trees	Mango, Papaya, some kinds of Orange such as Pommets, Cashew nut, Sour Tamarind, Sweet tamarind, Banana, etc.
	Industrial crops	Young bamboo shoot, Mulberry, Pine Apple Para rubber, kapok, etc.
	Ornamental Crops	Rose, Chrysanthemum, Aster, Mali-gold,
Vacant land	Fast Growing trees	Eucalyptus,
	Grasses for Cattle	Ruzi grass, Stylothantes spp., Mixture of these grasses
Restructure of Traditional Crops		Cassava, Second rice, Coffee etc.

table 3.5-3 Target Yield of Main Crops in the Target Year (kg/ha)

C R O P S		Udon Thani	Nong Khai	Nong Bua I.	Average T.Y.
Rice	Glutinous Rice	2,500	2,500	2,600	2,600
	Non-glutinous Rice	2,430	2,500	2,600	2,600
	High Yield Rice	3,000	3,200	3,200	3,200
	Second Rice (NG)	3,850	4,000	4,000	4,000
Upland Crop	Cassava	15,200	13,000	15,000	15,000
	Sugar Cane	63,000	65,000	63,000	64,000
	Maize (grain)	3,350	2,300	3,000	3,000
	Sweet Corn (Ear)	11,000	11,000	10,500	11,000
	Soy Bean Wet S.	1,700	1,800	1,800	1,800
	Dry S.	1,620	1,600	1,700	1,700
	Mung Bean	1,000	1,000	1,000	1,000
Industrial	Ground Nut	1,650	1,600	1,600	1,620
	Pine Apple	38,000	43,000	40,000	40,000
	Tomato	23,000	25,000	23,000	24,000
	Tobacco (verginia)	2,900	3,200	2,900	3,000
Vegetables	Tobacco (Local)	2,000	2,400	2,100	2,300
	Cucumber	15,000	17,000	16,000	16,000
	String Bean	14,000	16,000	15,000	15,000
Fruit Trees	Baby Corn	6,800	7,500	7,000	7,300
	Mango	4,100	4,200	4,300	4,200
	Sweet Banana	16,000	16,000	15,000	16,000
	Sweet Tamarind	3,750	3,750	4,000	3,800
	Cashew Nut	1,500	1,500	1,500	1,500
Bamboo	Young Bamboo Shoot	6,000	6,200	6,400	6,300
Fishes	Nile Tilapia	3,500	4,000	3,800	3,800
Livestock	Cattle (kg/head)	400	400	400	400
	Chicken (kg/head)	0.5-1.0	0.5-1.0	0.5-1.0	0.5-1.0

Table 3.5-5 Actual Land Use Plan in Udon Thani Province. (Unit:rai)

Activities	Area in 1993	Converting Area	Area in 2006	Remarks
Decreasing the Area of Traditional Crops				
Second Rice	20,904	10,904	10,000	(48%)
Paddy for Major Rice	2,180,201	80,201	2,100,000	(96%)
Cassava	317,800	158,900	158,900	(50%)
Total Decreased Area(Exclude Second rice)		239,101		
Substitution Activities				
Fruit Trees	81,857	50,143	132,000	from paddy &
Cut Flower	200	458	658	cassava field
Integrated Agric.	7,800	45,000(Inc.Fish Pond)	52,800	from paddy
Vegetables	27,262	7,800	35,062	"
Industrial crops	800	1,200	2,000	"
Sweet Bamboo	(22,000)	53,000	75,000	from cassava
Fast Growing Trees	(23,350)	43,500	66,850	field "
Grassland for Cattle	(50,000)	33,000	83,000	"
Other Upland Crops	552,600	5,000	557,600	"
Total Increased Area		239,101		

Notes: () are estimation from agricultural land area in the province.

Table 3.5-6 Actual Land Use Plan in Nong Khai Province. (Unit:rai)

Activities	Area in 1993	Converting Area	Area in 2006	Remarks
Decreasing the Area of Traditional Crops				
Second Rice	13,504	7,504	6,000	(44%)
Paddy for Major Rice	1,244,791	38,053	1,206,738	(97%)
Cassava	354,262	177,131	177,131	(50%)
Total Decreased Area(Exclude Second rice)		215,184		
Substitution Activities				
Fruit trees	93,750	13,250	107,000	from cassava fld.

Vegetables	20,725	5,275	26,000	From paddy fld.
Integrated Agric.	28,500	20,000	48,500	"
Industrial crops	32,436	13,000	45,436	"
Flower & Ornamental	300	529	829	"
Other Upland Crops	35,000	5,000	40,000	From upland fld.
Sweet Bamboo	(12,000)	55,430	67,430	"
Fast Growing Trees	(13,000)	73,000	86,000	"
Grassland for Cattle	(20,000)	29,700	49,700	"
Total Increased Area		215,184		

Notes: () are estimation from agricultural land area.

Table 3.5-7 Actual Land Use Plan in Nong Bua Lamphu Province. (Unit:rai)

Activities	Area in 1993	Converting Area	Area in 2006	Remarks
Decrease of Cultivation Area				
Second Rice	5,000	4,500	500	(10%)
Paddy for Major Rice	819,665	19,665	800,000	(98%)
Cassava	68,735	27,494	41,241	(60%)
Total Decreased Area (Exclude Second rice)		47,159		
Substitution Activities				
Vegetables	2,460	1,500	3,960	From paddy fld.
Integrated Agric.	2,000	10,000	12,000	"
Industrial crops	1,000	1,565	2,560	"
Flower & Ornamental	50	99	149	"
Fruit Trees	41,899	7,000	48,899	From cassava fld
Other Upland Crops	388,000	4,000	392,000	"
Sweet Bamboo	(15,000)	10,000	25,000	"
Fast Growing Trees	(20,000)	3,000	23,000	"
Grassland for Cattle	(20,000)	10,000	30,000	"
Total Increased Area		47,159		

Notes: () are estimation from agricultural land area.

Table 3.5-8 Cropping and Land Use Plan in the Study Area (Unit:ha)

Season Crops & Land Use	Rainy Season		Dry Season		
	Existing	Plan	Existing	Plan(UP)	Plan(PD)
Major Rice					
Irrigated Rice	41,280	109,000			
Rainfed Rice	258,539	193,262			
Crops in Dry Season Paddy					
Second Rice			3,053		1,359
Soy Bean			3,211		8,600
Mung Bean			437		1,000
Ground Nut			406		1,000
Maize			3,271		3,560
Sweet Corn			336		1,500
Baby Corn			2,531		3,000
Vegetables in DS Paddy			1,334		1,981
Sub-Total	299,819	302,262	14,579		22,000
Crops in Upland Field					
Cassava	33,233	16,912	33,233	16,912	
Sugar Cane	9,218	10,500	9,218	10,500	
Soy Bean	1,642	5,500	629	700	
Maize	7,552	7,500			
Sweet Corn	834	1,200			
Other Upland Crops	29,395	22,841			
Vegetables	3,333	3,518			
Industrial Crops			1,667	2,457	
Fruit Trees	15,976	21,793	15,976	21,793	
Flower & Ornamental Crops	69	199	69	199	
Fish Pond	1,500	16,500	1,500	6,500	
Young Bamboo	3,474	12,926	3,474	12,926	
Fast Growing Trees	3,886	13,707	3,886	13,707	
Grassland	6,125	11,270	6,125	11,270	
Sub-Total	416,056	446,628	90,356	96,964	22,000
Fallow & Others	44,462	13,890	370,162	363,554	0
TOTAL	460,518	460,518	460,518	460,518	22,000

Table 3.5-10 Some Agro-Industries Utilizing the Agro-Products in the Area.

Agro-Products	Methods for Processing	Main Products
Grains Non-glutinous rice	Milling	Flour, Candy, rice cracker,
Glutinous rice		Unbaked cake, Bun cake
Soy bean	Milling, Oil	Flour, Oil, Feed for animals
Mung bean	Sprouting Milling	Sprout of mungbean, Flour,
Ground nut	Oil & cake making	Oil & cake
Maize	Oil manufacture	Corn salad oil
Maize	Grinding & mixing	Feed for animals, poultry, fishes
Sorghum	"	"
Sun flower	Oil manufacture	Sunflower oil for machines
Vegetables		
Baby corn	Vacuum Packing	Canned & Vacuum Packing of baby
Asparagus	and canning	corn & asparagus
Cucumber, Egg plant	Salt-pickling	Salt-pickling of vegetables
" "	Canning, Packing	Canned & Vacuum packed vegetables
Tomato	Juice, Ketchup	Juice and Ketchup of tomato
Spice Chilli	Pepper manufacture	Chilli
Pepper		Pepper
Sugar Sugar cane	Sugar manufacture	Refined sugar
Starch Cassava	Starch, Feed	Cassava starch, feed for animals
Cotton Cotton	Cotton manufacture	Cotton goods
	Seed manufacture	Cotton oil, Feed for animals,
Fruits Fruits	Canning, Juice	Canning and juice of fruits
	Refrigerating	Refrigerating of fruits
Pine apple	Canning, Juice	Canning and juice of pine apple
Industrial		
Young bamboo shoot	Canning	Canning of bamboo shoot
Livestock		
Cattle, Swine.	Ham, Sausage	Ham, Sausage
Chicken	Processing of	Pet Feed
	Internals & bone	

Table 5.2-5 Planted Area of main crops in two Tambon in Suwan Khuha.

Tambon	Unit	Bun Than		Ban Khok		Total Cropping Area	
		rai	ha	rai	ha	rai	ha
Glutinous Rice		13,363	2,138	13,035	2,086	26,398	4,224
Non-glutinous Rice		263	42	5,782	925	6,045	967
Dry-season Crops in Paddy Field							
Second Rice		0	0	0	0	0	0
Soy Bean		1,450	232	4,568	731	6,018	963
Rainy Season Crops in Upland Field							
Cassava		975	156	4,625	740	5,600	896
Maize		15,362	2,458	6,460	1,034	21,822	3,492
Sweet Corn		95	15	36	6	131	21
Mung Bean		1,810	290	3,689	590	5,499	880
Ground Nut		0	0	200	32	200	32
Kenaf		0	0	250	40	250	40
Cotton		0	0	606	97	606	97

Source: By Tambon Agricultural Office.

Fig. 5.3-3 Cropping Season and Land Use Area in Huai Mong Project Area.

Crops, Land Use	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Major Rice in Supplemental Irrigation Area						6/16	7/16	8/1			11/11	11/30
						Land Preparation			1,000 ha (High Yield Variety)		Harvesting	
Major Rice in Rainfed Paddy Area						6/6	7/6	7/26			11/11	12/10
						Land Preparation			4,191 ha (Local Variety)		Harvesting	
Soy Bean in Dry Season Paddy Field	1/1			4/1	4/30							12/1
		400 ha (S J-5)										
Fish Pond with Irrigation	100 ha Water Exchange											

Major Rice in Supplemental Irrigation Area.....1,000 ha (High Yield Variety)

Land Preparation:6/16 to 7/30, Transplanting:7/16 to 7/31, Harvesting:11/5 to 11/30.

Major Rice in Rainfed Paddy Area.....4,191 ha, (Local Variety)

Land Preparation:6/6 to 7/25, Transplanting:6/26 to 7/26, Harvesting:11/1 to 12/10.

Soy Bean in Irrigated Dry Season Paddy Field.....400 ha, (Variety, S J-5)

Land Preparation: 11/21 to 12/29, Sowing: 12/1 to 12/30, Harvesting: 3/26 to 4/30.

Inland Fishery with Irrigation.....100 ha,

(Nile Tilapia, Common Carp, Mirror Carp, etc.) Exchange of Water, once a year.

The outline of cropping management and yield projection is as follows;

Table 5.3-4 The outline of cropping management and yield projection

Crops	Major Rice	Soy Bean
Land Preparation	Jun. 16--Jul./30	Nov./21--Dec./29
Seeding & Transplanting Time	Jul./16--Jul./31	Dec./01--Dec./30
Harvesting Time	Nov./05--Nov./30	Mar./26--Apr./30
Variety	High Yield Variety	S J-5
Seeding & Transplanting Methods	Transplanting of young seedling,	Hill seeding
	16-18 Plants/square meter	18-25 plants/square meter
Amounts of Seeds	35 -- 40 kg/ha	70 -- 80 kg/ha
Irrigation Time	At Land Preparation	
	Transplanting Time	Before or after seeding
	2 or 3 times in growing period	Every 10 days
Fertilization(Basal dressing)	N 20-25, P 10-15, K 10-15	N 15-20, P 15-20, K 10-15
(Top dressing)	N 20-25 kg/ha	
Fungicides	1 time (growing period)	1 time (growing period)
Insecticides		1 time (growing period)
Herbicides		1 time (before seeding)
Expected Yield	3,300 kg/ha	1,700 kg/ha

The outline of the projection is shown in Appendix Fig. 5.3-3.

Table 6.2-1 Agricultural Land Use in Bang Phuan Area

(Unit:rai)

Tambon	Kuan Wan	Muang Mi	Pa Kho	Wiang Khok	MiChai	Nong Kom ko	Phra Tat BangPhua
Total Area	6,059	6,060	18,185	10,622	1,136	6,968	38,282
Paddy Field	3,407	3,880	4,879	3,916	244	1,944	19,567
Flood Area	1,361	1,262	815	1,117	46	32	1,877
Upland Area	63	200	0	0	0	0	0
Vegetables	307	158	24	125	15	46	582
Fruit Area	6	55	232	95	9	102	294
Flowers	85	125	0	0	18	0	4
Other Agri	183	270			0	0	0
Total Agri	4,051	4,688	5,135	4,136	285	2,091	20,448
Glutinous Rice	2,870	3,440	4,400	3,766	184	1,144	16,632
Non-glutinous	537	440	479	150	60	800	2,935
Dry Season Crops							
Second rice	65	102	0	0	0	440	0
Sweet Corn	30	200	20		0	0	32
Tobacco		40	1,070	2,250	0	0	512
Tomato		97	50	147	0	0	214
Baby Corn	0	0	0	0	0	0	0
Soy Bean			250		0	0	19
Ground Nut	0	0	0	0	0	0	0
DS Vegetable	190	95	45	197	6	26	93
DS Sub-Total	285	534	1,435	2,594	6	466	871
DSPaddy Use %	8.4	13.8	29.4	66.2	2.3	24.0	4.5
Wet Season Crops							
Cassava					0	0	0
Sugar Cane					0	0	0
Maize	0	0	0	0	0	0	0
Sweet Corn	8			50	0	0	0
Ground Nut	0	0	0	0	0	0	0

Source: Data from Amphoe Office.

Tambon	Pho	Ban	Nong	Kham	Ban	TOTAL BANG PHUAN	
	Chai	Thon	Nang	Bong	Fang	rai	ha
Total Area	1,553	10,278	10,465	31,782	4,323	145,713	23,314
Paddy Field	739	6,265	6,598	10,084	1,104	62,627	10,020
Flood Area	0	941	1,250	0	0	8,701	1,392
Upland Area	0	803	472	6,888	97	8,523	1,364
Vegetables	1	72	60	0	1	1,391	223
Fruit Area	10	53	35	710	4	1,605	257
Flowers	0	0	0	0	0	232	37
Other Agri	320	69	328	0	128	1,298	208
Total Agri	1,070	7,262	7,493	17,682	1,334	75,676	12,108
Glutinous Ri	628	5,617	6,098	5,923	684	51,385	8,222
Non-glutinou	111	648	500	4,162	420	11,242	1,799
Dry Season C							0
Second rice	154	0	0		0	761	122
Sweet Corn	0	15	0		4	301	48
Tobacco	0	666	250		46	4,834	773
Tomato	0	14	250		0	772	124
Baby Corn	0	0	0		0	0	0
Soy Bean	0	0	0		0	269	43
Ground Nut	0	0	0		7	7	1
DS Vegetabl	1	45	0		1	699	112
DS Sub-Tota	155	740	500		50	7,636	1,222
DSPaddy Use	21.0	12.9	7.1	*	4.5	12.5	13
Wet Season C							0
Cassava	0	0	0	301	0	301	48
Sugar Cane	0	0	275	3,511	28	3,844	615
Maize	0	0	0	0	0	0	0
Sweet Corn	0	0	0	0	0	58	9
Ground Nut	0	0	0	0	7	7	

Table 6.2-2 Agricultural Land Use in Vieng Kook Area

(Unit:rai)

Tambon	Phon Sa	Ban Thon	Ban Dua	Nong Nang	Tha Bo	Hai Sok	TOTAL VIENG KOOK	
							rai	ha
Total Area	15,228	12,562	23,790	10,465	3,617	28,718	94,380	15,101
Paddy Field	8,398	7,658	17,183	6,598	1,536	11,431	52,804	8,449
Flood Area	2,968	1,159	1,875	1,250	359	0	7,611	1,218
Upland Field	2,155	981	484	472	173	4,803	9,067	1,451
Vegetables	1,243	87	257	60	87	7	1,740	278
Fruit Area	81	64	107	35	32	556	875	140
Flowers		0	0	0	0	0	0	0
Other Agri	1,558	84	2,203	328	34	0	4,207	673
Total Agri	13,435	8,874	20,233	7,493	1,862	16,797	68,693	10,991
Glutinous Rice	2,221	6,866	17,175	6,098	993	7,719	41,072	6,572
Non-glutinous	1,380	792	825	500	543	3,713	7,753	1,240
Dry Season Crops								0
Second Rice	61	0		0	0	0	61	10
Sweet Corn	8	19		0	5	0	32	5
Tobacco	4,950	814		250	196	0	6,210	994
Tomato	1,550	18		250	252	0	2,070	331
Baby Corn	198	0		0	0	0	198	32
Soy Bean	0	0		0	140	0	140	22
Ground Nut	0	0		0	3	0	3	0
DS Vegetables	84	55		0	147	7	293	47
DS Sub-Total	6,851	906	*	500	743	7	9,006	1,441
DSPaddy Use %	81.6	11.8		7.6	48.3	0.1	17.1	17
Wet Season Crops								0
Cassava	0	0		0	0	2,025	2,025	324
Sugar cane	181	0		275	0	293	749	120
Miaze	0	0		0	70	0	70	11
Sweet Corn	0	0		0	4	0	4	1
Ground Nut	0	0	*	0	0	0	0	0

Source : Data from Amphoe Office

* No data

Fig. 6.3-1 Cropping Season and Land Use Plan in Muai Vieng Kook and Muai Bang Phuan Flood Protection Project Area.

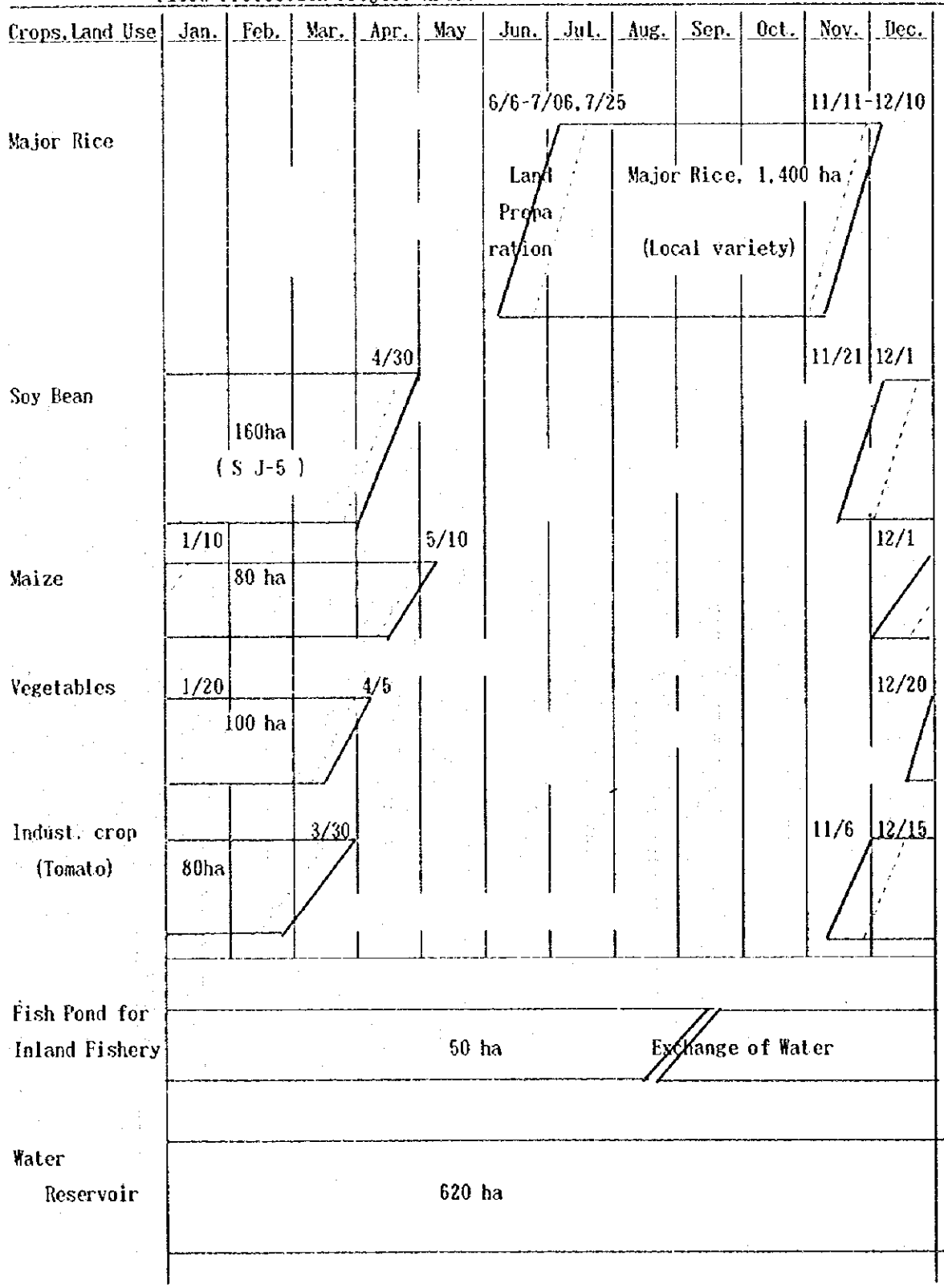


Table 6.3-5 The Outline of Cropping Management and Yield Projection of Major Rice

Crops	(a) Major Rice (LV)	(b) Major Rice (HYV)
Land Preparation	Jun./06--Jul./25	Jun./16--Jul./30
Seeding & Transplanting Time	Jul./06--Jul./25 m	Jul./16--Jul./31
Harvesting Time	Nov./11--Dec./10	Nov./05--Nov./30
Variety	Local Variety	High Yield Variety
Seeding & Transplanting Methods	Transplanting of Young Seedling	Transplanting of Young Seedling
Amount of seed.	35--40 kg/ha	35--40 kg/ha
Irrigation Time	At Land Preparation At Transplanting time 2 or 3 times in growing period	Same with Local Variety
Fertilization (Basal dressing)	N 20-25, P 10-15, K 10-15	N 20-25, P 10-15, K 10-15
(Top dressing)	N 20-25	N 20 - 25
Fungicides	1 time (growing period)	1 time (growing period)
Insecticides		0 time (growing period)
Expected Yield	2,500 kg/ha	3,200 kg/ha
Following Crops	Soy bean	Industrial Crops

Table 6.3-6 The Outline of Cropping Management and Yield Projection of Upland Crops

	(c) Soy bean	(d) Maize
Land Preparation	Nov./21--Dec./29	Dec./01--Dec./130
Seeding & Transplanting Time	Dec./01--Dec./30	Dec./16--Jan./10
Harvesting Time	Mar./26--Apr./30	Apr./16--May/10
Variety	S J-5	Dent Corn
Seeding & Transplanting Methods	Hill Sowing Ridge distance 80-100 cm Hill distance 30 - 35 cm	Hill planting Ridge distance 70-75 cm Hill distance 20-25 cm
Amounts of Seed	70 --80 kg/ha	35--40 kg/ha
Irrigation Time	At seeding time 2or 3 times in growing period	Before or after planting Every 15 days
Fertilization (Basal dressing)	N 15-20, P 15-20, K 10-15	N 20-25, P 15-20, K 10-15
(Top dressing)		N 15-20,
Fungicides	1 time (growing period)	1 time (growing period)

Insecticides	1 time	0 time (growing period)
Expected Yield	1,600 kg/ha	2,300 kg/ha

Table 6.3-7 The Outline of Cropping Management and Yield Projection of Vegetables

Crops	(e) Vegetables(Cucumber)	(f) Tomato(for Factory)
Transplanting Time	Dec./20 - Jan./20	Nov./06--Dec./15
Harvesting Time	Mar./20 - Apr./05	Feb./15--Mar/30
Variety	Big cucumber	for Factory Use
Seeding & Transplanting Methods	Hill Planting	Hill planting
Ridge distance	75-80 cm, : 25-30 cm	80-100 cm Ridge
Irrigation Time	At Planting time Every 15 days	At Planting time Every 15 days
Fertilization (Basal dressing)	N 20-25, P 15-20, K 10-15	N 15-20, P 15-20,K 10-15
(Top dressing)	N 10-15	N 10-15,
Fungicides	1 time (growing period)	2 time (growing period)
Insecticides	1 time (growing period)	0 time (growing period)
Expected Yield	17,000 kg/ha (2,880 kg/rai)	25,000 kg/ha
Following Crops	Major Rice	Major Rice

Table 6.3-8 The Outline of Fish Pond Management and Yield Projection

Management	(g) Fish Pond	(h) Water Reservoir
Variety of fishes	Nile Telapia, Mirror Carp etc.	Snake head, Prawn, Cat fish, Climbing Parch, etc.
Feeding for fishes	Chicken Dung	No Feeding
Irrigation	At dry season	No water irrigation
Exchange of water	Once a year (any time)	
Harvesting Method	By net	By boat and net
Expecting capture Yield	4,000 kg/ha (640 kg/rai)	1,500 kg/ha (240 kg/rai)
Chicken on fish pond	Local Variety, 1,000 head/ ha of fish pond,	
Breeding Period	70 - 90 days breeding,	
Breeding Times	4 times in a year	
Production of chicken	1,000*4 times*0.95(Survival rate) =0.75 kg*1,000*4 time *0.95=2,850 kg/ year	

Table 7.2-2 Cropping Area of main Crops in Huai Luang Rehabilitation Area

Tambon Field	Ban Luang	Chiang Yun	Chiang Pin	Mu Mong	Kut Chap	PaKho Pong	Chiang Peng	Total (rai)	Area (ha)
Glutinous rice	3,162	7,004	5,569	1,407	8,125	10,766	14,424	50,457	8,073
Non-glutinous rice	85	2,789	2,166	223	989	1,523	2,088	9,863	1,578
Wet Season Crops									
Cassava	0	599	145	0	198	127	18	1,087	174
Sugar cane	0	518	609	0	3,233	296	0	4,655	745
Sweet Corn	0	29	0	10	22	7	0	67	11
Ground Nut	0	9	0	0	144	0	0	123	20
Mung Bean	0	0	0	0	0	116	0	116	19
Dry Season Crops									
Second Rice	0	0	0	0	64	0	0	64	10
Sweet Corn	23	23	0	39	0	0	0	84	14
Sweet Potato	0	215	0	0	0	0	0	215	34
Ground Nut	0	7	11	0	0	156	247	420	67
Mung Bean	0	0	0	0	0	134	0	134	21
Yam Bean	0		98	4	0	0	0	102	16
Paddy use % in DS*	0.7	2.4	1.4	1.9	0.7	2.4	1.5	1.7	1.7
Vegetables	37	392	70	78	259	240	39	1,116	179
Cropping Intensity									
in Dry Season Paddy**	1.8	6.0	7.9	5.3	3.5	4.2	1.7	3.4	3.4
No. of farm household	274	1,229	760	171	806	757	948	4,950	
Average Area /house	15.1	10.9	14.9	19.9	16.6	18.0	18.3	15.5	2.48

Source : Data from the Amphoe Office in Udon Thani.

* Total area of dry season crops / Area of paddy field

** Total area of dry season crops + area of vegetables / Area of paddy field + vegetables area. Average Area/ house is total agricultural area/ number of farm household.

Table 7.2-5 Number of Livestock and Number of Farmhousehold Breeding the Livestock in Huai Luang Rehabilitation Area

Tambon	Ban Luang	Chiang Yun	Chiang Pin	Mu Mong	Kut Chap	PaKho	Chiang Peng	Total
Number of Heads								
Buffaloes	1,908	1,678	161	401	445	1,215	1,753	7,560
Beef Cattle	715	1,082	276	185	484	-	76	2,818
Swine	2,349	2,703	443	864	284	-	0	6,644
Chicken	8,059	8,987	4,803	2,517	2,822	-	11,336	38,524
Duck	2,119	17,412	856	3,112	1,875	-	306	25,680
Goose	408	520	125	68	0	-	0	1,121
Number of Farmhousehold breeding Livestock								
Buffaloes	253	186	73	39	89	380	756	1,775
Beef Cattle	200	175	93	19	97	-	17	602
Swine	50	58	39	29	205	-	0	381
Chicken	453	360	142	136	256	-	970	2,316
Goose	-	-	-	-	214	-	38	

Source : Data from the Amphoe Office in Udon Thani.

Fig. 7.3-2 Cropping Season & Area of Main Crops in Huai Luang Rehabilitation Project Area

Crops in Paddy	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
[WET SEASON]						6/16	7/06	7/26			11/1-25	
Major Rice [High Yield Variety]						Land Prepa- ration			H.Y.V. 1,190 ha		Harvest ing	
Major Rice [Local Variety]						6/6	7/6	7/26			11/11	12/10
						Land Prepa- ration			Local Variety		Harvest ing	
[DRY SEASON]	1/1			4/6-30								12/6
Soy Bean		S J-5 200 ha		Harvest ing								
Second Rice	1/6		Suphan-60 76 ha	4/6-25	Harvest ing							Land Prepara- tion
Sweet Corn	1/16		Super Sweet 30 ha	4/1-20	Harvesting							12/26
Baby Corn	1/16	2/10		4/11-5/5	Harves- ting							
Ground Nut	1/10			4/20-5/10	Harve- sting							12/21
Vegetables	1/16			3/6-4/30	Harvest- ing							12/16

Table 7.3-2 The Outline of Cropping Management and Yield Projection of Rice

Crops	(a) Major Rice	(b) Second Rice
Land Preparation	Jun./16--Jul./24	Dec./01--Jan./05
Seeding & Transplanting Time	Jul./06--Jul./26	Dec./21--Jan./06
Harvesting Time	Nov./01--Nov./25	Apr./06--Apr./25
Variety	High Yield Variety	Suphan-60, S-90
Seeding & Transplanting Methods	Transplanting of young seedling, Broadcasting by hand 25-30 day's seedling	
Amounts of Seeds	35--40 kg/ha	94--100 kg/ha
Irrigation Time	At Land Preparation At Transplanting time 2 or 3 times in growing period	Land Preparation and Sowing Time Every 10 days
Fertilization (Basal dressing)	N 20-25, P 10-15, K 10-15	N 15-20, P 15-20, K 10-15
(Top dressing)	N 20-25	N 20-25 (urea)
Fungicides	1 time (growing period)	1 time (growing period)
Insecticides		1 time (growing period)
Expected Yield	3,200 kg/ha	3,850 kg/ha

Table 7.3-3 The Outline of Cropping Management and Yield Projection

Crops	(c) Soy bean	(d) Sweet Corn
Seeding & Transplanting Time	Dec./06--Dec./30	Dec./26--Jan./15
Harvesting Time	Apr./06--Apr./30	Apr./01--Apr./20
Variety	S J-5	Super sweet
Seeding & Transplanting Methods	Hill Sowing 5-8 grains/hill	Hill seeding (2 plants/hill) 140 cm, 2 rows, 70-25 cm
Amount of seed	70--80 kg/ha	20-30 kg/ha
Irrigation Time	Land preparation & Sowing Every 10-14 days	Before or after Sowing Every 1 or 2 week
Fertilization (Basal dressing)	N 20-25, P 10-15, K 10-15	N 20-30, P 15-20, K 10-15
(Top dressing)		N 10-15
Fungicides	1 time (growing period)	0 time (growing period)
Insecticides	1 time (growing period)	0 time (growing period)
Herbicides	1 time	0 time
Expected Yield	1,600 kg/ha	11,000 kg/ha

Table 7.3-4 The Outline of Cropping Management and Yield Projection

Crops	(e) Baby Corn	(f) Ground Nut
Seeding & Transplanting Time	June/16--Feb./10	Dec./21--Jan/09
Harvesting Time	Apr./11--May /05	Apr./20--May/10
Variety	Ransit-1, Hybrid	Khon Kaen60-1, Thainan-9
Seeding & Transplanting Methods	Hill Sowing, 100 cm 2 rows, 2 plant /hill	Hill Sowing(unshelled half broken seed,
Amounts of Seed	20--30 kg / ha	70-80 kg/ha(unshelled)
Irrigation Time	At Sowing Time Every 1 Week	Before or after sowing Every 10 days
Fertilization (Basal dressing)	N 25-35, P 15-20, K 10-15	N 20-30, P 20-30, K 20-30
(Top dressing)	N 0	0
Fungicides	0 time (growing period)	0 time (growing period)
Insecticides		0 time (growing period)
Herbicides		1 time (before sowing time)
Expected Yield	6,800 kg/ha	1,650 kg/ha

Table 7.3-5 The Outline of Cropping Management and Yield Projection of Vegetables

Crops	(g) Cucumber	(h) Cabbage
Seeding & Transplanting Time	Dec./16--Jan./15	Dec./16--Jan./15
Harvesting Time	Mar./06--Apr./30	Mar./06-- Apr./30
Variety	Big or Long Variety	
Seeding & Transplanting Methods	Hill Sowing 120 cm 2 rows, 2 Seeds /hill	Hill Planting 150 cm 3 rows, 40 cm,
Irrigation Time	At Sowing Time Every 1 Week	Before or after planting Every 1 week
Fertilization (Basal)	N 20-25, P 15-20, K 15-20	N 20-30, P 15-20, K 10-15
(additional)	N 15	N 15
Fungicides	1 time (growing period)	0 time (growing period)
Insecticides	1 time (growing period)	1 time (growing period)
Herbicides		0 time (before sowing time)
Expected Yield	15,000 kg/ha	15,000 kg/ha

APPENDIX G. AGRO-ECONOMY

APPENDIX G AGRO-ECONOMY

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PART-1 CURRENT AGRO-ECONOMIC CONDITION OF THAILAND

1) Decline of Agricultural Sector and Rise of Industrial Sector

Thai economy from 1951 to 1988 has grown rapidly at the annual rate of 5 to 8.2 %. By sector, industrial (manufacturing, industry and construction) shows higher growth rate of 4.9 to 11.3 % a year, while agricultural sector 2.2 to 5.7 % a year.

Along with the economic growth of Thailand, place of the agricultural sector, on the contrary, has been declining its share such that 50 % of the sectoral share in GDP in 1951 reduced to 17 % in 1988 with the declining tendency of its share in the national economy. Contrary, the share of industrial sector has increased from 15 to 33 % in the same period, showing industrialization of Thai economy. Decline of agricultural sector and rise of industrial sector can be pointed out.

2) Progress of Agricultural Diversification

Agricultural structure in value in the sector has been also considerably varied. In line with improvement of food consumption share of livestock and fishery have been increased with an increase of household income. Share of oil crops, fiber crops, forestry products have been decreasing. However, share of paddy production in the amount of agricultural production value has been fallen from 34 % in 1960 to 1963 to 28 % in 1985 to 1987. Soybean increased its share. Judging from increasing tendency of fruit and upland crops and decreasing tendency of paddy, crop diversification in Thailand has been progressed and exporting of agricultural products has been also rapidly diversified.

Paddy, however, is the most important crop occupying about 30 % of agricultural production value and the largest share in planted land still now, producing in the whole country as stable food, and the most important exporting crop attaining foreign currency.

3) Decline of Farm Labour Force

Number of people working in agricultural and related sector has been declined from 69.1 % in 1983 to 62.2 % in 1987. Agricultural sector, however, still important sector for the national economy, employing 67 % of total labour force in 1986, which has been reduced from 79 % in 1960.

4) Disparity in Income and Poverty

It must be pointed out that disparity in incomes between agricultural sector and non-agricultural sector is 8.8 to one and widening year by year. Most of the households living on the lower income than poverty line is occupied by farm households.

Supposing that farmers would get the same annual income as average annual income in the country, 170 rai(27.2 ha) would be necessary.

5) Migrant Workers and Flow out of Rural People to Urban Area

Migrant workers working outside their villages are usual even in the Study Area, which was confirmed by the farm economic survey conducted in November 1995 and February 1996. At one village at the upstream of Huai Mong river basin, 80 % of farm households go outside such as Bangkok, other regions to get off-farm incomes, which is now the important income source of farm household. Migrant workers usually go outside after harvesting wet season paddy and some of them comes back to village before planting next wet season paddy. These off-farm incomes are spent for building houses, TV sets, motorcycles, power tiller and so on. Power tillers with two wheels are now popular and have been rapidly converting from buffaloes.

6) Paddy Marketing

Some 80 % of farmers sell paddy to local middlemen or wholesalers

came from the same village or other villages. The time when farmer sell their paddy is from November to March and July to October when farmer harvests wet season and dry season paddy, respectively but they are compelled to sell paddy right after harvesting because most of them has not warehouses, resulting in not being able to wait appreciate of paddy price after harvesting.

7) Decision of Paddy Price

Farmgate price, which is the selling price of paddy at farms(farmgate), is decided based on the wholesale price at Bangkok. Further, wholesale price at Bangkok is decided based on exporting price, that is, world market price. The exporting price of paddy is decided in considering fluctuation of paddy price in the world market by the Rice Exporter Association and then announced officially through TV and radio. In this procedure, cost of production spent for paddy on farm level is not taken into account.

8) Instability of Paddy Marketing in the World

Compared to wheat and cereals, 10 to 25 % of their production are traded in the world market, only three(3) to four(4) % of total paddy production are dealt in the international market. The international paddy market is an oligopolistic market controlled 70 to 80 % by Thai, America and China etc. , in addition, paddy price has been shown instability by fluctuating and affecting with low production due to flood and drought damage in the producing countries.

IPART-2 RIVALRIES IN THE WORLD-WIDE TRADE OF PADDY

Paddy production in 1994 was estimated at 530.9 million ton, of which 63.7 % were produced in the following three(3) countries, that is, 32.8 % by China, 22.3 % by India and 8.6 % by Indonesia, respectively, which have a large number of population. Therefore, Thailand(4.35 million ton), America(2.55 million ton), Vietnam(2.1 million ton), China(1.47 million ton) and Pakistan(1.2 million ton) are the major five(5) exporting countries of paddy in the world as of 1994.

It is notable that recently, Vietnam became the exporting country of paddy since 1989 and exported 2.1 million ton in 1994, which gained the third country next to Thailand and America. Since Vietnam can export paddy in lower price because of its lower cost of production resulted from lower wage, the country became the strong rival of Thailand in the world paddy market in which Vietnam got some share from Thailand. Vietnamese tendency in paddy production hereafter, therefore, will be paid attention.

From 1960 to 1970s, Thailand and America have competed centering on the foremost place in paddy exporting in the world. However, America worked out the policy in the beginning of 1980s, in which price of exporting paddy was politically increased despite of considerable surplus of paddy in the world market, resulted in declining paddy export and turning over her share to Thailand.

China's paddy production in 1990 was 192 million ton but declined to 174.6 million ton in 1994 because of stagnant of yield and considerable reduction of the cultivable lands. Such tendency of China makes feel misgiving about supply and demand of cereals in the world market because of her largest population.

Myanmar was formerly exporting country of paddy before the World War II. However, paddy exporting has been lower since 1987, resulted in getting worse in the economy. Then production of paddy restored to increase about 15 million ton in 1992 and exported about 0.4 million ton in 1992/93 crop year, implying her restoration in the paddy exporting. Although current exporting power is small Myanmar will have potentiality for

paddy exporting as well as Cambodia because of lower wage.

Under the condition, it will be forecasted that continuous rapid increase of paddy exporting of Thailand, which has occupied higher share in the world market since middle of 1970s, might be rather difficult for Thailand under the current unstable marketing condition. Sharp increase of paddy exporting by Thailand will attribute to make international paddy price lower, and this will be resulted that attainment of foreign currency acquisition with paddy exportation will be difficult for Thailand, and rivalry in paddy exporting among the countries will become serious, if based on the long-term projection. Thailand, therefore, should aim at stable and gradual increase of paddy exporting, not rapid increase, taking into consideration the long term conditions in the world market.

Comparison of Cost of Production of Paddy

		Thailand (1986/87)	America (1987)	Japan (1987)
Average Farm Size (ha)		4.2	110	1.1
	Yield of Unmilled Rice (t/ha)	1.5	4.9	5.3
per ha	1st Cost of Production (Yen/ha)	16,763	123,539	1,373,260
	2nd Cost of Production (Yen/ha)	33,095	150,895	1,773,200
per 1 ton of Unmilled Rice	1st Cost of Production (Yen/ton)	16,808	25,212	259,106
	2nd Cost of Production (Yen/ton)	20,489	30,734	334,566
Breakdown	Material Cost (Yen/ton)	1,933	7,149	45,213
	Machinery, Fuel Cost (Yen/ton)	4,789	6,276	93,085
	Charge/Fee (Yen/ton)	1,602	6,291	17,140
	Labour Cost (Yen/ton)	11,434	3,698	97,096
	Land Cost (Yen/ton)	3,963	3,160	58,813

Note. 2nd cost of production=1st cost of production+land cost+interest

Proportion of the Production Cost

	Material Cost	Machinery, Fuel Cost	Charge/Fee	Labour Cost	Land Cost	(unit:Yen/ton) (%)
Thailand	1,933 (8.1)	4,789 (20.2)	1,602 (6.8)	11,434 (48.2)	3,963 (16.7)	
America	7,149 (26.9)	6,276 (23.6)	6,291 (23.7)	3,698 (13.9)	3,160 (11.9)	
Japan	45,213 (14.5)	93,085 (29.9)	17,140 (5.5)	97,096 (31.2)	58,813 (18.9)	

PART-3 PROSPECTIVE OF THE AGRICULTURAL COMMODITIES

1. Paddy/Rice

Thailand produces about 20 million tons of paddy per year and 60 % of which are for domestic consumption and remainders for exporting, contributing 20 % to the total exports and occupying about 40 % of the world paddy market. Planting area is affected by world market price, fluctuating from 8.6 million ha to 9.6 million ha over these seven(7) years.

Declining rice price causes lack of interest among farmers, especially in dry-season irrigated cultivation. Thai government plans to decrease second rice by 560,000 ha in three years from 1994 to 1996. The World Bank forecasts the price in the commodity price outlook at 267 \$/ton in 2005 compared to 255 \$/ton in 1993, implying continuous strict condition to the producer/farmers.

Malaysia, Senegal, Hong Kong, Singapore and UAE are the major destinations.

2. Cassava

Cassava is one of the major crops together with paddy, exporting 80 to 90 % of total production to EC. However, exporting is limited because of agreement between EC and Thai. The government plans to decrease cassava area by 192,000 ha during 1994 to 1996 according to restructuring policy of agricultural production. Recently, it is notable that domestic demand for cassava flour for processing increasing at an annual rate of 20 %.

3. Sugarcane

World Bank estimates that sugar price will appreciate toward to the year 2000 to 2005 compared to 208 \$/ton. Thai government plans to remove sugarmill from the central plain and eastern part to the North and

Northeastern regions in line with the national policy on rectification of regional income disparity. Sugarcane area in the Study Area is forecasted to be increased within two(2) to three(3) years. However, value of sugar and its products are declining over these five(5) years and price of sugarcane fluctuates.

4. Soybeans

Import of vegetable oil of Thailand has been increasing with the high demand in the domestic markets because of improvement of people's daily life, especially in the urban areas. Soybean oil is considered as premium oil in Thailand. Farmgate price and profitability of soybean are higher than cereal crops and soybean is relatively tolerable to drought. Demand for soybean cakes will also increased together with promotion of animal husbandry.

Agricultural restructuring policy and present market conditions will encourage farmers to plant soybean, resulting in stable increase in cropping areas.

5. Maize

Maize has a tendency to be planted in the areas in which paddy cannot be cropped because of water availability and land conditions. Productivity of maize is generally low and this is resulted in lower profitability. Weak competitiveness of Thai maize in the world market enforces it to market to the domestic markets. Demand for maize in the domestic market is increasing along with increasing demand for raw material for animal feeds. However, maize is considered as non-promising crop from agricultural and agroeconomic point of view. World Bank forecasts the declining price of maize toward to the years of 2000 and 2005.

6. Mungbeans

Mungbeans maintain its good farmgate price at the same level as previous year because of brisk demand in the domestic market, which are mainly processed into noodles. Strong demand for mungbean noodles attributes to people's preference in the food custom. It is forecasted that area for mungbeans will be increased particularly in Udon Thani along with the agricultural policy aiming at restructure of production.

7. Vegetables

Vegetable intake of Thai people has been increasing from 40 kg/capita/year in 1970/71 to 73 kg/capita/year in 1991/92. This tendency will continue along with the economic growth of Thailand and the agricultural policy being encouraged planting value-added crops. Planting vegetables enable farmers to increase cropping intensity though it depends on water availability throughout the year.

Meanwhile, vegetables mainly for processing for exporting use, such as young corn, tomato etc. will be increased.

8. Fruit

Planting fruit trees is one of the major policy in the restructure of agricultural production and Thailand is known as the exporting country of fruit, exporting mango, durian and pineapple etc. to Hong Kong, Japan, Malaysia and so on. As well as vegetables, fruit production aimed at domestic consumption and exporting use will be increased.

9. Broiler

Demand for broiler has increased not only for exporting but also domestic markets because of the economic growth of Thailand, particularly in the Bangkok Metropolis area. Steady demand for broiler in the regional

and domestic market will be expected.

10. Eggs

Per capita annual consumption of eggs in Thailand is estimated at 100 eggs, which is smaller than other countries. Consumption will be increased together with improvement of nutrient intake of the people. Some commercial basis chicken farms exists in the Study Area.

11. Beef

Imports of beef has been increasing along with the increase in beef consumption of the people. In addition, agricultural practices in the Northeastern region are mechanizing, resulting in increase of beef cattle, and current agricultural policy encourages beef production. Therefore, beef production using grassland, agricultural by-products will be expanded.

12. Milk

Imports of milk products show rising tendency in the recent five(5) years with the increase of domestic demand. Per capita milk consumption in Thai in 1990 is about three(3) to four(4) liters per year, which is lower than 10 liters of Malaysia and Singapore. Small scale milk cow farming combined with other crops will have potential. One milk cooling station is situated at Udon Thani.

13. Eucalyptus

Recently, afforestation of Eucalyptus mainly for paper manufacturing has been paid attention in Thailand because of its fast growing being cut within five(5) to 10 years. A part of pulp and tips produced at Khon Kaen are exporting to Korea, Japan and Taiwan. Afforested areas with Euca-

lyptus are often observed in the Study Area. Taking into consideration the agricultural policy and declining forest areas in the Study Area, Eucalyptus planting will be increased.

PART-4 STATISTICAL DATA

CHAPTER 1. National, Regional and Changwat Levels

1. POPULATION
2. LAND
3. FOREIGN TRADE
4. 7TH 5 YEAR PLAN
5. AGRICULTURE
6. ECONOMY
7. IRRIGATION
8. OTHERS

Socio-Economic Indicators of Thailand

Items	1980	1990
1. Total Land (ha)	51,311,502	51,311,502
2. Population (1,000)	44,825	54,549
3. Population aged 13 years and over (1,000)	23,142	31,297
of which farmers and related workers (1,000)	16,662	21,061
4. Housing characteristics (%)		
-Piped water	18.1	29.7
-Electrification	43.0	89.7
-Sanitary types of toilet	54.5	86.1
-TV sets	23.4	46.2
-Refrigerators	17.3	36.0
-Gas for cooking	9.4	34.0
-Chacoal for cooking	53.7	36.8
-Motorcycles	20.4	40.0
5. Land Use (1,000 ha)	1988	1993
-Paddy	11,870	10,838
-Field crops	5,715	4,159
-Vegetables	164	185
-Fruit trees	3,126	2,992
-Grassland	762	224
-Forest	NA	306
-Idleland	1,229	502
-Others	276	265
6. Agricultural Production (1,000 ton)	1991/92	1992/93
-Paddy	20,400	19,917
-Maize	3,793	3,672
-Cassava	20,356	20,203
-Sugarcane	47,480	39,827
-Mungbeans	304	261
-Sorghum	250	250
-Soybeans	436	480
-Groundnut	157	137
-Cotton	129	99
-Kenaf	127	140
7. Number of Farm Households (1,000)	1987	1993
-Whole Thailand	4,990	5,647
-Central	931	934
-Northern	1,290	1,408
-Northeastern	2,101	2,506
-Southern	667	799

8. Income and Expenditure of Households	1990	1992
-Average family size	4.1	3.9
-Average annual income/family (Bahts)	67,500	84,744
-Average annual family income in village (Bahts)		
Central	63,276	71,796
Northern	48,396	51,732
Northeastern	38,292	48,336
Southern	54,876	64,344
9. GDP and GNP (million Bahts)	1991	1992
-GDP at current price	2,505,629	2,804,935
-GNP at current price	2,466,741	2,757,954
-per Capita GNP (Bahts)	43,335	47,749
-GDP at 1988 constant price (million Bahts)	2,110,978	2,270,527
-GNP at 1988 constant price (million Bahts)	2,079,545	2,234,166
-per Capita GNP (Bahts)	36,533	38,680
10. Current Labour Force (1,000)	57,234	57,827
-Total labour force	32,143	32,906
-Current labour force	32,008	32,841
of which, employed	31,139	32,385
of which, unemployed	869	456
11. Foreign Trade (million Bahts)	1992	1993
-Exports	834,839	951,360
-Imports	1,033,246	1,170,848
-Balance of trade	-198,407	-219,488

Source. Thailand in Figures 1994 NSO

POPULATION

Mid-Year Population of Thailand

	Persons (1,000)	Rate of Increase (%)
1984	50,637	
1985	51,580	1.86
1986	52,511	1.80
1987	53,427	1.74
1988	54,326	1.68
1989	55,214	1.63
1990	56,082	1.57
1991	56,923	1.50
1992	57,760	1.47
1993	58,580	1.42

Source: Agricultural Statistics of Thailand, 1993/94

Population by Region

	Whole Kingdom	North- Eastern	Northern	Central Plain	Southern
1990	56,303,273	19,828,941	10,993,792	18,367,778	7,112,762
1991	56,961,030	20,044,480	11,075,738	18,633,080	7,207,732
1992	57,788,965	20,059,015	11,682,315	18,465,889	7,401,746
1993	58,336,072	20,170,986	11,814,337	18,866,960	7,483,789
Annual Increase (%)	1.18	0.57	2.42	0.9	1.71

Source: Statistical Yearbook, 1994

Number of Population by Activity in Thailand

	(unit: million persons)					Change (1994/1990)
	1990	1991	1992	1993	1994	
Population	56.1	56.9	57.8	58.6	59.1	1.05
Persons in Labor Force	31.7	31.8	32.4	32.9	33.5	1.06
Employed Persons	30.8	30.8	31.5	32.0	32.6	1.06
-In Agriculture	19.7	18.7	18.9	18.8	18.8	0.95
-In Non-Agriculture	11.1	12.1	12.6	13.2	13.8	1.24
Unemployed Rate (%)	4.9	3.1	3.0	2.6	2.6	0.53

Source: Trade Statistics and Economic Indicators of Thailand,
Ministry of Commerce

Employed Person by Occupation in Thailand

	(unit: thousand)	
	1991	1992
Total	31,138	31,497
1. Professional, Technical and Related Workers	1,081	1,236
2. Administrative, Executive and Managerial Workers	554	663
3. Clerical Workers	986	99
4. Sales Workers	3,063	2,946
5. Farmers, Fishermen, Hunters, Loggers, and Related Workers	18,808	19,700
6. Workers in Transport and Communication Occupations	911	966
7. Craftsmen, Production Process Workers and Laborers	4,510	4,624
8. Service, Sports and Recreation Workers	1,215	1,242
9. Workers not Classified	11	22

Source: Statistical yearbook, 1994

LAND

Land Use of Thailand, 1991

	(unit:ha)			
	Farm Holding Area	Forest Land	Unclassified	Total Land
Whole Kingdom	21,292,190	13,669,805	16,349,507	51,311,502
Northeastern	9,234,963	2,179,871	5,470,601	16,885,434
Northern	4,703,084	7,714,297	4,547,047	16,964,429
Central	4,580,716	2,430,743	3,378,661	10,390,120
Southern	2,773,426	1,344,894	2,953,198	7,071,519

Source: Agricultural Statistics of Thailand, 1993/94

Land Use of Farm Holding Area

	Whole Kingdom (unit:ha)					Change 1991/1987
	1987	1988	1989	1990	1991	
Housing Area	502,445	516,314	525,626	537,850	565,839	1.13
Paddy Land	11,547,067	11,332,426	11,230,381	11,109,777	11,090,080	0.96
Field Crop	5,353,213	5,318,548	5,302,050	5,346,432	5,362,981	1.00
Fruit Tree	2,559,919	2,840,802	2,985,623	3,108,607	3,215,746	1.26
Vegetable	120,553	120,132	113,397	128,936	137,309	1.14
Grassland	133,987	122,954	120,038	118,470	113,090	0.84
Idle Land	567,470	615,224	610,304	588,768	579,401	1.02
Other land	207,766	217,241	205,572	201,065	227,744	1.10
Total	20,992,420	21,083,641	21,092,990	21,139,905	21,292,190	1.01
No. of Farm	4,989,508	5,040,132	5,056,906	5,073,471	5,130,531	1.03
Farm Size (ha)	4.21	4.18	4.17	4.17	4.15	0.99

Source: Agricultural Statistics of Thailand, 1993/94

	Northeastern (unit:ha)					Change 1991/1987
	1987	1988	1989	1990	1991	
Housing Area	180,026	182,180	186,679	190,103	200,434	1.11
Paddy Land	5,971,027	5,956,447	5,981,354	5,992,095	6,075,655	1.02
Field Crop	2,142,925	2,097,719	2,099,605	2,100,516	2,152,788	1.00
Fruit Tree	212,743	234,505	252,239	268,827	295,057	1.39
Vegetable	27,708	29,107	29,920	32,491	33,454	1.21
Grassland	76,975	70,774	67,983	66,584	63,171	0.82
Idle Land	350,831	352,863	349,408	346,655	330,680	0.94
Other land	85,514	86,742	77,530	76,923	83,403	0.98
Total	9,047,748	9,010,337	9,044,719	9,074,194	9,234,643	1.02
No. of Farm	2,101,938	2,116,097	2,117,488	2,131,448	2,183,557	1.04
Farm Size (ha)	4.30	4.26	4.27	4.26	4.23	0.98

Source: Agricultural Statistics of Thailand, 1993/94

Land Use of Farm Holding Area (1993)

Land Use	Whole Kingdon	Central Plain	(unit:ha)		
			Northern	North- eastern	Southern
Total	19,476,310	3,881,298	4,054,803	8,920,964	2,613,485
Rice	10,838,782	1,808,030	2,357,913	6,197,142	469,937
Field Crops	4,159,962	1,153,689	1,210,024	1,785,015	11,234
Vegetables	185,869	71,380	59,486	47,160	7,844
Fruit Trees	1,469,080	484,155	274,724	205,803	504,398
Para Rubber	1,523,774	119,298	751	27,642	1,376,084
Grassland	224,508	46,208	25,177	140,818	12,305
Forest	306,010	24,480	20,141	241,804	19,584
Idle Land	502,813	92,432	70,594	172,727	167,061
Others	265,511	81,628	35,992	102,854	45,038

Percentage of Farm Holding Area by Land Use (1993)

Land Use	Whole Kingdon	Central Plain	(unit:%)		
			Northern	North- eastern	Southern
Total	100.0	100.0	100.0	100.0	100.0
Rice	55.6	46.6	58.1	69.5	18.2
Field Crops	21.4	29.7	29.8	20.0	0.4
Vegetables	1.0	1.8	1.5	0.5	0.3
Fruit Trees	7.5	12.5	6.8	2.3	19.3
Para Rubber	7.8	3.1	0.1	0.3	52.5
Grassland	1.1	1.2	0.6	1.6	0.5
Forest	1.6	0.6	0.5	2.7	0.7
Idle Land	2.6	2.4	1.7	1.9	6.4
Others	1.4	2.1	0.9	1.2	1.7

Source: Statistical Yearbook, 1994

Number of Farm Households by Region

	1987	1988	1989	1990	1991	Change 1991/1987
Whole Kingdom	4,989,595	5,040,219	5,056,993	5,073,558	5,130,618	1.03
	100.0	100.0	100.0	100.0	100.0	
Northeastern	2,101,938	2,116,097	2,117,488	2,131,448	2,183,557	1.04
	42.1	42.4	42.4	42.7	43.8	
Northern	1,289,772	1,304,394	1,295,829	1,298,423	1,281,697	0.99
	25.8	26.1	26.0	26.0	25.7	
Central	930,600	927,133	925,123	909,088	898,444	0.97
	18.7	18.6	18.5	18.2	18.0	
Southern	667,198	692,508	718,466	734,512	766,833	1.15
	13.4	13.9	14.4	14.7	15.4	

Source. Agricultural Statistics of Thailand, 1993/94

Area of National Forest

(unit:ha)

	National Forest Reserves					Forest Land
	North- Eastern	Northern	Central	Southern	Total	
1984	5,224	9,941	3,539	2,548	21,253	15,265,440
1985	5,344	10,370	3,484	2,574	21,772	15,086,560
1986	5,356	10,629	3,487	2,744	22,216	14,842,400
1987	5,469	10,939	3,488	2,813	22,710	14,607,064
1988	5,483	11,426	3,488	2,817	23,214	14,380,829
1989	5,509	11,421	3,492	2,817	23,239	14,341,700
1990	5,513	11,390	3,492	2,819	23,214	13,998,166
1991	5,513	10,009	4,678	2,819	23,019	13,669,805
1992	5,513	10,009	4,678	2,818	23,018	NA
1993	5,513	10,009	4,678	2,818	23,018	13,352,100

Source. Agricultural Statistics of Thailand, 1993/94

FOREIGN TRADE

Trade Balance of Thailand (1980-1994)

	(unit: million Bahts)		
	Exports	Imports	Balance
1980	133,197	193,618	-60,421
1981	153,001	219,026	-66,025
1982	159,728	196,616	-36,888
1983	146,472	236,609	-90,137
1984	175,237	245,155	-69,918
1985	193,366	251,169	-57,803
1986	233,383	241,358	-7,975
1987	299,853	334,209	-34,356
1988	403,570	513,114	-109,544
1989	516,315	662,679	-146,364
1990	589,813	852,982	-263,169
1991	725,449	959,408	-233,959
1992	824,643	1,033,245	-208,602
1993	940,863	1,170,846	-229,983
1994	1,137,602	1,369,260	-231,658

Source: Trade Statistics and Economic Indicators of Thailand.

Thailand's Exports by Country of Destination 1985 and 1994

	Value (million Bahts)			
	1985	%	1994	%
Total Trade	193,365.5	100.0	1,137,601.6	100.0
Japan	38,016.3	19.7	239,099.7	21.0
USA	25,828.2	13.4	194,276.2	17.1
Singapore	15,350.2	7.9	155,050.2	13.6
Netherland	13,771.5	7.1	59,990.0	5.3
Malaysia	9,646.4	5.0	40,031.7	3.5
Hongkong	7,807.5	4.0	33,818.2	3.0
China	7,367.2	3.8	31,628.2	2.8
Germany	7,220.3	3.7	27,630.9	2.4
United Kingdom	4,703.2	2.4	24,691.1	2.2
Saudi Arabia	4,381.6	2.3	23,336.1	2.1
Other Countries	59,273.1	30.7	308,049.3	27.1

Source: Trade statistics and economic indicators of Thailand, Ministry of Commerce

Thailand's Major Trading Partners 1985 and 1994

	Value (million Bahts)			
	1985	%	1994	%
Total Trade	444,534.9	100.0	2,506,862.0	100.0
Japan	92,414.9	20.8	607,597.3	24.2
USA	66,450.5	14.9	401,162.9	16.0
Singapore	34,095.9	7.7	241,494.8	9.6
Malaysia	24,471.0	5.5	120,057.8	4.8
Germany	20,805.8	4.7	94,222.0	3.8
Netherland	16,253.9	3.7	94,055.3	3.8
China	13,440.4	3.0	77,352.2	3.1
Saudi Arabia	11,502.9	2.6	64,117.1	2.6
United Kingdom	11,038.1	2.5	62,793.8	2.5
Taiwan	10,923.2	2.5	58,233.5	2.3
Other Countries	143,138.3	32.2	685,775.3	27.4

Source: Trade statistics and economic indicators of Thailand, Ministry of Commerce

Value of Agricultural and Total Exports

	(unit: Million Bahts)				
	1989	1990	1991	1992	1993
Total Value of Agricultural and Products Exports (1)	230,536.7	224,168.0	256,035.9	284,980.1	279,650.6
Rice	45,462.3	27,769.5	30,515.8	36,213.8	32,946.6
Rice Products	926.5	1,037.6	1,237.6	1,521.8	1,749.7
Food Crops	6,607.1	7,150.4	7,117.5	3,486.1	3,835.9
Cassava Products	23,974.8	23,136.8	23,175.1	27,592.8	19,552.1
Sugar and Products	20,204.8	19,119.1	16,669.7	20,675.5	13,388.5
Oil Seeds	313.0	521.7	420.4	347.7	215.7
Vegetable Oils	148.6	154.5	158.8	160.9	165.2
Fiber Crops	7,897.6	8,438.2	8,669.9	8,953.6	8,967.5
Garden Crop and Products	3,613.1	4,137.5	5,777.0	5,864.4	7,092.1
Fruits and Products	8,507.3	11,198.1	14,836.3	16,058.9	14,299.2
Spices	250.4	268.1	211.8	286.6	262.1
Miscellaneous Crops	1,119.3	1,347.5	1,409.7	1,569.5	1,520.2
Tea and Coffee	1,926.2	1,309.8	761.1	1,334.0	1,328.1
Other Food Products	1,898.8	2,408.6	3,279.9	4,363.2	5,080.2
Tobacco and Products	1,396.0	1,845.6	2,874.0	3,655.2	2,672.6
Rubber and Products	31,952.6	30,155.9	32,156.6	38,137.1	40,631.2
Live Animals	90.3	83.5	69.1	100.1	163.6
Animal Feed	4,171.4	3,848.1	4,865.9	4,814.6	5,128.8
Animal Products	8,875.5	11,291.1	15,170.3	17,019.8	16,829.6
Milk Products	231.3	295.8	307.2	357.6	527.5
Fertilizer and Pesticides	125.6	253.6	380.8	291.6	315.2
Machinery and Appliances for Agricultural Purposes	88.0	141.5	266.2	298.4	407.3
Fishery Products	50,002.6	57,802.2	73,958.1	78,190.4	86,191.6
Paper and Products	1,761.2	1,232.5	1,634.1	1,937.1	2,259.6
Wood and Products	8,353.5	8,595.4	9,505.9	10,916.1	12,912.8
Forestry Products	637.2	623.8	601.2	763.8	847.8
Other Agricultural Products	1.7	1.6	5.9	69.5	359.9
Value of Total Exports (2)	514,729.5	588,157.4	723,111.8	824,357.3	939,111.6
(3) = (1)/(2) x 100 (%)	44.8	38.1	35.4	34.6	29.8

Source: Agricultural Statistics of Thailand, crop year 1993/94

Value of Agricultural and Total Imports

	(unit: Million Bahts)				
	1989	1990	1991	1992	1993
Total Value of Agricultural and Products Imports (1)	102,244.5	125,710.5	142,869.3	158,454.4	159,889.0
Food Crops	3,401.8	3,809.6	4,642.4	7,350.1	6,658.8
Sugar Products	125.5	137.4	182.0	217.4	237.0
Cocoa and Products	269.4	351.5	371.5	469.1	433.0
Tea and Coffee	53.2	73.4	75.5	111.3	123.1
Spirits and Beverages	2,234.0	3,174.2	3,917.7	3,337.4	3,830.6
Oil Seeds	82.2	295.9	209.4	1,122.2	505.0
Vegetable oils	499.1	421.2	480.4	769.5	816.8
Fiber Crops	15,335.0	18,368.1	22,582.0	21,471.0	18,693.5
Garden Crop and Products	354.5	390.6	475.8	784.9	967.5
Fruits and Products	563.0	850.9	771.1	1,204.1	2,068.8
Spices	94.3	81.4	70.6	76.6	89.6
Miscellaneous Crops	68.4	113.6	93.5	109.0	128.3
Other Food Products	718.1	754.0	859.0	1,065.0	1,175.5
Tobacco	1,291.1	1,696.0	1,687.0	2,025.4	2,264.4
Rubber and Products	3,499.5	5,020.7	5,040.2	6,493.5	7,732.6
Live Animals	671.5	720.6	1,126.6	791.5	581.7
Animal Feed	4,149.5	4,934.4	6,219.6	8,524.1	10,459.4
Animal Products	6,191.5	8,721.5	10,817.0	12,867.0	13,533.9
Milk Products	3,288.8	4,180.2	4,031.1	5,570.3	5,163.8
Fishery Products	18,705.6	20,179.5	26,353.3	23,270.2	19,247.9
Paper and Products	9,814.6	12,115.1	14,748.4	16,839.9	18,916.8
Fertilizer	10,182.7	11,019.8	10,334.6	12,585.8	13,693.7
Pesticides	2,856.1	353.8	2,811.0	3,286.1	3,052.3
Machinery and Appliances for Agricultural Purpose	5,730.6	8,605.1	6,502.7	6,996.9	7,967.5
Wood and Products	11,074.3	14,607.2	17,023.0	19,642.8	20,027.0
Forestry Products	981.7	1,149.4	1,436.9	1,426.8	1,513.7
Other Agricultural Products	8.5	3.4	5.0	46.6	6.8
Value of Total Imports (2)	662,678.8	852,981.7	959,408.0	1,033,244.7	1,170,846.4
(3) = (1)/(2) x 100 (%)	15.4	14.7	14.9	15.3	13.7

Source: Agricultural Statistics of Thailand, crop year 1993/94

Principal Exports 1992-1994

	(unit: Million Bahts)					
	1992		1993		1994	
	Value	%	Value	%	Value	%
Garments	86,773.9	10.5	89,594.1	9.5	100,679.3	8.9
Automatic Data Processing Machines and Parts	57,728.1	7.0	65,271.0	6.9	94,590.2	8.3
Frozen Shrimps and Prawns	31,708.6	3.8	37,843.5	4.0	49,155.6	4.3
Precious Stones and Jewelry	39,266.4	4.8	43,495.0	4.6	47,088.7	4.2
Electronic Integrated Circuits	28,622.3	3.5	35,550.0	3.8	45,310.8	4.0
Rubber	28,924.7	3.5	29,183.1	3.1	41,824.0	3.7
Footwears and Parts	25,642.3	3.1	27,941.9	3.0	39,261.0	3.5
Rice	36,213.8	4.4	32,958.6	3.5	39,187.3	3.5
Canned Fish	24,424.6	3.0	25,659.8	2.7	31,995.8	2.8
Radio-Broadcast Receivers, Television Receivers and Parts	20,352.0	2.5	22,205.7	2.4	28,031.9	2.5

Source: Trade Statistics and Economic Indicators of Thailand.

Exports Structure 1985 and 1994

	1985		1994	
	Value (million B)		Value (million B)	
	1985	%	1994	%
Agricultural Products	78,728.0	40.7	191,333.1	16.8
Agro-Industrial Products	24,383.6	12.6	99,216.4	8.7
Principal manufacturing Products	66,589.9	34.4	757,014.1	66.5
Mining and Fuel Products	9,384.2	4.9	5,679.0	0.5
Others	14,270.7	7.3	84,359.0	7.4

Source: Trade statistics and economic indicators of Thailand,
Ministry of Commerce

Trade between Thailand and Laos

Exports	1993	1994	1994/1993
	1,000 Bahts	1,000 Bahts	
Total Exports	4,431,204	7,326,271	1.65
1. Motorcycles, parts and accessories	860,242	1,235,825	1.44
2. Plastic products	69,857	505,418	7.24
3. Woven fabrics	156,653	267,565	1.71
4. Motor cars, parts and accessories	111,394	175,036	1.57
5. Chemical products	133,778	167,528	1.25
6. Sugar	55,388	137,807	2.49
7. Rubber products	106,937	137,677	1.29
8. Iron or steel products	66,004	123,632	1.87
9. Rice	9,936	123,028	12.38
10. Milk and cream	102,085	120,048	1.18
11. Pharmaceutical products	85,608	119,948	1.40
12. Ceramic products	46,455	119,861	2.58
13. Bicycles, parts and accessories	77,869	112,329	1.44
14. Electric instantaneous and parts thereof	18,057	94,990	5.26
15. Footwear and parts thereof	53,580	93,689	1.75

Imports	1993	1994	1994/1993
	1,000 Bahts	1,000 Bahts	
Total Imports	1,598,840	1,738,063	1.09
1. Wood in rough, sawn or chipped wood	1,420,393	1,489,935	1.05
2. Wooden products	43,133	87,921	2.04
3. Other metals waste and scrap	40,899	38,783	0.95
4. Raw hide and leather	16,022	30,633	1.91
5. Tobacco leaves	-	25,387	-
6. Crude mineral	5,198	6,051	1.16
7. Machines for industrial use	4,078	4,591	1.13
8. Clothes, footwear and other textiles	131	2,434	18.58
9. Fabrics	310	2,374	7.66
10. Buses and trucks	-	1,000	-
11. Pulp, waste and scrap of paper	158	884	5.59
12. Oil seeds and oleaginous fruits	1,802	827	0.46
13. Miscellaneous goods	201	526	2.62
14. Tractors	786	500	0.64
15. Textile fibers	-	408	-

Source: Trade Statistics and Economic Indicators of Thailand 1994
Department of Business Economics, Ministry of Commerce

ECONOMY

Gross National Product at 1988 Prices by Industrial Sector

	(unit: million Bahts)			
	1990	1991	1992	Annual Growth (%)
Agriculture	266,227	279,493	290,586	4.47
Crops	163,189	173,524	180,411	5.14
Livestock	29,171	29,436	30,307	1.93
Fisheries	30,075	31,024	31,871	2.94
Forestry	6,284	5,762	5,486	-6.56
Agricultural Services	9,585	9,237	9,400	-0.97
Simple Agricultural Processing	27,923	30,510	33,111	8.89
Mining and Quarrying	31,051	36,063	37,966	10.58
Manufacturing	542,669	606,897	671,339	11.23
Construction	116,606	130,462	135,038	7.61
Electricity and Water Supply	46,867	51,812	57,392	10.66
Transportation and Communication	146,753	157,035	171,277	8.03
Wholesale and Retail Trade	341,137	364,211	382,671	5.91
Banking, Insurance and Real Estate	108,111	113,106	142,202	14.69
Ownership of Dwellings	60,756	63,181	65,139	14.95
Public Administration and Defence	61,366	64,938	66,562	4.15
Services	231,839	243,780	250,355	3.92
GDP	1,953,382	2,110,978	2,270,527	7.81
Net factor income Payment from the Rest of the World	-23,681	-31,433	-36,361	
GNP	1,929,701	2,079,545	2,234,166	7.6
Per Capita GNP (Bahts)	34,409	36,533	38,680	

Source: Statistical Yearbook, 1994

Gross Domestic Product (GDP) by Sector at 1988 Prices

	(unit: million Bahts)							
	Agricultural Sector					Non-Agriculture		Total
	Crops	Livestock	Fishery	Forestry	Agricultural Services	Simple Processing	Non-Agriculture	
1984	139,171	20,008	20,429	11,503	8,980	17,427	920,835	1,138,353
1985	146,934	20,601	20,193	11,424	9,403	18,769	963,931	1,191,255
1986	141,776	23,012	21,816	12,274	9,225	20,088	1,028,986	1,257,177
1987	136,696	24,912	24,558	11,745	9,164	21,271	1,148,501	1,376,847
1988	157,783	26,022	25,254	10,489	9,835	22,963	1,307,458	1,559,804
1989	175,031	28,432	27,936	8,487	9,957	26,726	1,473,383	1,749,952
1990	163,189	29,171	30,075	6,284	9,585	27,923	1,687,155	1,953,382
1991	173,524	29,436	31,024	5,762	9,237	30,510	1,831,485	2,110,978
1992	180,411	30,307	31,871	5,486	9,400	33,111	1,979,941	2,270,527
1993	174,816	32,124	36,197	3,973	8,816	32,831	2,188,521	2,477,278
Annual Growth (%)	2.57	5.40	6.56	-11.14	-0.20	7.29	10.10	8.88

Source: Agricultural Statistics of Thailand, 1993/94

Gross Provincial Product at Current Prices by Industrial Sector in Northeastern Region

	1989	1990	1991	(unit:1,000 Bahts)		Proportion Agricultural	
				1992	1993	in 1993 (%)	Composition (%)
Agriculture	64,900,316	67,577,490	75,381,209	81,759,754	67,975,330	20.2	100.0
Crops	47,421,280	48,505,041	55,921,039	59,474,079	46,604,917	13.8	68.6
Livestock	8,500,897	9,478,833	9,952,611	11,053,968	10,554,167	3.1	15.5
Fisheries	961,726	1,281,119	1,206,403	1,041,273	1,169,103	0.3	1.7
Forestry	445,626	416,709	115,923	87,980	26,677	0.0	0.0
Agricultural Services	2,783,600	2,825,941	2,756,480	3,168,192	2,767,038	0.8	4.1
Simple Agricultural Processing Products	4,787,187	5,069,847	5,428,687	6,934,262	6,853,358	2.0	10.1
Mining and Quarrying	690,423	1,467,409	3,305,433	3,703,669	4,174,106	1.2	
Manufacturing	20,119,558	21,384,634	25,224,410	22,893,059	25,237,448	7.5	
Construction	15,913,250	20,270,622	24,608,906	26,346,752	26,808,076	7.9	
Electricity and Water Supply	3,252,965	3,457,596	3,878,670	4,755,226	5,619,069	1.7	
Transportation and Communication	7,777,402	9,699,299	10,804,180	13,736,054	15,917,727	4.7	
Wholesale and Retail Trade	47,564,971	55,987,934	61,978,218	67,143,488	75,363,731	22.3	
Banking, Insurance and Real Estate	5,892,626	6,906,736	8,387,258	10,897,938	14,344,448	4.3	
Ownership of Dwellings	12,760,579	13,811,135	14,745,704	14,800,652	15,911,746	4.7	
Public Administration and Defence	14,903,507	17,920,235	21,232,761	25,115,125	27,819,238	8.2	
Services	31,088,793	36,294,762	42,492,578	50,745,559	58,065,630	17.2	
Total Gross Provincial Product	224,864,400	254,777,852	292,039,327	322,407,176	337,236,549	100.0	
Per capita GPP (Bahts)	11,793	13,187	14,927	16,277	16,818		
Per ha of farm holding area (Bahts)	10,661	12,052	13,716	15,142	15,839		

Gross Provincial Product at 1988 Constant Prices in Northeastern Region

	1989	1990	1991	(unit:1,000 Bahts)		Annual Growth (%)
				1992	1993	
Agriculture	61,236,298	63,484,161	63,547,557	65,960,294	62,064,951	0.3
Crops	44,724,932	46,452,816	47,416,233	48,004,657	44,111,455	-0.3
Livestock	8,327,054	8,845,512	8,485,650	9,801,523	10,256,544	5.3
Fisheries	932,317	1,030,420	1,030,826	924,934	956,520	1.7
Forestry	392,523	362,759	91,512	68,299	21,470	-51.6
Agricultural Services	2,479,186	2,426,401	2,330,553	2,496,597	2,198,456	-3.1
Simple Agricultural Processing Products	4,380,286	4,366,253	4,192,783	4,664,284	4,480,506	0.6
Mining and Quarrying	567,626	1,065,093	2,438,130	2,724,638	2,899,312	50.3
Manufacturing	16,776,447	19,197,704	21,879,729	20,455,679	20,615,467	5.3
Construction	14,898,767	17,410,833	19,462,746	19,347,543	18,744,575	5.9
Electricity and Water Supply	3,243,583	3,421,408	3,758,695	4,184,074	4,687,909	9.6
Transportation and Communication	7,562,440	9,497,164	10,385,970	12,142,163	12,905,634	14.3
Wholesale and Retail Trade	45,661,194	49,729,747	52,899,236	54,309,855	58,149,978	6.2
Banking, Insurance and Real Estate	5,597,383	6,194,608	7,114,407	8,878,833	11,299,085	19.2
Ownership of Dwellings	12,351,716	12,695,604	12,983,540	12,493,017	12,768,419	0.8
Public Administration and Defence	13,209,164	14,363,810	15,940,141	15,800,184	16,102,588	5.1
Services	27,754,061	29,301,036	31,907,062	33,604,126	35,347,848	6.2
Total Provincial Gross Product	208,859,279	226,369,618	242,317,213	249,900,406	255,585,766	5.2

Source: NESDB

Poverty Incidence

	Poverty Incidence (%)		
	1986	1988	1990
Whole Thailand	26.33	21.17	17.98
Northeastern	41.31	32.20	27.67
Villages	43.35	33.87	29.11
Sanitary Districts	26.08	19.17	18.46
Municipal Areas	19.93	20.92	18.95
Northern	24.07	18.94	15.56
Villages	26.00	20.95	16.78
Sanitary Districts	18.92	15.74	10.15
Municipal Areas	8.86	10.65	10.59
Southern	22.53	19.97	17.98
Villages	25.20	22.56	19.71
Sanitary Districts	10.73	10.89	13.75
Municipal Areas	9.74	9.31	9.58
Central	16.86	15.20	12.66
Villages	18.19	17.32	13.91
Sanitary Districts	13.92	9.59	10.74
Municipal Areas	10.66	8.20	6.85
Bangkok Metropolis	5.23	5.35	3.97
All Villages	31.93	26.11	22.08
All Sanitary Districts	18.77	14.60	13.30
All Municipal Areas	12.10	11.16	10.85

Source: NESDB

Poverty Line

	(unit: Bahts/capita/year)	
	Village and Sanitary Districts	Municipal Areas
1986	3,823	5,834
1988	4,141	6,324
1990	4,569	7,148

Source: NESDB

Gross Regional Product at 1988 Prices

	Million Bahts			Per Capita (Bahts)		
	1989	1990	1991	1989	1990	1991
Whole Kingdom	1,751,515	195,429	2,108,249	31,722	34,846	37,037
Central Region	1,188,246	1,353,785	1,470,264	65,529	73,296	78,276
Northern Region	188,074	196,118	210,856	17,615	18,152	19,307
Southern Region	163,703	177,248	185,869	22,318	23,671	24,281
Northeastern Region	211,492	227,078	241,260	11,091	11,753	12,332
Nong Khai	10,774	10,448	10,682	12,675	12,205	12,292
Udon Thani	19,618	20,585	22,251	11,217	11,577	12,327

Source: Statistical Yearbook, 1994

Average Monthly Income and Expenditure by Region

	Average Family Size	(uni: Bahts)			
		Average Monthly Income		Average Monthly Expenditure	
		Per Family	Per Person	Per Family	Per Person
Whole Kingdom	3.9	7,062	1,811	6,529	1,674
Greater Bangkok	3.4	15,951	4,691	13,479	3,964
Central Plain	3.8	6,983	1,838	6,493	1,709
Northern	3.7	5,255	1,420	5,028	1,359
Northeastern	4.3	4,525	1,052	4,689	1,090
Southern	4.1	6,383	1,557	5,746	1,401

Source: Statistical Yearbook, 1994

Average Annual Income and Expenditure by Region and Area

(unit: Bahts)

	Family Size	Average Annual Income		Average Annual Expense		Balance	
		Per Household	Per Capita	Per Household	Per Capita	Per Household	Per Capita
Whole Kingdom	3.9	84,744	21,729	78,348	20,089	6,396	1,640
Greater Bangkok	3.4	191,412	56,298	161,748	47,573	29,664	8,725
Central Plain	3.8	82,872	21,808	77,916	20,504	4,956	1,304
Municipal Areas	3.4	136,968	40,285	116,064	34,136	20,904	6,149
Sanitary Districts	3.5	98,988	28,282	90,312	25,803	8,676	2,479
Villages	3.9	71,796	18,403	69,900	17,923	1,896	486
Northern Region	3.7	63,060	17,043	60,338	16,307	2,722	736
Municipal Areas	3.4	146,952	43,221	114,804	33,766	32,148	9,455
Sanitary Districts	3.4	80,976	23,816	72,132	21,215	8,844	2,601
Villages	3.7	51,732	13,982	52,956	14,312	-1,224	-330
Northeastern Region	4.3	54,300	12,628	56,266	13,086	-1,966	-458
Municipal Areas	3.6	132,492	36,803	115,956	32,210	16,536	4,593
Sanitary Districts	3.9	77,928	19,982	78,456	20,117	-528	-135
Villages	4.3	48,336	11,241	51,360	11,944	-3,024	-703
Southern Region	4.1	76,596	18,682	68,952	16,818	7,644	1,864
Municipal Areas	3.5	143,328	40,951	106,632	30,466	36,696	10,485
Sanitary Districts	3.7	87,060	23,530	81,912	22,138	5,148	1,392
Villages	4.2	64,344	15,320	61,428	14,626	2,916	694

Source: Report of the 1992 Household Socio-Economic Survey, NSO

Comparison of Average Annual Household Income 1992 to 1990

	Annual Household Income		Percent Change	Disparity Index	
	1990	1992		1990	1992
Whole Kingdom	67,500	84,744	25.5	-	-
Greater Bangkok	140,688	191,412	36.1	100	100
Central	69,924	82,872	18.5	50	43
Northern	56,628	63,060	11.4	40	33
Northeastern	42,348	54,300	28.2	30	28
Southern	61,836	76,596	23.9	44	40
Municipal Areas					
Central	106,896	136,968	28.1	76	72
Northern	120,612	146,952	21.8	86	77
Northeastern	89,748	132,492	47.6	64	69
Southern	99,636	143,328	43.9	71	75
Sanitary Districts					
Central	74,112	98,988	33.6	53	52
Northern	67,176	80,976	20.5	48	42
Northeastern	61,968	77,928	25.8	44	41
Southern	67,968	87,060	28.1	48	45
Villages					
Central	63,276	71,796	13.5	45	38
Northern	48,396	51,732	6.9	34	27
Northeastern	38,292	48,336	26.2	27	25
Southern	54,876	64,344	17.3	39	34

Source: Household and Socio-economic Survey, NSO

Average Annual Household Income by Source and Socio-Economic Class

	Farm Operators				Own-Account, Non-Farm				(unit: Bahts/household/year)					
	Mainly Own- ing Land		Mainly Renting Land		Enterpre- ners, Trade & Industry		Professional, Tech. & Adm. Workers		Farm Workers		General Services Workers		Economically Inactive	
	3.9	4.4	4.4	4.4	3.9	3.2	3.5	4.0	3.7	3.6	3.7	3.7	2.9	
Average family size														
Total annual income	84,744	48,336	58,020	126,432	393,072	228,756	35,820	42,696	124,392	80,100	75,012			
Total current income	83,484	47,844	57,384	125,124	384,264	226,488	35,616	42,432	123,096	79,596	69,864			
Money income	65,628	32,356	42,072	105,528	357,144	190,992	25,008	31,656	100,824	64,836	50,064			
Earning	59,364	30,888	40,380	101,880	352,956	180,144	23,054	30,600	96,468	63,288	43,164			
Wage and salaries	33,024	3,348	6,660	10,356	33,672	171,180	21,336	28,248	88,336	57,276	7,152			
Profits, non-farm	15,348	1,832	1,944	88,740	317,844	6,612	456	376	6,108	4,296	2,400			
Profits from farming	10,668	25,608	31,776	2,388	1,440	1,644	1,272	1,476	1,176	1,560	1,884			
Profits from roomers	324	-	-	396	-	708	-	-	348	156	1,728			
Property income	1,320	192	96	1,800	4,008	3,492	864	60	948	216	6,108			
Land rent for family	108	48	12	72	276	168	156	36	84	24	504			
Other rent, for non-farm	228	-	-	144	-	540	-	-	204	24	1,428			
Interest and dividends	984	144	84	1,584	3,732	2,784	708	24	660	168	4,176			
Current transfers	4,944	1,476	1,596	1,848	180	7,356	1,080	996	3,408	1,332	30,792			
Assistant payments	4,044	1,440	1,548	1,800	180	4,752	972	996	3,024	1,138	24,156			
Pensions and annuities	864	36	48	48	-	2,592	108	-	384	144	6,336			
Scholarship, grants etc.	12	-	-	-	-	12	-	-	-	-	72			
Terminal pay	24	-	-	-	-	-	-	-	-	-	228			
Non-money income	17,856	15,468	15,312	19,596	27,120	35,496	10,608	10,776	22,272	14,760	19,800			
Received as part of pay	1,920	144	228	384	2,820	8,292	1,032	996	6,660	3,360	432			
Home produced	5,448	3,844	7,332	5,856	1,140	1,908	4,260	3,384	1,754	3,144	4,068			
Received free	2,196	1,008	1,488	2,736	2,400	3,756	1,236	2,076	2,760	1,872	5,100			
Rental value of owned home	8,292	5,472	6,264	10,620	20,760	21,540	4,080	4,320	11,088	6,384	10,200			
Other money receipts	1,260	492	636	1,308	8,808	2,268	204	264	1,296	504	5,148			
Insurance proceeds	36	-	-	24	-	480	-	-	-	-	72			
Lottery winnings	456	228	300	720	2,748	564	144	108	456	360	1,260			
Other receipts	768	254	336	564	6,060	1,224	60	156	840	144	3,816			

Source: Report of the 1992 Household Socio-Economic Survey, NSO

Farm cash Income and Farm Expense per Farm by Region, 1991/92

(unit: Bahts)

	North- Eastern	Northern	Central Plain	Southern	Average Whole Kingdom
Cash Farm Income					
Crop	12,959	27,262	56,318	27,258	25,208
Livestock/Poultry	3,601	3,060	15,146	5,770	6,252
Others	2,466	2,948	7,751	3,708	3,583
Total	19,026	33,270	79,215	36,736	35,043
Cash Farm Expense					
Crop	7,396	11,275	30,059	9,053	11,961
Livestock/Poultry	2,067	2,545	17,091	5,892	5,065
Others	3,501	5,315	12,765	3,212	6,785
Total	12,964	19,135	59,915	18,157	23,811
Net Farm Cash Income	6,062	14,135	19,300	18,579	11,232
Non-Farm Cash Income	19,148	17,277	35,736	31,058	22,930
Farm Household Net Cash Income	25,210	31,412	55,036	49,637	34,162
Farm Household Cash Expense	24,005	28,255	66,370	50,695	35,433
Disposable Income	1,205	3,157	-11,334	-1,058	-1,271

Source: Agricultural Statistics of Thailand, 1993/94

Consumer Price Index (1986=100)

	Whole Kingdom			
	1990	1991	1992	1993
All Items	118.8	125.6	130.8	135.1
Food and Beverage	125.7	134.4	140.5	143.5
Clothing	118.6	125.4	131.9	139.7
Housing	113.7	117.2	119.8	122.6
Health and Personal Care	112.3	118.0	124.1	131.2
Transportation and Communication	111.0	119.9	123.8	131.4
Recreation, Reading and Education	117.8	123.8	133.5	141.6
Tobacco and Alcoholic Beverages	118.4	125.4	125.8	126.3

Source: Statistical Yearbook, 1994

	Northeastern			
	1990	1991	1992	1993
All Items	114.0	120.6	128.6	131.9
Food and Beverage	118.4	126.6	137.7	135.9
Clothing	118.2	128.1	140.0	148.6
Housing	108.8	112.3	116.7	122.4
Health and Personal Care	108.6	115.7	128.9	138.7
Transportation and Communication	110.2	116.6	118.8	122.8
Recreation, Reading and Education	115.2	122.5	132.6	142.6
Tobacco and Alcoholic Beverages	115.5	119.5	119.6	118.9

Source: Statistical Yearbook, 1994

Classification of Monthly Household Income by Region (1992)

Monthly Income Class	(unit:%)				
	Whole Kingdom	Central Region	Northern Region	Northeastern Reg.	Southern Region
Total	100.0	100.0	100.0	100.0	100.0
less than 1,000	2.9	1.8	4.1	3.7	2.9
1,000-1,499	6.0	3.2	7.7	9.0	5.9
1,500-1,999	9.1	5.5	11.0	14.3	7.2
2,000-2,499	8.9	8.0	11.1	12.1	6.3
2,500-2,999	8.2	6.6	8.8	11.6	8.2
3,000-3,499	7.6	7.5	8.3	9.5	7.5
3,500-3,999	6.4	6.1	7.7	6.8	7.2
4,000-4,499	5.6	7.0	6.0	5.0	6.3
4,500-4,999	4.6	5.6	4.6	4.3	5.0
5,000-5,999	7.8	9.8	7.3	6.1	9.5
6,000-6,999	5.9	7.8	5.0	4.3	7.2
7,000-7,999	4.2	6.0	3.2	2.5	5.0
8,000-8,999	3.1	4.1	2.8	1.5	3.9
9,000-9,999	2.8	4.0	2.0	1.6	2.8
10,000-10,999	2.3	2.6	1.7	1.0	2.5
11,000-12,999	2.4	4.1	2.1	1.8	3.4
13,000-14,999	2.4	3.0	1.7	1.3	2.0
15,000-19,999	3.5	3.3	2.4	1.8	3.5
20,000-29,999	3.0	2.3	1.8	1.0	2.5
30,000 and over	2.4	1.7	0.7	0.8	1.2

Source: Statistical Yearbook, 1994

Classification of Monthly Household Expenditure by Region (1992)

Monthly Income Class	(unit:%)				
	Whole Kingdom	Central Region	Northern Region	Northeastern Reg.	Southern Region
Total	100.0	100.0	100.0	100.0	100.0
Less than 1,000	1.0	0.5	1.8	1.3	1.2
1,000-1,499	3.8	1.4	6.5	5.5	2.6
1,500-1,999	7.2	4.5	10.4	10.4	4.8
2,000-2,499	10.0	7.1	11.9	14.6	9.1
2,500-2,999	10.6	9.6	10.7	14.5	10.5
3,000-3,499	9.0	8.7	8.3	11.8	10.1
3,500-3,999	8.2	8.6	10.0	8.0	10.0
4,000-4,499	6.1	7.3	6.8	5.1	7.2
4,500-4,999	5.7	6.8	5.1	5.2	7.1
5,000-5,999	8.5	11.7	7.3	7.0	9.3
6,000-6,999	6.6	8.9	5.9	3.9	9.2
7,000-7,999	4.8	6.1	3.9	3.2	5.6
8,000-8,999	4.0	4.9	3.4	2.6	3.7
9,000-9,999	2.4	3.2	1.4	1.2	2.7
10,000-10,999	2.1	2.1	1.5	1.1	1.6
11,000-12,999	2.9	3.1	1.6	1.8	1.7
13,000-14,999	1.8	1.6	1.2	0.7	1.4
15,000-19,999	2.2	2.2	1.2	0.7	0.9
20,000-29,999	1.6	1.0	0.6	0.6	0.8
30,000 and over	1.5	0.7	0.5	0.8	0.5

Source: Statistical Yearbook, 1994

Number of Farm Households with Debt for Agricultural Purpose

Unit	BAAC	Other Banks/ Financial Institutes	Cooperative/ Farmer's Group	Middleman/Private Merchant Lenders	Relative/ Neighbors & Others		Total	
					Farmer's	Others		
Whole Kingdom	Number	1,607,547	16,019	292,165	94,382	137,989	272,693	2,420,795
	Amount (1000 Bahts)	44,957,362	21,138,746	8,523,342	3,254,377	4,731,392	5,662,727	88,267,946
	Bahts/F. H. H	27,986	1,319,605	29,173	34,481	34,288	20,766	36,452
Central	Number	231,759	40,051	56,797	28,724	37,763	63,161	458,255
	Amount (1000 Bahts)	12,901,009	10,977,032	2,523,766	1,111,410	2,281,312	2,844,879	32,639,408
	Bahts/F. H. H	55,666	274,076	44,435	38,693	60,411	45,042	71,235
Northern	Number	421,282	50,302	70,718	23,548	31,574	51,672	649,076
	Amount (1000 Bahts)	10,719,900	3,979,075	1,786,186	891,551	949,983	920,079	19,256,774
	Bahts/F. H. H	25,447	79,104	25,399	37,861	30,088	17,806	29,663
Southern	Number	161,238	18,266	32,020	4,308	3,950	25,824	245,606
	Amount (1000 Bahts)	6,572,103	2,828,151	1,252,910	215,225	180,184	571,597	11,621,170
	Bahts/F. H. H	793,288	51,400	132,630	37,802	64,702	131,036	1,210,858
Northeastern	Number	14,784,360	3,354,488	2,949,480	1,036,191	1,318,913	1,326,172	24,750,594
	Amount (1000 Bahts)	40,760	154,831	39,160	49,959	45,616	22,134	47,316
	Bahts/F. H. H	32,320	1,980	4,760	760	1,220	5,060	46,100
Nong Khai	Number	525,653	104,938	95,596	18,346	18,820	54,271	817,624
	Amount (1000 Bahts)	18,612	65,262	22,238	27,411	20,400	10,121	20,441
	Bahts/F. H. H	78,990	3,630	10,470	2,310	3,660	9,900	108,960
Udon Thani	Number	1,619,602	319,077	301,166	136,091	286,095	106,011	2,768,042
	Amount (1000 Bahts)	16,264	52,999	20,083	24,139	15,426	10,725	17,736
	Bahts/F. H. H	16,264	52,999	20,083	24,139	15,426	10,725	17,736

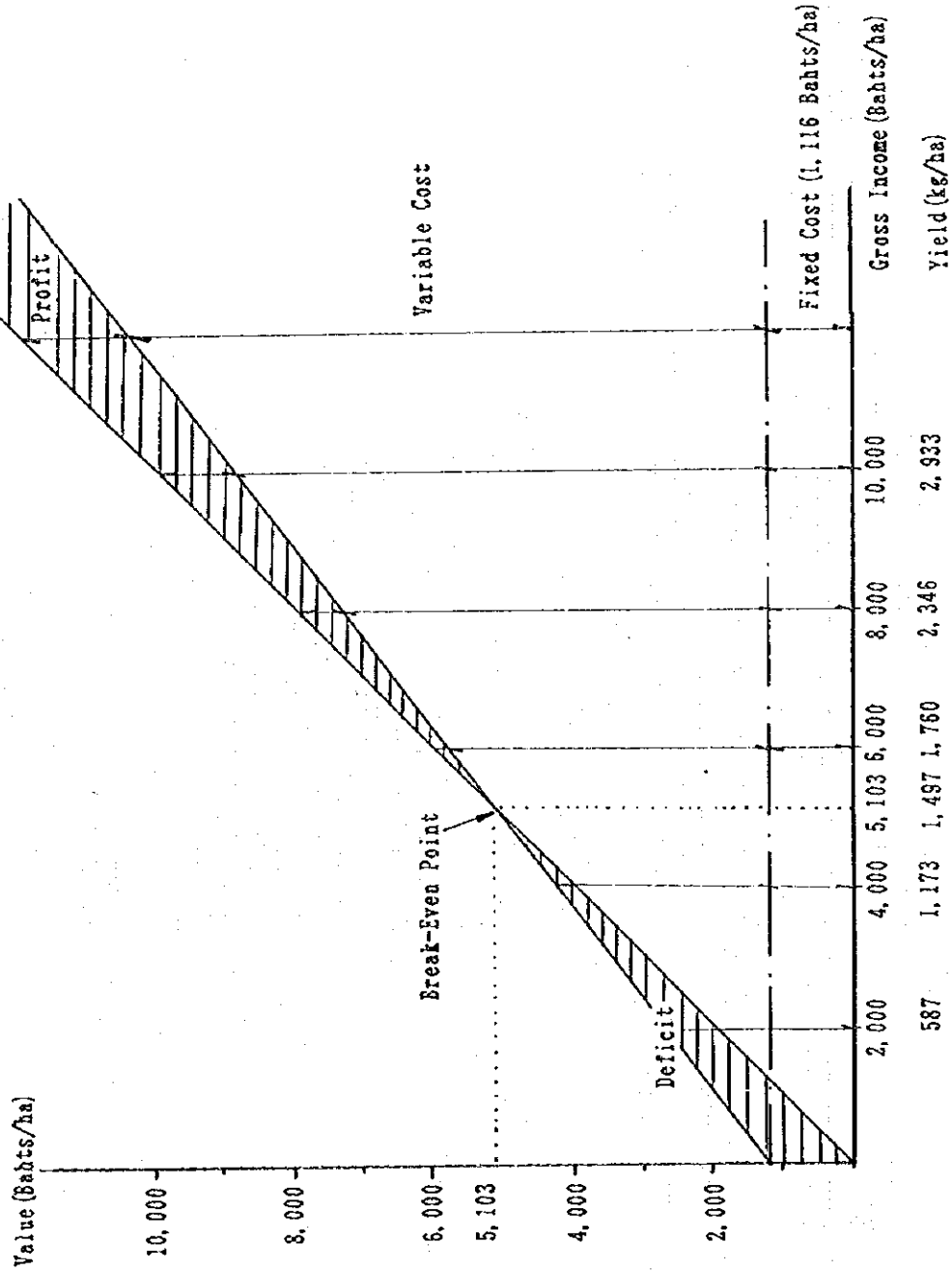
Source: Survey on Farm Households, 1993, NSO

Commodity Prices and Price Projections in Constant 1990 US Dollars

Commodities	Unit	Actual			Short-Term			Long-Term	
		1991	1992	1993	1994	1995	1996	2000	2005
Food									
Coffee	¢/kg	183	132	147	359	560	537	211	194
Cocoa	¢/kg	117	103	105	123	129	130	137	145
Tea	¢/kg								
Sugar	\$/ton	193	187	208	246	245	235	254	295
Beef	¢/kg	260	230	247	235	234	235	290	278
Shrimp	¢/kg	1,129	1,027	1,074	1,185	1,194	1,163	1,054	998
Banana	\$/ton	547	444	418	403	438	438	433	426
Orange	\$/ton	510	459	408	431	430	429	425	420
Rice	\$/ton	308	270	255	358	319	284	270	267
Wheat	\$/ton	140	166	182	186	172	164	161	145
Maize	\$/ton	105	98	96	114	109	105	98	90
Grain Sorghum	\$/ton	103	96	93	111	107	102	96	88
Fats and Oils									
Palm Oil	\$/ton	332	369	356	407	370	329	321	283
Coconut Oil	\$/ton	424	542	424	552	523	492	298	486
Groundnut Oil	\$/ton	874	572	697	934	786	631	587	448
Soybean Oil	\$/ton	444	402	453	541	490	439	434	398
Soybeans	\$/ton	234	221	241	248	232	224	232	247
Copra	\$/ton	280	357	279	358	314	307	420	342
Groundnut Meal	\$/ton	147	146	159	196	174	172	167	186
Soybean Meal	\$/ton	193	192	196	189	184	180	196	223
Non-Food Agricultural Crops									
Cotton	¢/kg	164	120	11	175	173	153	150	144
Jute	\$/ton	310	300	273	308	305	303	295	289
Rubber	¢/kg	99	96	94	102	104	105	114	116
Tobacco	\$/ton	2,158	2,307	1,980	1,783	1,776	1,759	1,744	1,725
Fertilizers									
Urea	\$/ton	168	132	101	126	129	134	144	140
TSP	\$/ton	130	113	106	125	125	125	133	129
DAP	\$/ton	169	136	122	158	159	162	166	160
Muriate of Potash	\$/ton	107	105	101	99	100	101	107	103

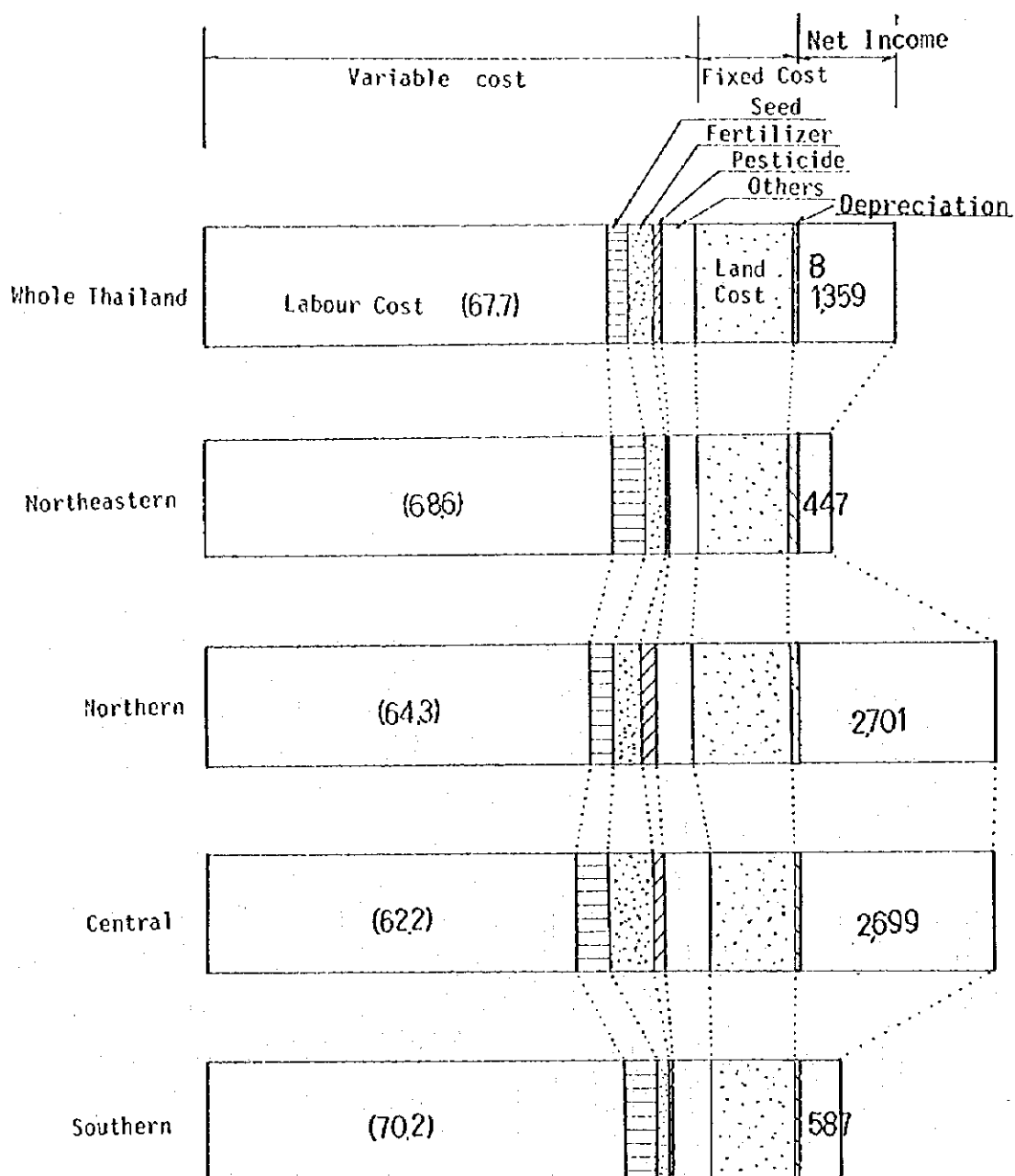
Source: World Bank, August 1994

Break-Even Chart of Major Paddy (whole country) 1994/95



Data source. Office of Agricultural Economy, MOAC

Comparison of Production Cost by Region



Comparison of Production Cost of Major Paddy by Region (1994/95)

	Whole Thailand		Northeastern		Northern		Central		South	
	(Bahts)	(%)	(Bahts)	(%)	(Bahts)	(%)	(Bahts)	(%)	(Bahts)	(%)
1. Variable Cost										
Labour	4,394	67.7	4,006	68.6	4,488	64.3	4,900	62.2	4,775	70.2
2. Material Cost										
Seeds	244	3.8	331	5.7	313	4.5	469	5.9	363	5.3
Fertilizer	281	4.3	213	3.6	331	4.7	606	7.7	175	2.6
Pesticides	88	1.3	38	0.6	194	2.8	156	2.0	63	0.9
Fuel, oil	69	1.1	0	0.0	100	1.4	175	2.2	94	1.4
Equipments	38	0.6	31	0.5	31	0.4	31	0.4	19	0.3
Repairing	19	0.3	19	0.3	25	0.4	19	0.2	13	0.2
Others	238	3.7	213	3.6	269	3.9	313	4.0	269	4.0
3. Fixed Cost										
Land Cost	1,056	16.3	913	15.6	1,144	16.4	1,138	14.4	969	14.2
Depreciation	63	1.0	81	1.4	81	1.2	75	1.0	63	0.9
Total	6,488	100.0	5,844	100.0	6,975	100.0	7,881	100.0	6,800	100.0
4. Yield (t/ha)	2,012		1,613		2,481		2,713		1,894	
5. Gross Income (B/ha)	7,847		6,291		9,676		10,581		7,387	
6. Net Income (B/ha)	1,359		441		2,701		2,699		587	

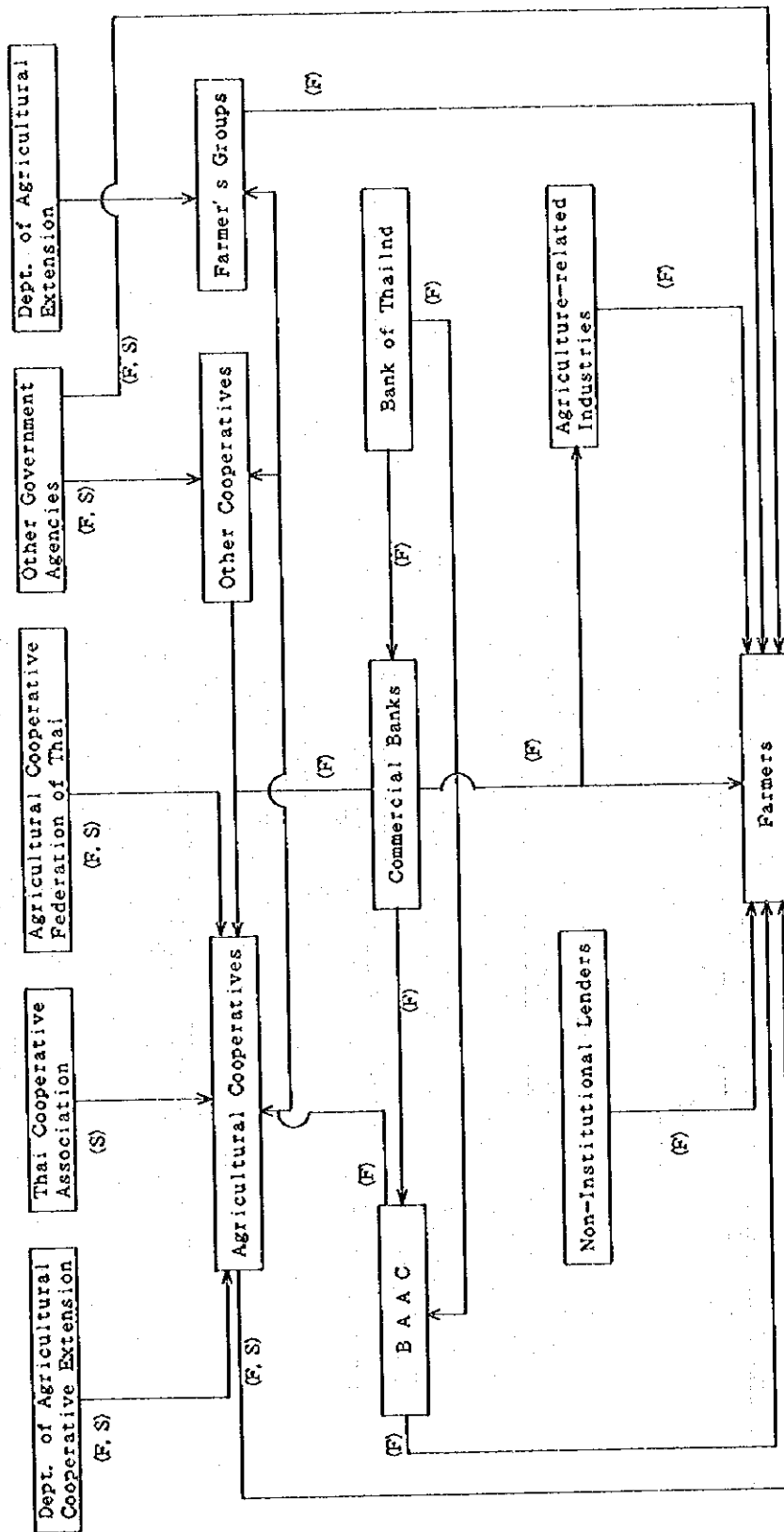


Chart of Crediting System in Thailand

Note. F:Financing
S:Services

7TH 5 YEAR PLAN

Major Development Targets of Seventh Plan(1992-1996)

	Sixth Plan (1987-1991)	Seventh Plan Targets (1992-1996)
1. Economic growth (% per year at constant prices)	10.5	8.2
1.1 Agriculture sector	3.4	3.4
1.2 Non-agriculture sector	12.1	8.6
- Industry	13.7	9.5
- Construction	18.7	8.9
- Services and others	11.0	8.1
2. Per capita income (Bahts/year)	41,000	71,000
3. Expenditures (% per year at constant prices)		
3.1 Private sector		
- Consumption	9.1	5.7
- Investment	26.0	8.8
3.2 Public sector		
- Consumption	2.0	3.3
- Investment	6.5	8.5
4. Export of goods		
4.1 Average value (billion Bahts)	496.0	1063.0
4.2 Average growth rate per year (%)	24.5	14.7
5. Import of goods		
5.1 Average value (billion Bahts)	664.3	1358.0
5.2 Average growth rate per year (%)	32.6	11.4
6. Trade balance		
6.1 Average value	(168.0)	(313.0)
6.2 Trade balance/GDP (%)	(8.4)	(9.4)
7. Income from tourism		
7.1 Average value (billion Bahts)	91.5	185.0
7.2 Average growth (%)	27.5	13.3
8. Current account balance		
8.1 Average value (billion Bahts)	(99.0)	(170.3)
8.2 Current account balance/GDP (%)	(4.9)	(5.2)
9. Inflation (%)	4.7	5.2
10. Commercial energy production (thousand barrels of crude oil/day)	280.0	410.0

Key Elements of Agricultural Policies of Seventh Plan(1992-1996)

1. Efficient use of national resources
 - 1.1 Protection of fertile agricultural areas
 - 1.2 Support systematic land use planning to avoid conflicts in land use
 - 1.3 Encourage more efficient use of water, including charging fees and participation by farmers
2. Support research, development and transfer of technology
 - 2.1 Support private sector through research and development by government
 - 2.2 Optimise use of chemical fertilizers
 - 2.3 Encourage correct use of agro-chemicals and minimise their use
 - 2.4 Enhance productivity and efficiency of agricultural machinery
 - 2.5 Expand scope of agricultural credit and contract farming
3. Restructure agricultural production to suit local market demand
 - 3.1 Create multi-discipline(not single product) extension service so that farmers can prepare their own production plans
 - 3.2 Support private sector institutions and farmers forestry
4. Support agro-industry and increased added value
 - 4.1 Enhance productivity through public and private sector cooperation
 - 4.2 Support for new products with export potential
5. Improve agricultural and cooperative development system
 - 5.1 Formulate agricultural production restructuring plan
 - 5.2 Improve information systems for agriculture and markets
 - 5.3 Provide training in management and administration

Crops to be Decreased Planting Areas in the 7th 5-year Plan

Crops	(unit:1,000 ha)			
	1994	1995	1996	Total
1. Crops to be decreased				
Second Rice	160.0	160.0	240.0	560.0
Cassava	64.0	64.0	64.0	192.0
Coffee	11.2	11.2	11.2	33.6
Pepper	0.3	-	-	0.3
	235.5	235.2	315.2	785.9
2. Crops to be increased				
Upland Crops	64.0	64.0	64.0	192.0
Beef Cattle Area (0.48ha/head)	24.0	28.8	19.2	72.0
Buffaloe Area (0.32ha/head)	1.9	2.1	1.9	5.9
Dairy Cow Area (0.8ha/head)	8.0	8.0	8.0	24.0
Fruit Tree	43.1	36.3	41.3	120.7
Mix Farming	50.5	55.2	100.0	205.7
Sweet Bamboo	24.0	20.8	40.0	84.8
Fast Growing Trees	16.0	16.0	36.8	68.8
Vegetable and Flower	4.0	4.0	4.0	12.0
Total	235.5	235.2	315.2	785.9

AGRICULTURE

Index of Production of Food Crops (1977/76=100)

	Rice	Maize	Mungbean	Cassava	Sugarcane	Sorghum	Total	Total Food Crops
1984/85	132	158	282	163	96	252	139	135
1985/86	134	184	259	129	92	272	134	134
1986/87	125	161	241	165	94	142	137	130
1987/88	122	104	214	188	104	129	134	127
1988/89	141	175	267	205	141	145	172	153
1989/90	137	164	285	175	129	156	157	145
1990/91	114	139	243	166	156	160	158	131
1991/92	135	142	244	172	182	169	171	149
1992/93	132	137	210	171	153	168	156	142
1993/94	122	124	185	161	145	140	146	132

Source: Agricultural Statistics of Thailand, 1993/94

Index of Farm Price of Food Crops (1977/76=100)

	Rice	Maize	Mungbean	Cassava	Sugarcane	Sorghum	Total	Total Food Crops
1984/85	122	140	129	85	106	153	109	117
1985/86	121	109	129	166	82	123	116	119
1986/87	157	96	118	189	100	99	127	145
1987/88	198	149	159	130	114	158	129	171
1988/89	212	157	172	119	115	153	129	179
1989/90	185	175	128	132	133	164	143	169
1990/91	197	147	125	177	124	130	145	177
1991/92	198	165	207	164	116	164	146	178
1992/93	172	163	185	128	122	151	136	158
1993/94	184	168	185	121	170	155	155	173

Source: Agricultural Statistics of Thailand, 1993/94

Number of Farm Households by Farm Size (1993)

Farm Size	Whole	Central	North-		Southern
	Kingdom	Plain	Northern	eastern	
Total	5,647,316	933,752	1,408,054	2,505,941	799,569
Under 0.32 ha	121,005	33,845	33,702	41,030	12,428
0.32-0.80	880,176	143,942	340,671	253,836	141,727
0.96-1.44	728,108	90,212	225,239	293,408	119,249
1.60-3.04	1,613,322	228,937	364,325	787,871	232,189
3.20-6.24	1,513,203	258,533	285,460	772,153	197,057
6.40-9.44	493,836	99,800	97,311	239,389	57,336
9.60-22.24	268,073	66,388	56,249	110,423	35,013
22.20 and over	29,593	12,095	5,097	7,831	4,570

Percentage of Farm Households by Farm Size (1993)

Farm Size	Whole	Central	North-		Southern
	Kingdom	Plain	Northern	eastern	
Total	100.0	100.0	100.0	100.0	100.0
Under 0.32 ha	2.1	3.6	2.4	1.6	1.6
0.32-0.80	15.6	15.4	24.2	10.1	17.7
0.96-1.44	12.9	9.7	16.0	11.7	14.9
1.60-3.04	28.6	24.5	25.9	31.5	29.0
3.20-6.24	26.8	27.7	20.3	30.8	24.6
6.40-9.44	8.7	10.7	6.9	9.6	7.2
9.60-22.24	4.8	7.1	4.0	4.4	4.4
22.20 and over	0.5	1.3	0.3	0.3	0.6

Source: Statistical Yearbook, 1994

Planted Area and Production of Crops

	Planted Area (1,000 ha)					Production (1,000 ton)				
	1989/1990	1990/1991	1991/1992	1992/1993	1993/1994	1989/1990	1990/1991	1991/1992	1992/1993	1993/1994
Rice	10,310	9,906	9,547	9,672	9,480	20,601	17,193	20,399	19,917	18,447
-Major Rice	9,471	9,313	8,828	9,007	8,984	18,477	14,902	17,518	17,303	16,483
-Second Rice	839	593	719	665	496	2,124	2,291	2,882	2,615	1,965
Sugarcane	688	789	927	1,003	857	33,562	40,661	47,480	39,827	37,623
Cassava	1,530	1,492	1,492	1,456	1,411	20,701	19,705	20,356	20,203	19,091
Maize	1,786	1,746	1,475	1,351	1,339	4,392	3,722	3,793	3,672	3,328
Sorghum	187	194	197	186	176	231	237	250	249	209
Kenaf	127	128	100	96	92	149	157	126	140	127
Cotton	64	74	99	77	52	86	97	129	99	67
Mungbean	513	449	441	385	344	356	303	304	261	231
Groundnut	122	122	116	104	96	162	161	157	137	136
Soybean	513	425	348	367	416	672	530	436	480	513
Kapok	51	51	51	54	53	38	40	37	37	40
Castor Bean	47	44	45	48	48	29	28	28	30	31
Sesame	53	58	62	59	60	28	29	32	32	33
Para Rubber	1,759	1,777	1,782	186	-	1,097	1,152	1,520	1,603	-
Pineapple	75	80	90	100	14	466	498	561	624	-
Tobacco	23	24	28	30	78	143	153	176	186	87
Coffee Beans	82	86	84	79	-	514	540	523	494	485
Oil Palm	140	146	153	153	25	875	915	958	954	-
Garlic	29	26	24	25	-	181	161	151	157	154

	Yield (ton/ha)				
	1989/1990	1990/1991	1991/1992	1992/1993	1993/1994
Rice	2.00	1.74	2.14	2.06	1.95
-Major Rice	1.95	1.60	1.98	1.92	1.83
-Second Rice	2.53	3.86	4.01	3.93	3.96
Sugarcane	48.80	51.56	51.24	39.72	44.14
Cassava	13.53	13.21	13.65	13.88	13.53
Maize	2.46	2.13	2.57	2.72	2.49
Sorghum	1.23	1.22	1.27	1.34	1.19
Kenaf	1.17	1.23	1.27	1.46	1.38
Cotton	1.35	1.32	1.30	1.28	1.28
Mungbean	0.69	0.67	0.69	0.68	0.67
Groundnut	1.33	1.32	1.36	1.32	1.41
Soybean	1.31	1.25	1.25	1.31	1.23
Kapok	0.74	0.79	0.73	0.69	0.76
Castor Bean	0.61	0.64	0.62	0.63	0.66
Sesame	0.53	0.50	0.52	0.54	0.55
Para Rubber	0.62	0.65	0.85	0.61	-
Pineapple	6.25	6.25	6.25	6.25	0.00
Tobacco	6.25	6.25	6.25	6.25	1.12
Coffee Beans	6.25	6.25	6.25	6.25	-
Oil Palm	6.25	6.25	6.25	6.25	0.00
Garlic	6.25	6.25	6.25	6.25	-

Source: Trade Statistics and Economic Indicators of Thailand, Ministry of Commerce

Major and Second Rice

	Planted Area (1000 ha)	Harvested Area (1,000 ha)	Production (1,000 ton)	yield (ton/ha)	Farm Price (Bahts/ton)	Farm Value (Million Bahts)
1984/85	9,973	9,630	19,905	2.07	2,325	46,279
1985/86	10,148	9,833	20,264	2.06	2,301	46,627
1986/87	9,851	9,194	18,868	2.05	2,994	56,491
1987/88	9,422	9,147	18,428	2.01	3,764	69,363
1988/89	10,348	9,906	21,263	2.15	4,030	85,690
1989/90	10,310	9,879	20,601	2.09	3,511	72,330
1990/91	9,906	8,792	17,193	1.96	3,743	64,353
1991/92	9,547	9,053	20,400	2.25	3,763	76,765
1992/93	9,672	9,160	19,917	2.17	3,268	65,089
1993/94	9,480	8,482	18,447	2.17	3,496	64,491

Source: Agricultural Statistics of Thailand, 1993/94

Second Rice

	Planted Area (1000 ha)	Harvested Area (1,000 ha)	Production (1,000 ton)	yield (ton/ha)	Farm Price (Bahts/ton)	Farm Value (Million Bahts)
1984/85	706	706	2,630	3.73	2,499	6,572
1985/86	638	637	2,334	3.66	2,158	5,037
1986/87	580	580	2,042	3.52	2,493	5,091
1987/88	730	721	2,770	3.84	3,612	10,005
1988/89	849	842	3,381	4.01	3,678	12,435
1989/90	839	731	2,124	2.91	2,952	6,270
1990/91	593	583	2,291	3.93	3,712	8,504
1991/92	719	701	2,882	4.11	3,528	10,168
1992/93	665	648	2,615	4.04	2,675	6,995
1993/94	496	482	1,964	4.07	2,964	5,821

Source: Agricultural Statistics of Thailand, 1993/94

Major Rice

	Planted Area (1,000 ha)	Harvested Area (1,000 ha)	Production (1,000 ton)	yield (ton/ha)	Farm Price (Bahts/ton)	Farm Value (Million Bahts)
1984/85	9,266	8,924	17,275	1.94	2,299	39,715
1985/86	9,510	9,196	17,930	1.95	2,320	41,598
1986/87	9,271	8,614	16,826	1.95	2,408	40,517
1987/88	8,692	8,426	15,658	1.86	3,790	59,344
1988/89	9,500	9,064	17,882	1.97	4,092	73,173
1989/90	9,471	9,148	18,477	2.02	3,610	66,702
1990/91	9,313	8,208	14,902	1.82	3,748	55,853
1991/92	8,828	8,352	17,518	2.10	3,892	68,180
1992/93	9,007	8,512	17,302	2.03	3,357	58,083
1993/94	8,984	8,000	16,483	2.06	3,749	61,795

Source: Agricultural Statistics of Thailand, 1993/94

Production of Major Rice by Region

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Whole Kingdom				
1990/91	9,312,747	8,208,534	14,902,423	1.82
1991/92	8,828,293	8,352,276	17,517,892	2.10
1992/93	9,007,130	8,511,882	17,302,465	2.03
1993/94	8,984,491	8,000,391	16,482,663	2.06
North-Eastern				
1990/91	5,062,306	4,716,404	7,744,744	1.64
1991/92	4,763,880	4,510,942	7,667,013	1.70
1992/93	5,073,177	4,731,997	8,027,395	1.70
1993/94	4,917,505	4,355,684	7,125,324	1.64
Northern				
1990/91	2,087,980	1,763,726	4,030,558	2.29
1991/92	1,947,200	1,791,368	4,576,672	2.55
1992/93	1,901,348	1,846,330	4,378,481	2.37
1993/94	1,940,668	1,715,666	4,170,424	2.43
Central				
1990/91	1,685,786	1,287,587	2,400,613	1.86
1991/92	1,635,511	1,585,806	4,331,920	2.73
1992/93	1,571,521	1,486,512	4,009,598	2.70
1993/94	1,635,417	1,508,960	4,244,548	2.81
Southern				
1990/91	476,675	440,818	726,508	1.65
1991/92	481,702	464,160	942,287	2.03
1992/93	461,084	447,044	886,991	1.98
1993/94	490,901	420,081	942,367	2.24

Source: Agricultural Statistics of Thailand, 1993/94

Production of Major Rice by Province

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong khai				
1990/91	188,024	178,577	279989	1.57
1991/92	156,958	130,135	222684	1.71
1992/93	188,648	152,372	266466	1.75
1993/94	173,797	155,305	253093	1.63
Udon Thani				
1990/91	471,139	452,163	755881	1.67
1991/92	445,424	410,536	712679	1.74
1992/93	438,390	410,912	693205	1.69
1993/94	429,216	359,855	552616	1.54

Source: Agricultural Statistics of Thailand, 1993/94

Production of Second Rice by Region

		Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Whole Kingdom					
	1991	592,877	583,351	2,290,799	3.93
	1992	719,044	700,671	2,881,528	4.11
	1993	665,304	647,857	2,614,834	4.04
	1994	495,711	482,041	1,964,597	4.08
North-Eastern					
	1991	80,329	79,467	231,607	2.91
	1992	105,197	100,228	328,201	3.27
	1993	77,812	75,195	199,980	2.66
	1994	14,992	14,383	32,323	2.25
Northern					
	1991	106,418	103,648	454,514	4.39
	1992	170,258	163,774	742,864	4.54
	1993	137,616	133,923	576,026	4.30
	1994	86,990	84,510	354,884	4.20
Central					
	1991	389,273	383,440	1,557,621	4.06
	1992	429,844	422,924	1,774,955	4.20
	1993	423,997	414,176	1,775,626	4.29
	1994	371,763	362,532	1,525,466	4.21
Southern					
	1991	16,856	16,796	47,057	2.80
	1992	13,745	13,745	35,508	2.58
	1993	25,558	24,563	63,202	2.57
	1994	21,966	20,616	51,924	2.52

Source: Agricultural Statistics of Thailand, 1993/94

Production of Second Rice by Province

		Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai					
	1991	1,036	955	1885	1.97
	1992	2,001	1,898	5415	2.85
	1993	2,161	2,034	5172	2.54
	1994	876	867	1926	2.22
Udon Thani					
	1991	3,309	3,289	7837	2.38
	1992	1,836	1,671	3971	2.38
	1993	3,345	2,971	6747	2.27
	1994	760	636	1263	1.99

Source: Agricultural Statistics of Thailand, 1993/94

Production of Maize by Region

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Whole Kingdom				
1990/91	1,745,609	1,545,135	3,722,266	2.41
1991/92	1,475,021	1,398,612	3,792,652	2.71
1992/93	1,351,384	1,235,981	3,672,022	2.97
1993/94	1,339,197	1,217,675	3,328,228	2.73
North-Eastern				
1990/91	497,853	460,073	1,069,449	2.32
1991/92	400,244	364,662	949,011	2.60
1992/93	399,198	361,006	1,027,266	2.85
1993/94	355,880	313,480	838,409	2.67
Northern				
1990/91	783,914	697,319	1,768,862	2.54
1991/92	713,692	685,535	1,815,073	2.65
1992/93	615,897	573,712	1,712,075	2.98
1993/94	622,733	566,794	1,517,454	2.68
Central				
1990/91	450,972	372,436	860,059	2.31
1991/92	343,058	331,780	981,592	2.96
1992/93	317,963	283,610	886,231	3.12
1993/94	338,195	316,465	920,578	2.91
Southern				
1990/91	12,870	10,987	23,896	2.17
1991/92	18,028	16,634	46,976	2.82
1992/93	18,326	17,653	46,450	2.63
1993/94	22,389	20,935	51,787	2.47

Source: Agricultural Statistics of Thailand, 1993/94

Production of Maize by Province

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Kong Khai				
1990/91	0	0	0	0.00
1991/92	0	0	0	0.00
1992/93	51	49	145	2.97
1993/94	31	31	83	2.69
Udon Thani				
1990/91	40,798	40,732	94029	2.31
1991/92	37,493	29,801	68859	2.31
1992/93	37,116	36,632	93547	2.55
1993/94	31,696	28,127	89132	3.17

Source: Agricultural Statistics of Thailand, 1993/94

Production of Cassava by Region

		Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Whole Kingdom	1991	1,491,639	1,433,579	19,705,040	13.75
	1992	1,491,752	1,450,539	20,355,723	14.03
	1993	1,456,060	1,438,017	20,202,897	14.05
	1994	1,410,763	1,382,695	19,091,347	13.81
	North-Eastern	1991	932,407	904,032	12,125,453
1992		932,040	900,622	12,231,400	13.58
1993		905,809	901,355	12,417,787	13.78
1994		874,040	861,513	11,679,874	13.56
Northern		1991	138,992	136,214	1,934,198
	1992	990,449	151,793	2,229,097	14.69
	1993	171,306	162,114	2,263,999	13.97
	1994	168,579	165,340	2,219,578	13.42
	Central	1991	420,240	393,334	5,645,389
1992		401,240	398,124	5,895,226	14.81
1993		378,945	374,548	5,521,111	14.74
1994		368,145	355,842	5,191,895	14.59
Southern		1991	0	0	0
	1992	0	0	0	0
	1993	0	0	0	0
	1994	0	0	0	0

Source: Agricultural Statistics of Thailand, 1993/94

Production of Cassava by Province

		Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai	1991	67,566	66,013	823,920	12.48
	1992	70,630	68,683	889,056	12.94
	1993	65,961	65,961	838,943	12.72
	1994	64,351	64,351	814,043	12.65
	Total	268,509	265,008	3,365,962	12.70
Udon Thani	1991	81,852	81,362	1,094,322	13.45
	1992	81,275	79,606	1,179,667	14.82
	1993	76,995	76,995	1,146,259	14.89
	1994	73,380	68,509	994,762	14.52
	Total	313,502	306,473	4,415,010	14.41

Source: Agricultural Statistics of Thailand, 1993/94

Production of Sugarcane by Region

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Whole Kingdom				
1990/91	788,680	782,518	40,660,624	51.96
1991/92	926,604	916,600	47,479,508	51.80
1992/93	1,002,679	991,678	39,826,601	40.16
1993/94	856,824	799,539	37,822,875	47.31
North-Eastern				
1990/91	129,552	129,122	7,796,563	60.38
1991/92	163,536	162,424	9,189,994	56.58
1992/93	248,110	245,941	10,401,439	42.29
1993/94	224,992	204,876	9,381,852	45.79
Northern				
1990/91	179,609	179,372	9,650,217	53.80
1991/92	214,549	214,032	11,064,693	51.70
1992/93	257,017	256,330	9,378,643	36.59
1993/94	187,169	172,599	8,348,818	48.37
Central				
1990/91	479,519	474,023	23,213,844	48.97
1991/92	548,519	540,143	27,224,821	50.40
1992/93	497,552	489,407	20,046,519	40.96
1993/94	444,664	422,064	20,092,205	47.60
Southern				
1990/91	0	0	0	0
1991/92	0	0	0	0
1992/93	0	0	0	0
1993/94	0	0	0	0

Source. Agricultural Statistics of Thailand, 1993/94

Production of Sugarcane by Province

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai				
1990/91	136	136	8147	60.12
1991/92	211	211	12061	57.06
1992/93	751	751	24221	32.26
1993/94	279	279	11616	41.68
Udon Thani				
1990/91	46,775	46,606	2777808	59.60
1991/92	53,020	52,066	2739570	52.62
1992/93	91,556	89,908	3545354	39.43
1993/94	69,289	64,193	2731829	42.56

Source. Agricultural Statistics of Thailand, 1993/94

Production of Groundnut by Region

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Whole Kingdom				
1990/91	121,529	117,440	161,114	1.37
1991/92	115,600	109,938	156,913	1.43
1992/93	104,044	100,535	136,863	1.36
1993/94	96,446	91,596	136,363	1.49
North-Eastern				
1990/91	34,644	33,864	46,119	1.36
1991/92	34,832	32,806	48,386	1.47
1992/93	30,604	29,108	39,773	1.37
1993/94	31,824	30,013	42,618	1.42
Northern				
1990/91	62,797	61,799	83,836	1.22
1991/92	57,261	54,500	75,370	1.38
1992/93	53,253	52,245	69,949	1.34
1993/94	45,887	44,073	66,428	1.51
Central				
1990/91	17,014	16,527	23,319	1.41
1991/92	17,309	16,574	26,628	1.61
1992/93	15,588	14,694	22,274	1.52
1993/94	14,716	13,709	23,225	1.69
Southern				
1990/91	7,073	6,209	7,840	1.26
1991/92	6,199	6,058	6,529	1.08
1992/93	4,598	4,487	4,867	1.08
1993/94	4,019	3,801	4,092	1.08

Source: Agricultural Statistics of Thailand, 1993/94

Production of Groundnut by Province

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai				
1990/91	412	394	442	1.12
1991/92	361	361	395	1.09
1992/93	276	242	278	1.15
1993/94	282	188	242	1.28
Total	1,331	1,186	1,357	1.14
Udon Thani				
1990/91	1,488	1,488	2,329	1.56
1991/92	1,571	1,553	2,498	1.61
1992/93	2,599	2,308	3,257	1.41
1993/94	2,870	2,787	4,314	1.55
Total	8,528	8,136	12,398	1.52

Source: Agricultural Statistics of Thailand, 1993/94

Production of Mungbean by Region

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Whole Kingdom				
1990/91	449,228	427,902	303,299	0.71
1991/92	44,009	417,616	304,207	0.73
1992/93	384,567	350,164	261,403	0.75
1993/94	343,575	314,591	231,257	0.74
North-Eastern				
1990/91	317,036	27,776	17,822	0.64
1991/92	29,402	28,235	18,305	0.65
1992/93	23,100	21,722	13,892	0.64
1993/94	22,385	19,993	12,450	0.62
Northern				
1990/91	355,454	345,696	246,489	0.71
1991/92	346,797	330,541	243,931	0.74
1992/93	314,616	289,245	219,485	0.76
1993/94	278,035	253,727	190,312	0.75
Central				
1990/91	55,898	46,361	34,099	0.74
1991/92	57,248	53,556	38,116	0.71
1992/93	42,793	35,587	25,927	0.73
1993/94	40,905	38,698	27,246	0.70
Southern				
1990/91	8,840	8,069	4,889	0.61
1991/92	7,202	5,285	4,125	0.78
1992/93	4,058	3,611	2,099	0.58
1993/94	2,250	2,173	1,249	0.57

Source: Agricultural Statistics of Thailand, 1993/94

Production of Mungbean by Province

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai				
1990/91	0	0	0	0.00
1991/92	0	0	0	0.00
1992/93	0	0	0	0.00
1993/94	0	0	0	0.00
Udon Thani				
1990/91	1,951	1,941	1178	0.61
1991/92	2,488	2,412	1738	0.72
1992/93	1,862	1,831	1380	0.75
1993/94	2,468	2,039	1403	0.69

Source: Agricultural Statistics of Thailand, 1993/94

Production of Soybean by Region

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Whole Kingdom				
1990/91	425,155	407,837	530,112	1.30
1991/92	348,076	318,265	435,587	1.37
1992/93	366,961	343,232	480,148	1.40
1993/94	416,035	379,867	513,099	1.35
North-Eastern				
1990/91	70,908	68,170	85,865	1.26
1991/92	52,104	47,023	62,496	1.33
1992/93	63,390	61,408	86,436	1.41
1993/94	55,524	47,722	66,195	1.39
Northern				
1990/91	312,279	300,601	392,837	1.31
1991/92	275,723	251,995	342,080	1.36
1992/93	282,157	261,022	360,345	1.38
1993/94	327,302	300,755	395,702	1.32
Central				
1990/91	40,929	38,178	50,387	1.32
1991/92	19,017	18,644	29,987	1.61
1992/93	21,414	20,802	33,367	1.60
1993/94	33,176	31,357	51,160	1.63
Southern				
1990/91	1,039	888	1,023	1.15
1991/92	770	602	1,024	1.70
1992/93	0	0	0	0.00
1993/94	33	33	42	1.29

Source: Agricultural Statistics of Thailand, 1993/94

Production of Soybeans by Province

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai				
1990/91	2,491	2,387	3258	1.37
1991/92	1,134	1,123	1495	1.33
1992/93	1,714	1,509	1846	1.22
1993/94	2,523	2,024	2719	1.34
Udon Thani				
1990/91	5,891	5,573	7277	1.31
1991/92	5,019	4,958	5861	1.18
1992/93	6,808	6,797	9400	1.38
1993/94	4,849	4,268	6646	1.56

Source: Agricultural Statistics of Thailand, 1993/94

Production of Cotton by Region

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Whole Kingdom				
1990/91	73,789	71,122	96,699	1.36
1991/92	99,333	97,856	128,674	1.31
1992/93	77,230	71,400	99,176	1.39
1993/94	52,507	49,368	66,574	1.35
North-Eastern				
1990/91	9,662	9,483	12,971	1.37
1991/92	16,192	15,904	20,861	1.31
1992/93	13,647	13,395	17,227	1.29
1993/94	10,447	9,248	12,369	1.34
Northern				
1990/91	40,110	38,374	50,775	1.75
1991/92	54,850	54,120	67,006	1.24
1992/93	41,936	37,147	51,619	1.39
1993/94	25,289	24,184	31,930	1.32
Central				
1990/91	24,018	23,265	32,953	1.42
1991/92	28,292	27,833	40,807	1.47
1992/93	21,648	20,859	30,330	1.45
1993/94	16,771	15,935	22,275	1.40
Southern				
1990/91	0	0	0	0
1991/92	0	0	0	0
1992/93	0	0	0	0
1993/94	0	0	0	0

Source: Agricultural Statistics of Thailand, 1993/94

Production of Cotton by Province

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai				
1990/91	0	0	0	0
1991/92	0	0	0	0
1992/93	27	27	37	1.39
1993/94	0	0	0	0
Udon Thani				
1990/91	1,345	1,319	1538	1.17
1991/92	3,112	3,092	3112	1.01
1992/93	2,154	2,110	2074	0.98
1993/94	2,041	1,936	2360	1.22

Source: Agricultural Statistics of Thailand, 1993/94

Production of Kenaf by Region

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Whole Kingdom				
1990/91	127,897	121,661	157,058	1.29
1991/92	99,462	93,909	126,785	1.35
1992/93	95,700	91,613	126,184	1.38
1993/94	92,219	85,723	127,073	1.48
North-Eastern				
1990/91	120,250	114,309	144,759	1.27
1991/92	94,773	89,341	118,961	1.33
1992/93	91,542	87,496	119,713	1.37
1993/94	87,982	81,639	119,502	1.46
Northern				
1990/91	0	0	0	0.00
1991/92	0	0	0	0.00
1992/93	0	0	0	0.00
1993/94	0	0	0	0.00
Central				
1990/91	7,646	7,352	12,299	1.67
1991/92	4,688	4,569	7,824	1.71
1992/93	4,158	4,118	6,471	1.57
1993/94	4,236	4,084	7,571	1.85
Southern				
1990/91	0	0	0	0.00
1991/92	0	0	0	0.00
1992/93	0	0	0	0.00
1993/94	0	0	0	0.00

Source. Agricultural Statistics of Thailand, 1993/94

Production of Kenaf by Province

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai				
1990/91	2,585	2,574	2633	0.00
1991/92	1,945	1,827	2295	0.00
1992/93	1,127	996	1325	1.33
1993/94	724	690	1034	1.50
Udon Thani				
1990/91	8,953	8,494	10638	1.25
1991/92	6,044	5,856	7064	1.21
1992/93	4,943	4,738	5716	1.21
1993/94	4,322	4,008	5471	1.37

Source. Agricultural Statistics of Thailand, 1993/94

Production of Pineapple

	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Whole Kingdom			
1990	74,514	1,865,290	25.03
1991	79,693	1,030,691	12.93
1992	89,721	2,180,407	24.30
1993	99,918	2,589,302	25.91

Source: Agricultural Statistics of Thailand, 1993/94

Production of Pineapple by Province

	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai			
1990	0	0	0
1991	0	0	0
1992	2,458	68428	27.83
1993	3,278	95957	29.28
Udon Thani			
1990	0	0	0
1991	0	0	0
1992	19	252	13.02
1993	329	7596	23.08

Source: Agricultural Statistics of Thailand, 1993/94

Number of Livestock by Region

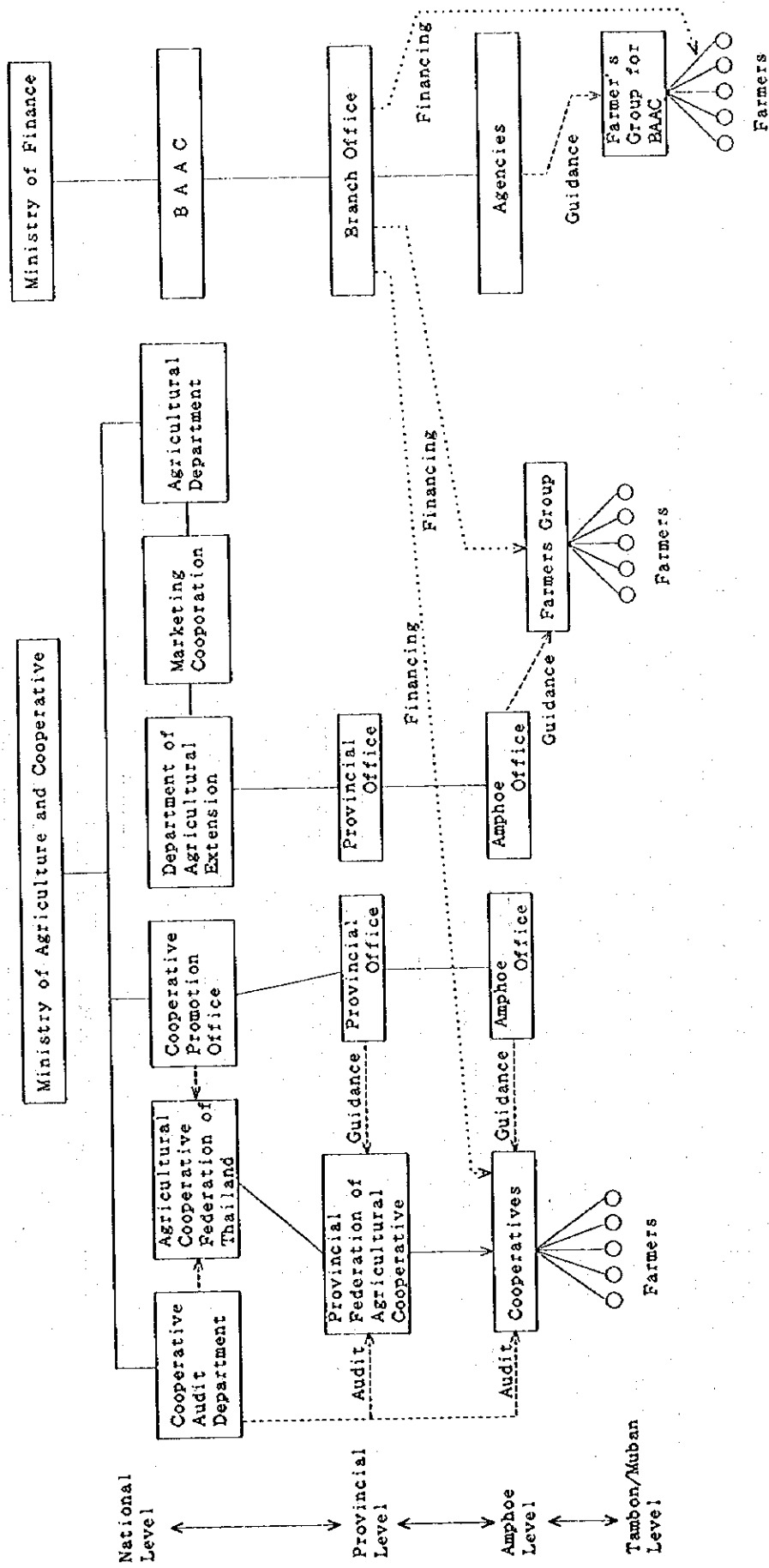
	Buffaloes	Cattle	Swine	Goats	Sheep	Duck	Chicken
Whole Kingdom							
1984	6,300,896	4,788,989	4,263,201	73,644	44,877		
1985	6,249,926	4,826,983	4,224,120	80,807	57,877		
1986	6,256,854	4,878,741	4,201,074	80,333	72,679		
1987	5,998,423	4,968,845	4,209,059	79,592	95,099		
1988	5,708,270	5,072,024	4,684,926	78,525	130,663		
1989	5,442,614	5,284,960	4,678,503	108,218	155,898		
1990	5,094,270	5,458,680	4,761,622	120,519	162,496		
1991	4,976,730	5,631,130	4,859,036	136,035	166,102	19,123,564	99,722,430
1992	4,861,910	5,815,470	4,655,479	159,642	176,229	19,344,714	105,619,276
1993	NA	NA	NA	151,860	110,465	21,778,395	NA
North-Eastern							
1991	3,682,852	2,031,481	1,227,502	NA	NA	5,934,037	31,595,902
1992	3,597,883	2,097,984	1,177,834	NA	NA	6,019,511	33,070,113
1993						6,420,269	NA
Northern							
1991	765,042	1,326,572	1,298,554	NA	NA	1,416,574	27,286,868
1992	747,392	1,369,998	1,243,480	NA	NA	1,334,357	28,761,080
1993						1,821,108	NA
Central							
1991	370,279	1,336,911	1,568,557	NA	NA	10,398,969	28,033,971
1992	361,736	1,380,676	1,486,958	NA	NA	10,288,432	29,508,183
1993						11,742,093	NA
Southern							
1991	158,557	936,166	764,423	NA	NA	1,373,984	12,805,689
1992	154,899	966,812	747,207	NA	NA	1,702,414	14,279,900
1993						1,794,925	NA

Source: Agricultural Statistics of Thailand, 1993/94

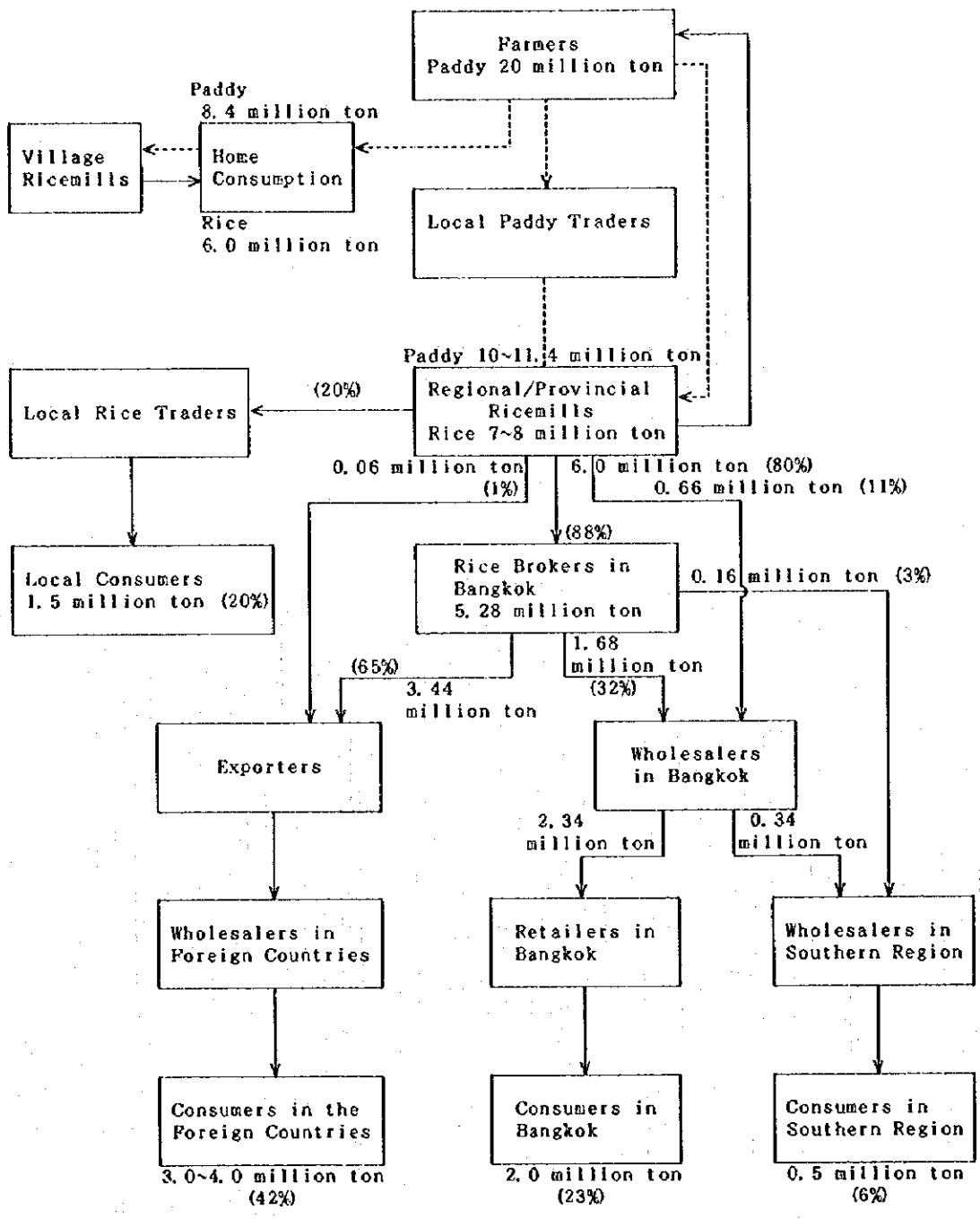
Number of Livestock by Province

	Buffaloes	Cattle	Swine	Duck	Chicken
Nong Khai					
1991	157,282	43,671	23,856	267,644	786,085
1992	153,653	45,101	22,891	267,654	822,762
1993	NA	NA	NA	267,644	NA
Udon Thani					
1991	302,919	146,868	54,319	394,091	1,592,860
1992	295,930	151,676	52,121	336,175	1,667,181
1993	NA	NA	NA	617,131	NA

Source: Agricultural Statistics of Thailand, 1993/94



Relationship between Agricultural Agencies and Farmer's Organization



----- Marketing Channel of Paddy
 _____ Marketing Channel of Rice

Marketing Channel of Paddy/Rice in Thailand

IRRIGATION

Water Resources Development Completed by Region

	(unit:ha)				
	Accumulated Irrigated Area				
	1989	1990	1991	1992	1993
Northeastern	629,581	659,616	699,381	719,810	756,114
Northern	1,083,641	1,107,537	1,133,315	1,151,057	1,098,020
Central	2,024,232	2,034,971	2,082,185	2,104,523	2,216,926
Southern	420,787	435,946	434,315	457,227	465,918
Whole Kingdom	4,158,242	4,238,069	4,349,196	4,432,616	4,536,978

Source: Agricultural Statistics of Thailand, 1994

Water Resources Development Completed by Province

	(unit:ha)				
	Accumulated Irrigated Area				
	1989	1990	1991	1992	1993
Nong Khai	21,016	21,638	22,326	23,046	23,542
Udon Thani	25,994	29,465	31,364	36,969	31,848
Nong Bua Lamphu	-	-	-	-	14,483

Source: Agricultural Statistics of Thailand, 1994

Pumping Irrigation for Rice by Region

	(unit:ha)			
	Whole Kingdom	Northeastern	Northern	Central
Major Rice				
1992	202,717	61,373	63,550	70,792
1993	275,763	71,107	83,253	104,054
Second Rice				
1992	101,626	40,523	27,989	17,621
1993	50,347	31,814	1,440	NA

Source: Agricultural Statistics of Thailand, 1993/94

Pumping Irrigation for Rice by Province

	(unit:ha)	
	Nong Khai	Udon Thani
Major Rice		
1992	597	1,238
1993	1,091	208
Second Rice		
1992	877	488
1993	1,554	779

Irrigated Area and Non-Irrigated Area under Dry Season Crops by Region

	(unit:ha)				
	Whole Kingdom	Northeastern	Northern	Central	Southern
1988/89					
Irrigated Area	824,127	76,476	147,241	582,950	17,460
Non-Irrigated Area	557,266	114,972	352,779	51,487	38,028
1989/90					
Irrigated Area	790,749	68,284	137,164	572,227	13,074
Non-Irrigated Area	532,201	140,235	298,156	60,311	33,500
1990/91					
Irrigated Area	613,435	81,450	106,728	412,492	12,765
Non-Irrigated Area	451,057	132,640	217,751	62,447	38,219
1991/92					
Irrigated Area	483,440	93,744	128,368	242,256	19,072
Non-Irrigated Area	548,240	189,424	250,656	58,720	49,440
1992/93					
Irrigated Area	644,272	73,869	101,156	460,008	9,240
Non-Irrigated Area	697,454	184,750	375,898	106,002	30,804

Source: Agricultural Statistics of Thailand, 1993/94

Irrigated Area and Non-Irrigated Area under Dry Season Crops by Province

	(unit:ha)	
	Nong Khai	Udon Thani
1988/89		
Irrigated Area	2,426	1,898
Non-Irrigated Area	3,203	10,593
1989/90		
Irrigated Area	920	2,694
Non-Irrigated Area	8,716	14,083
1990/91		
Irrigated Area	568	2,737
Non-Irrigated Area	7,445	8,577
1991/92		
Irrigated Area	2,608	2,896
Non-Irrigated Area	7,472	14,848
1992/93		
Irrigated Area	133	3,274
Non-Irrigated Area	10,021	11,738

Source: Agricultural Statistics of Thailand, 1993/94

Electric Pump Irrigation Area under Dry Season Crops by Region

	(unit:ha)				
	Whole Kingdom	Northeastern	Nothern	Central	Southern
1988/89					
No. of Pump Stati	596	329	167	61	39
Irrigated Area (ha)	145,285	83,560	41,029	13,163	7,533
1989/90					
No. of Pump Stati	656	354	187	73	42
Irrigated Area (ha)	156,867	88,518	45,285	14,829	8,235
1990/91					
No. of Pump Stati	701	368	207	77	49
Irrigated Area (ha)	198,814	106,632	60,974	20,115	11,093
1991/92					
No. of Pump Stati	711	370	215	78	48
Irrigated Area (ha)	200,368	106,608	62,544	20,304	10,912
1992/93					
No. of Pump Stati	908	456	296	104	52
Irrigated Area (ha)	246,179	123,531	82,778	27,803	12,067
1993/94					
No. of Pump Stati	980	485	341	97	57
Irrigated Area (ha)	265,421	131,651	584,930	26,744	13,437

Source: Agricultural Statistics of Thailand, 1993/94

Electric Pump Irrigation Area under Dry Season Crops by Region

	(unit:ha)	
	Nong khai	Udon Thani
1988/89		
No. of Pump Stati	62	4
Irrigated Area (ha)	18,830	861
1989/90		
No. of Pump Stati	63	9
Irrigated Area (ha)	19,310	1,797
1990/91		
No. of Pump Stati	62	12
Irrigated Area (ha)	21,187	2,682
1991/92		
No. of Pump Stati	61	12
Irrigated Area (ha)	20,784	2,688
1992/93		
No. of Pump Stati	79	14
Irrigated Area (ha)	22,861	3,126
1993/94		
No. of Pump Stati	86	14
Irrigated Area (ha)	24,629	3,126

Source: Agricultural Statistics of Thailand, 1993/94

Number of Water Pump Used for Dry Season Crops by Region

	(unit: number)				
	1988/89	1989/90	1990/91	1991/92	1992/93
Whole Kingdom	1562	1434	1316	1415	1213
North-Eastern	543	584	594	607	566
Northern	417	344	326	395	349
Central	355	293	237	242	107
Southern	247	213	159	171	191

Source: Agricultural Statistics of Thailand, 1993/94

Number of Water Pump Used for Dry Season Crops by Province

	1988/89	1989/90	1990/91	1991/92	1992/93
Nong Khai	16	22	19	17	23
Udon Thani	35	39	28	14	40

Source: Agricultural Statistics of Thailand, 1993/94

OTHERS

Number of Rice Mill

	1989	1990	1991	1992	1993
Whole Kingdom	46,125	45,956	45,690	45,328	45,019
Northeastern	25,584	25,516	25,403	25,296	25,213
Northern	10,618	10,543	10,453	10,335	10,183
Central	5,475	5,467	5,422	5,291	5,223
Southern	4,448	4,430	4,412	4,406	4,400
Nong Khai	803	802	802	802	800
Udon Thani	2,019	2,001	1,971	1,916	1,899

Source: Agricultural Statistics of Thailand, 1993/94

Number of Cooperatives and Members by Type (1994)

	Whole Kingdom	Nong Khai	Udon Thani
Cooperative Federations			
Number	74	1	1
Members	1,042	18	20
Agricultural Cooperatives			
Number	1,976	37	30
Members	3,287,358	57,681	104,623
Fishery Cooperatives			
Number	46	1	1
Members	8,030	107	1,255
Land Settlement Cooperatives			
Number	95	0	0
Members	109,740	0	0
Thrift and Credit cooperatives			
Number	966	5	14
Members	1,648,561	10,081	28,344
Consumer Cooperatives			
Number	351	2	3
Members	687,078	485	3,615
Services Cooperatives			
Number	310	1	1
Members	103,194	31	1,119

Source: Agricultural Statistics of Thailand, 1993/94

Registered Agricultural Group by Type (1994)

	Whole Kingdom	Nong Khai	Udon Thani
Paddy land	2648	31	91
Upland Crops	639	8	17
Horticulture Crops	447	0	1
Livestock Husbandry	229	1	7
Silk Worm	8	0	0
Fishermen	107	0	0
Aquatic	30	0	0
Mushroom Culture	2	0	0
Honey	1	0	0
Total	4111	40	116

Source: Agricultural Statistics of Thailand, 1993/94

CHAPTER 2. Changwat Level

1. POPULATION
2. LAND
3. AGRICULTURE
4. IRRIGATION
6. OTHERS

AGRO-ECONOMIC CONDITIONS

Agro-Economic Conditions, Whole Changwat Basis

	Whole Thailand	Northeastern	Nong Khai	Udon Thani	Nong Bua Lamphu
1. Total Land (ha)	51,311,502	16,885,434	733,228	1,558,939	385,909
2. Population					
1990	56,303,273	19,828,941	797,344	1,770,669	439,110
1993	58,336,072	20,170,986	853,706	1,398,991	463,046
Annual Increase (%)	1.19	0.57	2.30	-7.55	1.78
3. Population Density (1993)	114	119	116	90	120
4. No. of Farm households					
1987	4,989,508	2,101,938	80,819	170,337	65,195
1991	5,130,531	2,183,557	84,822	165,599	76,532
Change	1.03	1.04	1.05	0.97	1.17
5. Average Farm Size in 1991 (ha)	4.15	4.23	4.65	5.10	3.15
6. Land Use in ha					
(1991)		(1991)	(1991)	(1991)	(1994)
Paddy	11,090,080	6,075,655	227,912	530,674	156,779
Field crops	5,362,981	2,152,788	107,183	219,471	73,078
Fruit trees	3,215,746	295,057	11,968	22,515	10,246
Vegetables	137,309	22,454	1,241	1,221	1,290
Grassland	113,090	63,171	3,581	6,043	
Idle land	579,401	330,680			
Others	227,744	83,403	33,370	46,257	
Total	20,126,351	9,023,208	385,255	826,181	241,393
7. Irrigable Areas in ha (1993)	4,536,978	756,114	23,542	31,848	NA
8. Crop Yields (ton/ha in 1993/94)					
Major rice	1.83	1.64	1.63	1.54	2.34
Second rice	3.96	2.25	2.22	1.99	0.00
Cassava	13.81	13.56	12.7	14.41	12.10
Maize	2.73	2.67	2.69	3.17	2.87
Sugarcane	47.31	45.79	41.68	42.56	46.88
9. Gross Production Value (GPV) in 1993					
Per capita GPV (Bahts)	54,082	16,818	19,705	16,424	10,702
Per ha of land (Bahts)	61,747	19,972	22,628	19,428	20,131
10. Agricultural GPV (million Bahts) in 1993					
Crops	175,622	46,604	2,283	3,667	NA
Livestock	32,921	10,554	327	987	NA
Fisheries	46,830	1,169	106	83	NA
Forestry	4,664	26	6	0	NA
Agricultural services	10,767	2,767	99	311	NA
Simple agro-processing	44,167	6,853	354	508	NA
Total	314,971	67,973	3,175	5,556	NA
Per capita (Bahts)	5,376	3,369	3,719	3,971	NA
Per ha of farm holding areas (Bahts)	14,792	7,353	8,041	6,580	NA
11. Farm Economy (Bahts/family/year-1991/92)					
Gross farm income	35,042	19,026	23,334	21,634	18,436
Farm expenditure	23,812	12,963	12,652	10,564	6,647
Net farm income	11,230	6,063	10,682	11,050	11,789
Off-farm income	22,930	19,147	23,733	22,174	20,733
Net farm household income	34,161	25,210	34,415	33,224	32,522
Farm household expense	35,432	24,005	31,760	23,543	22,781

Source: Agricultural Statistics of Thailand
Statistical Yearbook, NSO

Note: Nong Bua Lamphu was administratively separated from Udon Thani in 1993

POPULATION

Population by Province

	1992			1993		
	Male	Female	Total	Male	Female	Total
Nong Khai	423,522	413,171	836,693	430,896	422,810	853,706
Udon Thani	934,701	911,453	1,846,154	705,253	693,738	1,398,991

Source: Statistical Yearbook, 1994

Employed Population Aged 13 Years and Over by Occupation in Udon Thani (1990)

	(unit:person)		
	1990		
	Male	Female	Total
Total	537,288	496,010	1,033,298
1. Professional, Technical and Related Workers	14,275	13,385	27,660
2. Administrative, Executive and Managerial Workers	10,819	578	11,397
3. Clerical Workers	6,005	3,969	9,974
4. Sales Workers	18,138	28,643	46,781
5. Farmers, Fishermen, Hunters, Loggers, and Related Workers	418,820	418,595	837,415
6. Miners, Quarrymen, Well Drillers and Related Workers	95	12	107
7. Workers in Transport and Communication Occupations	12,247	391	12,638
8. Craftsmen, Production Process Workers and Laborers	46,357	21,391	67,748
9. Service, Sports and Recreation Workers	8,158	7,445	15,603
10. Workers not Classified	2,374	1,601	3,975

Source: Statistical Reports of Changwat, Udon Thani, 1992

Employed Population Aged 13 Years and Over by Occupation in Nong Khai (1990)

	(unit: person)		
	1990		
	Male	Female	Total
Total	245,019	229,929	474,948
1. Professional, Technical and Related Workers	5,457	4,474	9,931
2. Administrative, Executive and Managerial Workers	2,930	272	3,202
3. Clerical Workers	2,031	1,496	3,527
4. Sales Workers	7,413	13,157	20,570
5. Farmers, Fishermen, Hunters Loggers, and Related Workers	202,346	200,965	403,311
6. Miners, Quarrymen, Well Drillers and Related Workers	11	1	12
7. Workers in Transport and Communication Occupations	4,055	122	4,177
8. Craftsmen, Production Process Workers and Laborers	16,260	6,575	22,835
9. Service, Sports and Recreation Workers	4,053	2,491	6,544
10. Workers not Classified	463	376	839

Source: Statistical Reports of Changwat, Nong Khai, 1994

Employed Population Aged 13 Years and Over by Occupation

	Ages													Total	
	13-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70 & over		
Nong Khai															
Total	23,532	76,268	70,814	63,248	57,532	46,536	38,007	32,452	25,850	19,729	11,432	5,800	3,748	474,948	
%	5.0	16.1	14.9	13.3	12.1	9.8	8.0	6.8	5.4	4.2	2.4	1.2	0.8	100.0	
Male	11,755	38,042	35,760	32,604	29,521	23,973	19,798	16,704	13,432	10,596	6,796	3,625	2,413	245,019	
%	4.8	15.5	14.6	13.3	12.0	9.8	8.1	6.8	5.5	4.3	2.8	1.5	1.0	100.0	
Female	11,777	38,226	35,054	30,644	28,011	22,563	18,209	15,748	12,418	9,133	4,636	2,175	1,335	229,929	
%	5.1	16.6	15.2	13.3	12.2	9.8	7.9	6.8	5.4	4.0	2.0	0.9	0.6	100.0	
Farmers, Fishermen, Hunters															
Total	22,315	69,112	60,835	51,192	45,115	37,359	31,109	27,298	22,548	17,436	10,363	5,332	3,297	483,311	
%	5.5	17.1	15.1	12.7	11.2	9.3	7.7	6.8	5.6	4.3	2.6	1.3	0.8	100.0	
Male	11,185	34,464	30,094	25,425	22,038	18,306	15,378	13,434	11,270	9,133	6,128	3,345	2,146	292,346	
%	5.5	17.0	14.9	12.6	10.9	9.0	7.6	6.6	5.6	4.5	3.0	1.7	1.1	100.0	
Female	11,130	34,648	30,741	25,767	23,077	19,053	15,731	13,864	11,278	8,303	4,235	1,987	1,151	200,965	
%	5.5	17.2	15.3	12.8	11.5	9.5	7.8	6.9	5.6	4.1	2.1	1.0	0.6	100.0	
Udo Thani															
Total	46,325	159,850	162,610	140,603	124,551	106,473	87,188	71,472	53,536	39,204	22,046	11,079	8,361	1,033,298	
%	4.5	15.5	15.7	13.6	12.1	10.3	8.4	6.9	5.2	3.8	2.1	1.1	0.8	100.0	
Male	22,886	80,205	83,429	73,510	64,233	55,594	45,446	37,418	28,217	21,394	12,898	6,759	5,309	537,288	
%	4.3	14.9	15.5	13.7	12.0	10.3	8.5	7.0	5.3	4.0	2.4	1.3	1.0	100.0	
Female	23,439	79,645	79,181	67,093	60,318	50,879	41,742	34,054	25,319	17,820	9,148	4,320	3,052	496,010	
%	4.7	16.1	16.0	13.5	12.2	10.3	8.4	6.9	5.1	3.6	1.8	0.9	0.6	100.0	
Farmers, Fishermen, Hunters															
Total	43,003	141,098	132,105	108,315	92,533	81,336	67,618	57,067	44,195	33,299	19,553	9,962	7,331	837,415	
%	5.1	16.8	15.8	12.9	11.0	9.7	8.1	6.8	5.3	4.0	2.3	1.2	0.9	100.0	
Male	21,432	70,910	64,451	54,369	45,159	38,805	33,134	28,140	22,218	17,299	11,230	6,059	4,614	418,820	
%	5.1	16.9	15.4	13.0	10.8	9.5	7.9	6.7	5.3	4.1	2.7	1.4	1.1	100.0	
Female	21,571	70,188	67,654	53,946	47,374	41,531	34,484	28,927	21,977	16,000	8,323	3,903	2,717	418,595	
%	5.2	16.8	16.2	12.9	11.3	9.9	8.2	6.9	5.3	3.8	2.0	0.9	0.6	100.0	

Source: 1990 Population and Housing Census, NSO

Classification of Working Hours per Week for 13 Years Old Upward (1994)

(unit:person)

	Working Hours per Week										
	Total	Less than 10 hrs	10~19	20~29	30~39	40~49	50~59	60~69	70~79	80~89	90~99
Udon Thani	565,907	2,798	24,852	24,710	73,718	127,688	169,329	56,653	63,907	16,628	5,624
	100.00	0.49	4.39	4.37	13.03	22.56	29.92	10.01	11.29	2.94	0.99
Male	362,091	960	18,767	14,716	42,185	79,364	113,277	40,687	42,130	8,612	1,393
	100.00	0.27	5.18	4.06	11.65	21.92	31.28	11.24	11.64	2.38	0.38
Female	203,816	1,838	6,085	9,994	31,533	48,324	56,052	15,966	21,777	8,016	4,231
	100.00	0.90	2.99	4.90	15.47	23.71	27.50	7.83	10.68	3.93	2.08
Nong Khai	444,930	1,563	6,065	17,826	43,098	85,883	177,806	32,478	71,230	5,932	3,049
	100.00	0.35	1.36	4.01	9.69	19.30	39.96	7.30	16.01	1.33	0.69
Male	260,878	960	3,805	8,489	22,223	38,339	117,386	20,147	45,639	3,143	747
	100.00	0.37	1.46	3.25	8.52	14.70	45.00	7.72	17.49	1.20	0.29
Female	184,052	603	2,260	9,337	20,875	47,544	60,420	12,331	25,591	2,789	2,302
	100.00	0.33	1.23	5.07	11.34	25.83	32.83	6.70	13.90	1.52	1.25
Nong Bua Lamphu	216,623	-	4,431	9,460	22,427	62,145	62,751	19,304	34,825	143	1,137
	100.00	-	2.05	4.37	10.35	28.69	28.97	8.91	16.08	0.07	0.52
Male	137,888	-	2,873	5,120	14,495	33,799	42,638	13,447	24,782	85	649
	100.00	-	2.08	3.71	10.51	24.51	30.92	9.75	17.97	0.06	0.47
Female	78,733	-	1,558	4,339	7,932	28,346	20,112	5,857	10,043	58	488
	100.00	-	1.98	5.51	10.07	36.00	25.54	7.44	12.76	0.07	0.62

Source: NSO

LAND

Land Use of Nong Khai Province

Year	Total Land	Farm Hold- ing Area	Forest Land	(unit:ha)		
				Other Land	Ratio of Farm Hold- ing Area (%)	Ratio of Forest Area (%)
1981	722,300	349,087	87,248	285,966	48.3	12.1
1984	733,228	365,773	83,177	284,278	49.9	11.3
1985	733,228	370,761	81,800	280,667	50.6	11.2
1986	733,228	376,246	71,373	285,609	51.3	9.7
1987	733,228	380,377	62,276	290,576	51.9	8.5
1988	733,228	372,241	54,337	306,649	50.8	7.4
1989	733,228	377,068	54,000	302,160	51.4	7.4
1990	733,228	385,181	51,544	296,503	52.5	7.0
1991	733,228	394,820	49,200	289,208	53.8	6.7

Source: Statistical Report of Changwat, Nong Khai, 1994

Land Use of Farm Holding Area in Nong Khai Province

Year	Total	(unit:ha)						
		Housing Area	Paddy Area	Field Crops	Fruit Trees	Vegetables	Grassland	Idle Land & Others
1981	349,087	5,296	221,618	81,261	4,268	872	2,123	33,648
1984	360,045	625	221,156	94,063	3,685	1,760	1,709	37,048
1985	370,761	6,890	218,185	92,679	3,878	1,892	3,004	44,232
1986	376,246	6,624	221,545	93,730	6,353	1,761	2,532	43,701
1987	380,377	7,029	220,211	101,685	6,711	1,746	7,287	35,708
1988	372,241	6,740	216,037	112,900	7,012	2,419	6,076	21,058
1989	377,068	7,750	221,287	108,224	9,594	1,432	3,993	24,787
1990	385,186	8,761	224,886	101,493	11,610	1,018	3,434	33,984
1991	394,820	9,558	227,912	107,183	11,968	1,241	3,581	33,376

Source: Statistical Report of Changwat, Nong Khai, 1994

Land Use of Udon Thani Province

Year	Total Land	Farm Hold- ing Area	Forest Land	(unit:ha)		
				Other Land	Ratio of Farm Hold- ing Area (%)	Ratio of Forest Area (%)
1981	1,660,500	754,920	276,060	629,520	45.5	16.6
1984						
1985						
1986	1,558,939	787,608	237,368	533,964	50.5	15.2
1987						
1988	1,558,939	848,433	239,808	470,698	54.4	15.4
1989						
1990						
1991	1,558,939	844,324	219,575	495,040	54.2	14.1

Source: Agricultural Statistics of Thailand

Land Use of Farm Holding Area in Udon Thani Province

Year	Total	(unit:ha)						
		Housing Area	Paddy Area	Field Crops	Fruit Trees	Vegetables	Grassland	Idle Land & Others
1981	754,920	11,020	509,280	184,954	6,799	1,420	3,344	38,102
1984								
1985								
1986	787,608	14,959	512,129	214,713	10,707	1,195	5,793	28,111
1987								
1988	848,433	15,636	546,662	181,465	19,382	1,740	3,843	79,706
1989								
1990								
1991	844,324	18,144	530,674	219,471	22,515	1,221	6,043	46,257

Source: Agricultural Statistics of Thailand

Land Use and Farm Size

	Number of Farms	Average Farm Size (ha)	Total Holding	Housing Area (ha)	Paddy Land (ha)	Under Field Crops (ha)	Under Fruit Trees & Tre Crops (ha)	Under Vegetable & Flowers (ha)	Livestock Farm Area (ha)	Idle Land (ha)	Others (ha)
Nong Khai											
1988	80,819	4.81	388,793	8,522	219,131	108,171	8,569	2,419	1,598	34,576	5,808
1991	84,822	4.65	394,820	9,558	227,912	107,183	11,958	1,241	3,581	26,637	6,740
Change	1.05	0.97	1.02	1.12	1.04	0.99	1.40	0.51	2.24	0.77	1.16
Udon Thani											
1988	170,337	4.98	848,433	15,636	546,662	181,465	19,382	1,740	3,843	74,476	5,230
1991	165,599	5.10	844,324	18,144	530,674	219,471	22,515	1,221	6,043	40,632	5,625
Change	0.97	1.02	1.00	1.16	0.97	1.21	1.16	0.70	1.57	0.55	1.08

Source: Agricultural Statistics of Thailand 1993/94, NSO

ECONOMY

Gross Provincial Product at Current Prices by Industrial Sector in Udon Thani

	(unit: 1,000 Bahts)					Proportion Agricultural in 1993 (%)	
	1989	1990	1991	1992	1993	Composition (%)	
Agriculture	6,218,157	5,999,627	6,454,369	7,101,170	5,558,038	18.4	100.0
Crops	4,576,477	4,342,359	4,649,435	4,969,956	3,667,395	12.1	66.0
Livestock	804,033	766,961	908,120	989,655	987,691	3.3	17.8
Fisheries	80,835	108,259	85,801	74,056	83,148	0.3	1.5
Forestry	15,959	2,563	55	308	0	0.0	0.0
Agricultural Services	315,145	314,746	322,063	427,107	311,749	1.0	5.6
Simple Agricultural Processing Products	425,698	464,739	488,895	640,078	508,065	1.7	9.1
Mining and Quarrying	30,919	30,386	24,263	24,632	30,508	0.1	
Manufacturing	1,783,177	1,883,751	2,308,048	2,443,956	2,490,747	8.2	
Construction	1,187,413	1,581,545	1,894,595	1,930,524	1,972,556	6.5	
Electricity and Water Supply	336,120	355,785	381,815	436,200	507,097	1.7	
Transportation and Communication	830,525	974,185	1,272,110	1,922,691	1,852,763	6.1	
Wholesale and Retail Trade	4,395,020	5,182,030	5,727,510	6,250,107	6,941,403	22.9	
Banking, Insurance and Real Estate	663,317	732,485	886,275	1,163,953	1,463,576	4.8	
Ownership of Dwellings	1,103,790	1,100,188	1,297,622	1,403,233	1,504,290	5.0	
Public Administration and Defence Services	1,336,221	1,604,233	1,909,959	2,254,238	2,563,915	8.5	
Services	2,871,386	3,347,609	4,060,187	4,633,568	5,401,509	17.8	
Total Gross Provincial Product	20,756,045	22,891,824	26,216,713	29,564,272	30,286,492	100.0	
Per capita GPP (Bahts)	11,867	12,875	14,516	16,262	16,424		
Per ha of farm holding area (Bahts)	24,464	26,981	31,051	35,015	35,871		

Gross Provincial Product at 1988 Constant Prices in Udon Thani

	(unit: 1,000 Bahts)					Annual Growth (%)
	1989	1990	1991	1992	1993	
Agriculture	5,816,749	5,702,909	5,621,508	5,848,017	5,125,376	-3.1
Crops	4,276,544	4,271,357	4,177,131	4,171,667	3,556,403	-4.4
Livestock	777,781	684,636	722,162	851,730	926,507	4.5
Fisheries	78,363	87,074	73,313	65,782	70,873	-2.5
Forestry	14,685	2,210	49	264	0	0.0
Agricultural Services	282,728	271,657	273,833	341,202	249,416	-3.1
Simple Agricultural Processing Products	386,648	385,975	375,020	417,372	322,167	-4.5
Mining and Quarrying	25,374	21,533	15,097	17,710	21,633	-3.9
Manufacturing	1,505,569	1,639,657	1,945,683	2,197,058	2,073,827	8.3
Construction	1,111,962	1,360,376	1,502,083	1,423,848	1,384,534	5.6
Electricity and Water Supply	336,046	354,429	374,251	389,766	428,521	6.3
Transportation and Communication	803,676	955,110	1,196,324	1,648,577	1,487,037	16.6
Wholesale and Retail Trade	4,219,110	4,602,796	4,888,506	5,010,701	5,355,925	6.1
Banking, Insurance and Real Estate	630,081	656,897	751,730	948,301	1,152,855	16.3
Ownership of Dwellings	1,068,423	1,103,248	1,142,552	1,184,457	1,207,121	3.1
Public Administration and Defence Services	1,184,364	1,285,859	1,433,877	1,418,164	1,484,069	5.8
Services	2,563,727	2,712,120	3,054,985	3,098,709	3,330,989	6.8
Total Provincial Gross Product	19,265,081	20,394,934	21,926,596	23,185,308	23,051,887	4.6

Source: NESDB

Gross Provincial Product at Current Prices by Industrial Sector in Hong Khai

	(unit: 1,000 Bahts)					Proportion Agricultural	
	1989	1990	1991	1992	1993	in 1993 (%)	Composition (%)
Agriculture	3,333,655	3,332,233	3,698,045	3,720,553	3,178,923	19.2	100.0
Crops	2,611,644	2,514,664	2,692,985	2,817,615	2,293,515	13.8	71.8
Livestock	281,593	310,640	312,668	339,546	327,177	2.0	10.3
Fisheries	94,114	125,321	110,181	95,099	106,774	0.6	3.4
Forestry	4,061	20,341	4,663	16,788	6,903	0.0	0.2
Agricultural Services	99,727	105,373	93,232	108,809	99,587	0.6	3.1
Simple Agricultural Processing Products	242,516	255,894	284,316	342,706	354,967	2.1	11.2
Mining and Quarrying	56,547	590,865	1,159,914	1,311,248	1,601,358	9.7	
Manufacturing	1,399,582	1,540,429	1,826,355	1,587,061	1,749,364	10.5	
Construction	782,580	914,415	1,125,316	1,325,300	1,285,081	7.7	
Electricity and Water Supply	98,307	105,755	117,874	134,965	162,100	1.0	
Transportation and Communication	359,461	396,394	395,604	522,502	633,172	3.8	
Wholesale and Retail Trade	2,046,426	2,356,822	2,633,519	2,905,373	3,262,162	19.7	
Banking, Insurance and Real Estate	181,146	202,900	260,094	344,624	684,945	4.1	
Ownership of Dwellings	518,080	559,351	603,099	632,781	693,262	4.2	
Public Administration and Defence Services	505,436	610,076	719,996	882,578	1,026,072	6.2	
Services	1,129,790	1,335,779	1,547,596	2,157,874	2,315,233	14.0	
Total Gross Provincial Product	10,397,010	11,944,930	13,887,412	15,524,869	16,591,672	100.0	
Per capita GPP (Bahts)	12,232	13,954	15,981	18,179	19,705		
Per ha of farm holding area (Bahts)	27,573	31,011	35,174	39,321	42,023		

Gross Provincial Product at 1988 Constant Prices in Hong Khai

	(unit: 1,000 Bahts)					Annual Growth (%)
	1989	1990	1991	1992	1993	
Agriculture	3,050,349	2,904,777	2,635,665	2,760,698	2,690,256	-3.1
Crops	2,360,722	2,183,127	1,974,190	2,034,696	1,967,401	-4.5
Livestock	279,782	288,416	265,204	306,438	310,123	2.6
Fisheries	91,236	100,797	94,145	84,474	91,012	0.0
Forestry	3,739	17,409	4,015	13,073	5,316	9.2
Agricultural Services	89,494	90,329	78,836	85,917	79,037	-3.1
Simple Agricultural Processing Products	225,376	224,699	219,275	236,100	237,367	1.3
Mining and Quarrying	46,484	413,664	721,703	803,349	855,259	107.7
Manufacturing	1,265,574	1,400,338	1,591,114	1,377,261	1,468,170	3.8
Construction	714,075	786,492	892,308	972,575	902,985	6.0
Electricity and Water Supply	98,530	105,620	115,868	120,862	137,526	8.7
Transportation and Communication	344,695	392,700	381,678	465,980	527,534	11.2
Wholesale and Retail Trade	1,964,518	2,093,383	2,247,744	2,329,233	2,517,055	6.4
Banking, Insurance and Real Estate	177,770	181,964	210,620	280,775	539,527	32.0
Ownership of Dwellings	501,480	514,172	531,027	534,125	556,310	2.6
Public Administration and Defence Services	447,995	489,001	540,525	555,239	593,921	7.3
Services	1,008,897	1,077,065	1,158,060	1,420,979	1,388,601	8.3
Total Provincial Gross Product	9,670,367	10,359,176	11,036,332	11,621,026	12,187,144	6.1

Source: NESDB

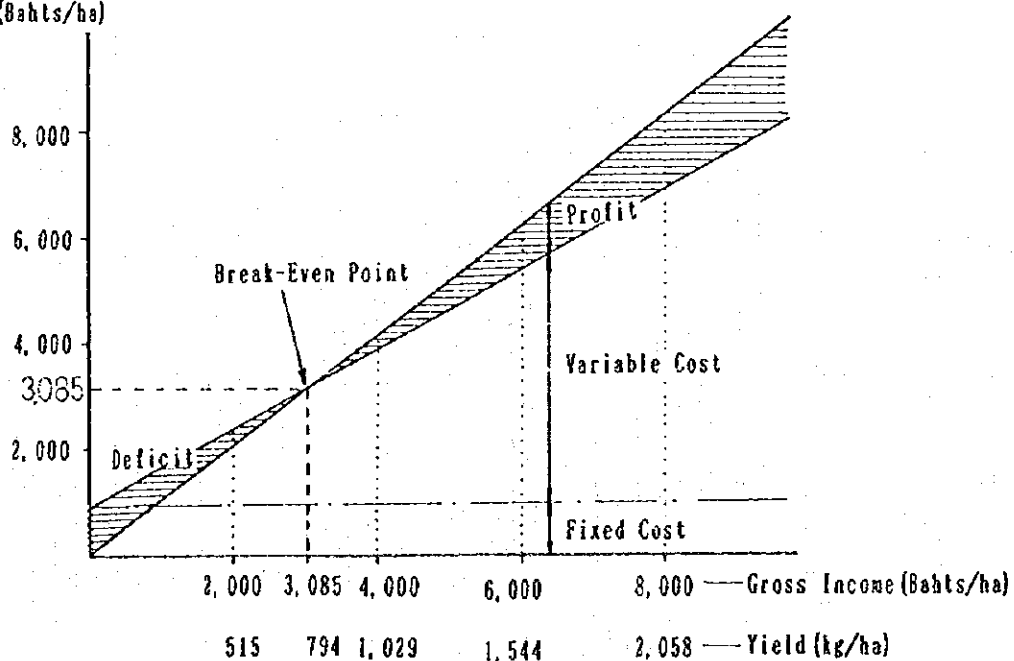
Comprison of Gross Provincial Product at Current Market Prices(1991)

		GPP	Per Capita	Rank in
	Region	(million Bahts)	GPP (Bahts)	Per Capita in Whole Kingdom
Samut Prakan	Central	158,889.4	192,827.0	1
Bangkok Metropolis	Central	980,065.8	156,385.0	2
Chon Buri	Central	128,417.0	146,261.0	3
Pathum Thani	Central	56,513.0	129,320.0	4
Samut Sakhon	Central	37,526.2	108,772.0	5
Rayon	Central	41,519.4	94,793.0	6
Phuket	Southern	16,015.1	87,038.0	7
Saraburi	Central	37,582.2	71,722.0	8
Nonthaburi	Central	38,922.0	59,605.0	9
Ranon	Southern	7,065.3	55,632.0	10
Nong Khai	Northeastern	13,565.3	15,610.0	61
UdonnThani	Northeastern	26,958.9	14,936.0	62
Nong Bua Lamphu	Northeastern	NA	NA	NA

Source: Statistical Reports of Changwat, Nng Khai, 1994

Gross Income
&
Production Cost
(Bahts/ha)

Break-Even Chart of Wet Season Paddy - Udon Thani



Data Source: Agro-economic Zone-1 Office, Udon Thani

AGRICULTURE

Major Crops in the Changwat (1992/93)

Udon Thani

	Planted Area (ha)	Production (ton)	Yield (ton/ha)
Paddy	441,735	699,952	1.58
Sugarcane	91,556	3,545,354	38.72
Cassava	76,995	1,146,259	14.89
Maize	37,116	93,547	2.52
Fruit	19,644	-	-
Soybeans	6,808	9,400	1.38
Perennial plant	5,896	-	5.38
Jute	5,874	6,987	1.19
Groundnut	2,599	3,257	1.25
Cotton	2,155	2,074	0.96
Mung Bean	1,862	1,380	0.74

Nong Khai

	Planted Area (ha)	Production (ton)	Yield (ton/ha)
Paddy	190,809	271,638	1.42
Cassava	65,961	838,943	12.72
Fruit/perennial plant	20,834	-	-
Pineapple	2,463	68,428	27.79
Kenaf	1,891	2,226	1.18
Soybeans	1,628	1,846	1.13
Sugarcane	751	24,221	32.26
Groundnut	276	278	1.01
Maize	51	145	2.87
Cotton	27	297	10.92

Nong Bua Lamphu

	Planted Area (ha)	Production (ton)	Yield (ton/ha)
Paddy	143,938	362,114	2.52
Cassava	14,484	221,548	15.30
Maize	14,098	55,163	3.91
Fruit/Perennial plant	9,088	66,416	-
Sugarcane	5,877	318,210	54.15
Soybeans	4,726	6,009	1.27
Mung Bean	2,897	2,371	0.82
Kenaf	2,218	3,024	1.36
Vegetables	1,610	14,403	8.95
Cotton	886	1,253	1.41
Groundnut	856	638	0.75
Jute	652	1,024	1.57

Source: Agricultural guideline

Production of Major Rice by Province

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai				
1990/91	188,024	178,577	279989	1.57
1991/92	156,958	130,135	222684	1.71
1992/93	188,648	152,372	266466	1.75
1993/94	173,797	155,305	253093	1.63
Udon Thani				
1990/91	471,139	452,163	755881	1.67
1991/92	445,424	410,536	712679	1.74
1992/93	438,390	410,912	693205	1.69
1993/94	429,216	359,855	552616	1.54

Source: Agricultural Statistics of Thailand, 1993/94

Production of Second Rice by Province

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai				
1991	1,036	955	1885	1.97
1992	2,001	1,898	5415	2.85
1993	2,161	2,034	5172	2.54
1994	876	867	1926	2.22
Udon Thani				
1991	3,309	3,289	7837	2.38
1992	1,836	1,671	3971	2.38
1993	3,345	2,971	6747	2.27
1994	760	636	1263	1.99

Source: Agricultural Statistics of Thailand, 1993/94

Production of Cassava by Province

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai				
1991	67,566	66,013	823,920	12.48
1992	70,630	68,683	889,056	12.94
1993	65,961	65,961	838,943	12.72
1994	64,351	64,351	814,043	12.65
Total	268,509	265,008	3,365,962	12.70
Udon Thani				
1991	81,852	81,362	1,094,322	13.45
1992	81,275	79,606	1,179,667	14.82
1993	76,995	76,995	1,146,259	14.89
1994	73,380	68,509	994,762	14.52
Total	313,502	306,473	4,415,010	14.41

Source: Agricultural Statistics of Thailand, 1993/94

Production of Sugarcane by Province

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai				
1990/91	136	136	8147	60.12
1991/92	211	211	12061	57.06
1992/93	751	751	24221	32.26
1993/94	279	279	11616	41.68
Udon Thani				
1990/91	46,775	46,606	2777808	59.60
1991/92	53,020	52,066	2739570	52.62
1992/93	91,556	89,908	3545354	39.43
1993/94	69,289	64,193	2731829	42.56

Source: Agricultural Statistics of Thailand, 1993/94

Production of Maize by Province

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai				
1990/91	0	0	0	0.00
1991/92	0	0	0	0.00
1992/93	51	49	145	2.97
1993/94	31	31	83	2.69
Udon Thani				
1990/91	40,798	40,732	94029	2.31
1991/92	37,493	29,801	68859	2.31
1992/93	37,116	36,632	93547	2.55
1993/94	31,696	28,127	89132	3.17

Source: Agricultural Statistics of Thailand, 1993/94

Production of Groundnut by Province

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai				
1990/91	412	394	442	1.12
1991/92	361	361	395	1.09
1992/93	276	242	278	1.15
1993/94	282	188	242	1.28
Total	1,331	1,186	1,357	1.14
Udon Thani				
1990/91	1,488	1,488	2,329	1.56
1991/92	1,571	1,553	2,498	1.61
1992/93	2,599	2,308	3,257	1.41
1993/94	2,870	2,787	4,314	1.55
Total	8,528	8,136	12,398	1.52

Source: Agricultural Statistics of Thailand, 1993/94

Production of Cotton by Province

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai				
1990/91	0	0	0	0
1991/92	0	0	0	0
1992/93	27	27	37	1.39
1993/94	0	0	0	0
Udon Thani				
1990/91	1,345	1,319	1538	1.17
1991/92	3,112	3,092	3112	1.01
1992/93	2,154	2,110	2074	0.98
1993/94	2,041	1,936	2360	1.22

Source: Agricultural Statistics of Thailand, 1993/94

Production of Mungbean by Province

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai				
1990/91	0	0	0	0.00
1991/92	0	0	0	0.00
1992/93	0	0	0	0.00
1993/94	0	0	0	0.00
Udon Thani				
1990/91	1,951	1,941	1178	0.61
1991/92	2,488	2,412	1738	0.72
1992/93	1,862	1,831	1380	0.75
1993/94	2,468	2,039	1403	0.69

Source: Agricultural Statistics of Thailand, 1993/94

Production of Soybeans by Province

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai				
1990/91	2,491	2,387	3258	1.37
1991/92	1,134	1,123	1495	1.33
1992/93	1,714	1,509	1846	1.22
1993/94	2,523	2,024	2719	1.34
Udon Thani				
1990/91	5,891	5,573	7277	1.31
1991/92	5,019	4,958	5861	1.18
1992/93	6,808	6,797	9400	1.38
1993/94	4,849	4,268	6646	1.56

Source: Agricultural Statistics of Thailand, 1993/94

Production of Kenaf by Province

	Planted Area (ha)	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai				
1990/91	2,585	2,574	2633	0.00
1991/92	1,945	1,827	2295	0.00
1992/93	1,127	996	1325	1.33
1993/94	724	690	1034	1.50
Udon Thani				
1990/91	8,953	8,494	10638	1.25
1991/92	6,044	5,856	7064	1.21
1992/93	4,943	4,738	5716	1.21
1993/94	4,322	4,008	5471	1.37

Source: Agricultural Statistics of Thailand, 1993/94

Production of Pineapple by Province

	Harvested Area (ha)	Production (ton)	Yield (ton/ha)
Nong Khai			
1990	0	0	0
1991	0	0	0
1992	2,458	68428	27.83
1993	3,278	95957	29.28
Udon Thani			
1990	0	0	0
1991	0	0	0
1992	19	252	13.02
1993	329	7596	23.08

Source: Agricultural Statistics of Thailand, 1993/94

Number of Livestock by Province

	Buffaloes	Cattle	Swine	Duck	Chicken
Nong Khai					
1991	157,282	43,671	23,856	267,644	786,085
1992	153,653	45,101	22,891	267,654	822,762
1993	NA	NA	NA	267,644	NA
Udon Thani					
1991	302,919	146,868	54,319	394,091	1,592,860
1992	295,930	151,676	52,121	336,275	1,667,181
1993	NA	NA	NA	617,131	NA

Source: Agricultural Statistics of Thailand, 1993/94

Production of Field Crops (whole Changwat)

Changwat	Planted Area (ha)	Damaged Area (ha)	Harvested Area (ha)	Production (ton)	Yield (t/ha)
Nong Khai (1992/93)					
1. Cassava	54,695	0	54,695	563,779	10.31
2. Pineapple	3,186	199	2,987	86,330	28.90
3. Tobacco (Virginia)	2,261	0	2,261	5,055	2.24
4. Soybean (dry season)	2,223	0	2,223	3,053	1.37
5. Sugarcane	2,111	450	1,661	97,981	58.97
6. Soybean (wet season)	1,162	511	651	1,179	1.81
7. Watermelon	797	31	766	20,755	27.09
8. Tobacco (Barae)	676	0	676	1,235	1.83
9. Tobacco	513	0	513	907	1.77
10. Kenaf	422	86	337	439	1.30
11. Jute	335	16	319	478	1.50
12. Watermelon for Seed	124	0	124	19	0.15
13. Maize	111	102	8	26	3.13
14. Groundnut (dry season)	85	1	84	185	2.22
15. Groundnut (wet season)	37	0	37	48	1.30
16. Tobacco (Turkish)	37	0	37	80	2.17
Udon Thani/Nong Bua Lamphu (1990/91)					
1. Sugarcane	73,697	-	73,697	4,260,794	57.81
2. Cassava	53,196	-	53,196	863,387	16.23
3. Maize	43,324	-	43,324	116,240	2.68
4. Soybean	7,862	-	7,862	12,570	1.60
5. Kenaf	7,759	-	7,759	10,934	1.41
6. Mungbean	4,177	-	4,177	3,538	0.85
7. Cotton	2,614	-	2,614	3,585	1.37
8. Jute	1,457	-	1,457	2,777	1.91
9. Groundnut	1,205	-	1,205	1,846	1.53
10. Sesame	297	-	297	333	1.12

Source: Statistical Reports of Changwat

Production of Fruit and Tree Crops (whole Changwat)

	Planted Area (ha)			Harvested Area (ha)			Production (ton)	Yield (t/ha)
	Total	Yielded Area	Un-yielded Area	Total	Yielded Area	Un-yielded Area		
Nong Khai (1992/93)								
1. Para Rubber	7,967	31	7,936	7,967	31	7,936	27	0.88
2. Bananas	5,090	3,999	1,091	5,090	3,999	1,091	80,098	20.03
3. Mango	3,477	1,500	1,977	3,477	1,500	1,977	6,313	4.21
4. Cashew Nut	1,333	1,192	141	1,333	1,192	141	323	0.27
5. Coconut	1,099	815	283	1,099	815	283	4,947	6.07
6. Tamarind	1,070	484	586	1,070	484	586	1,968	4.07
7. Kapok	625	357	268	625	357	268	816	2.28
8. Jack Fruit	379	193	186	379	193	186	3,341	17.27
9. Sweet Banana	274	253	21	274	253	21	6,903	27.27
10. Lime	270	188	82	270	188	82	408	2.17
11. Papaya	258	187	71	258	187	71	2,785	14.88
12. Sapodilla	111	39	72	111	39	72	135	3.46
13. Olive	87	26	61	87	26	61	97	3.70
14. Guava	58	51	7	58	51	7	216	4.25
15. Lychee	31	19	12	31	19	12	60	3.13
16. Betel Nut	30	24	6	30	24	6	28,579	1190.79
17. Gendaria	17	15	2	17	15	2	60	3.95
18. Java Apple	13	9	5	13	9	5	34	3.94
19. Coffee	5	2	4	5	2	4	2	1.04

Udon Thani/Nong Bua Lamphu (1990/91)

1. Mango	5,256	3,347	1,909	5,256	3,347	1,909	28,328	8.46
2. Banana	2,736	2,237	499	2,736	2,237	499	29,288	13.09
3. Para Rubber	2,100	0	2,100	2,100	0	2,100	0	0.00
4. Coconut	1,936	1,339	597	1,936	1,339	597	12,099	9.04
5. Tamarind	1,783	1,026	757	1,783	1,026	757	3,881	3.78
6. Kapok	1,553	960	593	1,553	960	593	2,109	2.19
7. Ripe Papaya	1,061	701	360	1,061	701	360	8,764	12.50
8. Cashew Nut	696	336	360	696	336	360	525	1.56
9. Sugar Apple	693	380	313	693	380	313	2,614	6.88
10. Green Papaya	638	526	112	638	526	112	4,274	8.12
11. Jack Fruit	565	319	246	565	319	246	797	2.50
12. Lime	366	306	60	366	306	60	5,733	18.75
13. Bamboo	314	141	173	314	141	173	970	6.87
14. Guava	61	51	10	61	51	10	190	3.75
15. Longan	25	13	12	25	13	12	62	4.67
16. Sapodilla	17	16	2	17	16	2	31	1.98

Source: Statistical Reports of Changwat

IRRIGATION

Water Resources Development Completed by Province (accumulated irrigated area)

Year	(unit:ha)	
	Nong Khai	Udon Thani
1989	21,016	25,994
1990	21,638	29,465
1991	22,326	31,364
1992	23,046	36,969
1993	23,542	31,848

Source: Agricultural Statistics of Thailand, 1993/94

Irrigated Area and Non-Irrigated Area under Dry Season Crops by Province

	(unit:ha)	
	Nong Khai	Udon Thani
1988/89		
Irrigated Area	2,426	1,898
Non-Irrigated Area	3,203	10,593
1989/90		
Irrigated Area	920	2,694
Non-Irrigated Area	8,716	14,083
1990/91		
Irrigated Area	568	2,737
Non-Irrigated Area	7,445	8,577
1991/92		
Irrigated Area	2,608	2,896
Non-Irrigated Area	7,472	14,848
1992/93		
Irrigated Area	133	3,274
Non-Irrigated Area	10,021	11,738

Source: Agricultural Statistics of Thailand, 1993/94

Electric Pump Irrigation Area under Dry Season Crops by Region

	(unit:ha)	
	Nong khai	Udon Thani
1988/89		
No. of Pump Station	62	4
Irrigated Area (ha)	18,830	861
1989/90		
No. of Pump Station	63	9
Irrigated Area (ha)	19,310	1,797
1990/91		
No. of Pump Station	62	12
Irrigated Area (ha)	21,187	2,682
1991/92		
No. of Pump Station	61	12
Irrigated Area (ha)	20,784	2,688
1992/93		
No. of Pump Station	79	14
Irrigated Area (ha)	22,861	3,126
1993/94		
No. of Pump Station	86	14
Irrigated Area (ha)	24,629	3,126

Source: Agricultural Statistics of Thailand, 1993/94

Number of Water Pump Used for Dry Season Crops by Province

	1988/89	1989/90	1990/91	1991/92	1992/93
Nong khai	16	22	19	17	23
Udon Thani	35	39	28	14	40

Source: Agricultural Statistics of Thailand, 1993/94

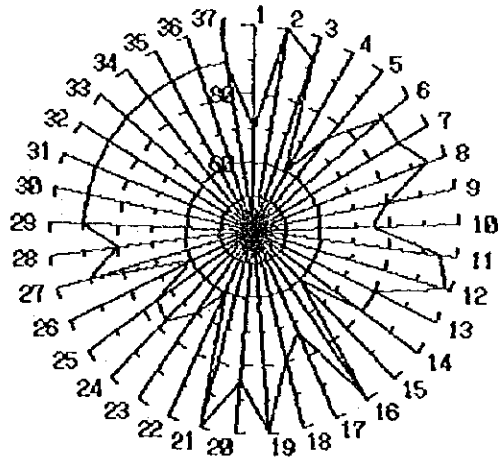
OTHERS

Number of Schools

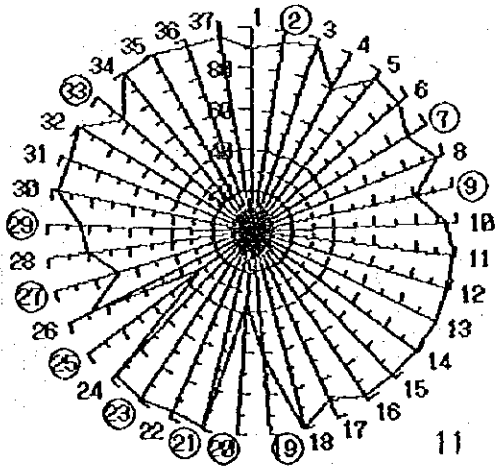
Changwat	Amphoe	Pre Primary- Elementary	Elementary	Elementary- Lower Secondary	Elementary Upper Secondary	Lower Secondary	Lower- Upper Secondary
Nong Khai							
Whole Changwat		303	74	1	-	32	18
Study Area							
	1. Muang Nong Khai	65	1	-	-	6	5
	2. Tha Bo	26	1	-	-	3	2
	3. Phon Phisai	79	27	-	-	4	2
	4. Si Chiang Mai	16	6	1	-	3	1
	5. Sang Khom	10	9	-	-	2	-
	Sub-total	196	44	1	0	18	10
Udon Thani (1991)							
Whole Changwat		383	377	18	1	14	24
Study Area							
	1. Muang Udon Thani	-	125	6	1	2	8
	2. Kut Chap	20	17	-	-	1	1
	3. Kumphawapi	64	18	-	-	2	2
	4. Thung Fon	13	-	-	-	-	1
	5. Ban Dung	39	30	4	-	2	1
	6. Ban Phu	39	-	-	-	2	1
	7. Phen	40	28	2	-	-	1
	8. Sang Khom	12	5	-	-	-	1
	9. Nong Wua So	23	4	1	-	1	1
	10. Nong Han	47	56	-	-	2	2
	11. Nam Son	16	10	1	-	-	1
	Sub-total	313	293	14	1	12	20
Nong Bua Lamphu							
Whole Changwat		179	109	9	-	7	5
Study Area							
	1. Muang Nong Bua Lamphu	44	28	4	-	2	1
	2. Na Kiang	40	22	1	-	2	1
	3. Suwannakhuha	20	7	1	-	-	1
	Sub-total	104	57	6	0	4	3
Total		613	394	21	1	34	33

Source: Statistical Reports of Changwat, NSO

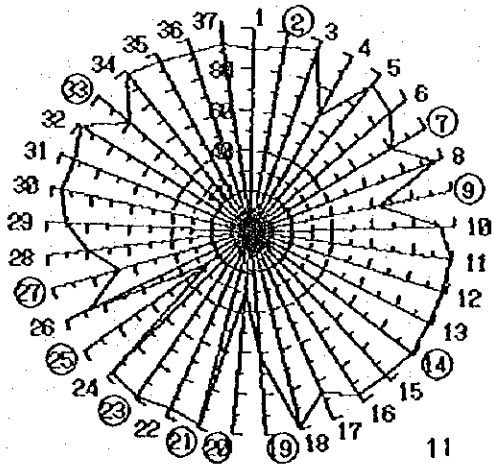
Basic Minimum Needs
Target (1996)



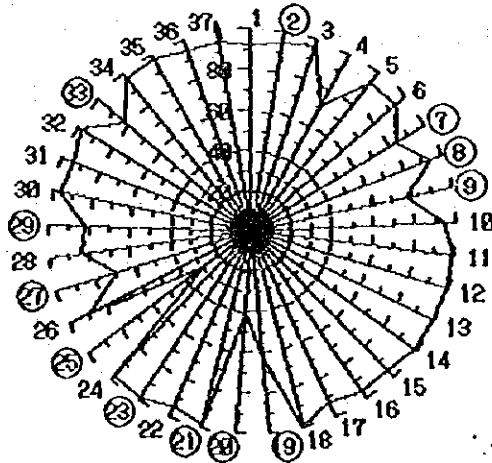
Basic Minimum Needs
Udon Thani



Basic Minimum Needs
Nong Khai



Basic Minimum Needs
Nong Bua Lamphu



Note. Figures marked by circle mean being not met target.

Rural Quality of Life

Target of BMN for 1995-2000 (%)	Result by Region in 1994					Province (1994)			
	Whole Thailand		North- eastern	North- central	Southern	Nong Khai	Jhansi	Nong Bua Lamphu	Udon
	Thailand	North- eastern	North- central	Southern	Nong Khai	Jhansi	Nong Bua Lamphu	Udon	
Group 1: Consume Sufficient Nutrient and Safe Food									
1. Infant birth weight is more than 3,000 grams	70	85.3	85.6	78.2	89.0	85.6	90.1	90.3	92.5
2. Infants and children from birth to 5 years,	Not over level 3	91.0	89.1	89.0	96.4	91.9	91.8	93.5	94.1
2.1 Malnutrition level 1	93	94.8	95.4	92.3	97.3	92.9	95.4	97.3	96.8
2.2 Malnutrition level 2	80	77.6	70.7	61.8	94.1	98.9	85.4	79.4	71.0
2.3 Malnutrition level 3	75	92.4	94.7	88.4	94.7	89.6	93.4	95.8	94.0
3. Children from to 14 years receive all necessary nutrients									
4. People in the family do not eat raw food or uncooked food									
5. People in the family eat food which has level from Public Health Office									
Group 2: Lives in Appropriate Shelter									
6. Houses are made of materials no less than 5 years durability	90	93.5	95.6	88.4	95.0	93.4	90.2	95.1	93.9
7. Houses are kept clean	90	82.6	82.1	77.8	92.3	77.8	80.1	87.9	83.2
8. Family uses sanitary latrine	95	91.4	92.7	89.3	94.9	87.6	96.7	97.0	94.3
9. People in the family have safe drinking water	95	77.2	77.0	69.7	88.3	74.1	84.4	81.7	78.0
10. Surrounded with good environment	80	91.7	93.7	87.1	93.4	91.6	92.8	94.9	94.5
Group 3: People have access to basic health services									
11. Pregnant women are vaccinated for tetanus before giving birth	75	97.4	98.6	95.4	98.3	95.5	98.6	98.6	98.9
12. Receive birthing services and check up after giving birth	80	97.7	98.3	96.3	98.9	96.4	98.4	98.9	99.2
13. Children under 1 year receive vaccination	95	97.8	98.9	97.1	97.7	95.7	98.1	99.9	99.2
14. Primary school children receive vaccination	99	98.8	98.7	98.6	99.3	98.7	98.7	99.4	99.4
15. Family have knowledge of AIDS	80	94.3	96.2	91.6	96.4	90.8	96.9	97.7	96.0
16. Family know how to protect against AIDS	80	93.9	95.9	90.9	96.2	90.5	96.3	97.7	95.8
17. Children between 3 to 6 years receive adequate care	50	89.3	89.8	87.8	93.2	85.6	86.2	90.3	93.0
18. Children and youth receive compulsory education	99	97.7	98.0	96.1	98.9	97.5	99.4	99.6	99.6
19. Children finish complete compulsory education and attend secondary school	73	72.3	55.6	73.3	81.3	77.1	52.2	52.4	52.5
20. Children who do not attend secondary school receive occupation training	80	35.4	31.8	36.4	50.8	39.4	29.9	36.1	41.6
21. People between 14 to 50 years are literate	99	96.3	98.4	91.4	98.4	95.2	98.6	98.8	98.3
22. People have adequate information	85	92.2	95.0	87.3	95.9	87.4	95.6	96.7	95.1
Group 4: People have Security of Life									
23. People are safe from harm and theft	100	98.6	98.8	98.3	99.1	97.9	99.0	99.2	99.0
24. People are safe from accident	60	96.7	97.1	96.1	96.9	96.1	97.2	97.1	98.0
Group 5: Income									
25. People have income no less than 15,000 Bahts per year	70	44.2	29.5	38.0	70.2	55.1	27.5	31.6	29.9
Group 6: Families are able to plan the spacing and number of children									
26. Couples have family planning	77	86.3	87.5	88.1	90.1	73.8	87.4	87.2	89.3

	Target of BMN for 1996-2000 (%)	Result by Region in 1994						Province (1994)	
		Whole North-		Northern		Central	Southern	Hong Bua	
		Thailand	eastern	Northern	Central	Southern	Hong Khai	Udon Thani	Lamphun
27. Couples have no more than 2 children and are able to choose birth control	75	58.6	65.8	73.4	77.8	54.9	67.1	68.4	69.3
Group 7: Participate in the Development of Their Own Community and Way of Life									
28. People are member of development groups	60	76.2	81.3	82.1	71.3	59.7	80.5	81.4	84.0
29. People use their right to vote	90	78.7	85.5	80.4	88.6	75.1	90.2	83.2	81.7
30. People participate in keeping public property	80	90.2	95.4	88.8	89.3	79.5	94.7	96.9	95.5
Group 8: People Uphold Spiritual Values									
31. People participate in religious activities	90	86.4	94.1	82.1	92.8	77.3	93.1	95.5	93.7
32. Absence of addiction to alcohol	90	87.3	98.0	95.6	95.8	97.5	97.5	98.8	97.9
33. Absence of addiction cigarette	90	83.7	82.7	80.9	88.7	83.7	80.3	83.5	82.1
34. There is moderation in organizing ceremonies	90	96.3	98.6	95.1	96.0	92.4	98.8	99.2	97.8
35. Old people have receive take care	90	97.7	97.7	95.4	98.7	97.8	95.4	99.7	98.3
Group 9: Conserve Environment									
36. People conserve and develop natural resources	90	90.1	94.9	88.8	91.5	80.6	93.1	95.6	94.8
37. People protect and control environment	90	90.5	95.0	89.9	92.3	81.7	93.8	95.3	94.8
		15	14	18	9	20	11	11	12

Number of items being not met target

Source: Department of Rural Community Development, Ministry of Interior

Note: Square means less than targeted figures

CHAPTER 3. Study Area

- 1. POPULATION**
- 2. LAND USE**
- 3. AGRICULTURE**
- 4. FARM ECONOMY**
- 5. OTHERS**

POPULATION

Population in the Study Area (1994)

Changwat/Amphoe	Overall			Study Area		
	Whole Population	Overall Households	Farm Households	Population	Overall Households	Farm Households
<u>Udon Thani</u>						
Study Area						
1. Muang Udon Thani	386,609	64,433	41,470	300,009	50,000	32,181
2. Kut Chap	53,490	10,306	8,620	53,490	10,306	8,620
3. Kumphawapi	135,391	25,559	18,245	6,905	1,304	930
4. Thung Fon	24,838	4,924	4,024	4,893	970	793
5. Ban Dung	102,333	19,754	16,052	37,863	7,309	5,939
6. Ban Phu	91,362	18,405	15,725	91,362	18,405	15,725
7. Phen	95,650	17,495	15,225	95,650	17,495	15,225
8. Sang Khom	26,134	4,579	4,131	26,134	4,579	4,131
9. Nong Wua So	56,608	10,160	7,620	48,570	8,717	6,538
10. Nong Han	99,318	18,764	16,156	70,516	13,322	11,471
11. Nam Som	46,452	9,423	7,859	11,892	2,412	2,012
12. Phibul Rak	18,465	3,674	3,362	18,465	3,674	3,362
Sub-Total	1,136,650	207,476	158,489	765,748	138,494	106,927
<u>Nong Khai</u>						
Study Area						
1. Muang Nong Khai	101,871	19,826	12,176	101,871	19,826	12,176
2. Tha Bo	70,346	13,575	10,506	70,346	13,575	10,506
3. Phon Phisai	108,475	22,004	18,533	77,343	15,689	13,214
4. Si Chiang Mai	39,975	8,153	5,486	39,975	8,153	5,486
5. Sang Khom	19,665	4,242	3,966	3,776	814	761
6. Sra Khrai	19,250	3,659	3,178	19,250	3,659	3,178
Sub-Total	359,582	71,459	53,845	312,560	61,716	45,322
<u>Nong Bua Lamphu</u>						
Study Area						
1. Muang Nong Bua Lamphu	112,751	21,566	17,400	6,427	1,229	992
2. Na Klang	79,539	14,205	11,826	38,735	6,918	5,759
3. Suwannakhaha	55,325	10,955	9,371	55,325	10,955	9,371
4. Na Wang	32,584	5,994	4,790	2,704	498	398
Sub-Total	280,199	52,720	43,387	103,192	19,600	16,520
Total	1,776,431	331,655	255,721	1,181,500	219,809	168,768

Source: Village Survey, 1994, NSO

Changwat/Amphoe	Overall Population	Population in the Study Area		
		Total	Male	Female
<u>Udon Thani</u>				
Study Area				
1. Muang Udon Thani	386,609	300,009	143,404	156,605
2. Kut Chap	53,490	53,490	26,371	27,119
3. Kumphawapi	135,391	6,905	3,528	3,377
4. Thung Fon	24,838	4,893	2,471	2,422
5. Ban Dung	102,333	37,863	20,333	17,530
6. Ban Phu	91,362	91,362	45,955	45,407
7. Phea	95,650	95,650	48,208	47,442
8. San Khom	26,134	26,134	12,989	13,145
9. Nong Wua So	58,608	48,570	24,236	24,334
10. Nong Han	99,318	70,516	32,508	38,008
11. Nam Som	46,452	11,892	5,958	5,934
12. Phibun Rak	18,465	18,465	8,512	9,953
Sub-Total	1,136,650	765,748	374,472	391,276
<u>Nong Khai</u>				
Study Area				
1. Muang Nong Khai	101,871	101,871	51,343	50,528
2. Tha Bo	70,346	70,346	35,243	35,103
3. Phon Phisai	108,475	77,343	39,135	38,208
4. Si Chiang Mai	39,975	39,975	20,187	19,788
5. Sang Khom	19,665	3,776	1,918	1,858
6. Sra Kbrai	19,250	19,250	9,702	9,548
Sub-Total	359,582	312,560	157,529	155,031
<u>Nong Bua Lamphu</u>				
Study Area				
1. Muang Nong Bua Lamphu	112,751	6,427	3,528	2,899
2. Na Kiang	79,539	38,735	19,716	19,019
3. Suwannakhuha	55,325	55,325	26,999	28,326
4. Na Wang	32,584	2,704	1,377	1,327
Sub-Total	280,199	103,192	51,620	51,572
Total	1,776,431	1,181,500	583,621	597,879

Source: Village Survey, 1994, NSO

LAND USE

Agricultural Land Use in the Study Area (1994)

Changwat/Amphoe	Cultivable Land						Total
	Paddy	Upland Crops	Fruit/Perennial Crops	Vegetables	Flowers	Others	
(unit:ha)							
Nong Khai							
Whole Changwat	215,489	57,894	19,049	3,316	47	108,535	404,330
Study Area							
1. Muang Nong Khai	33,640	565	491	493	41	1,050	36,280
2. Tha Bo	22,182	1,668	238	963	1	1,727	26,779
3. Phon Phisai	23,264	3,733	1,156	232	0	1,196	29,581
4. Si Chiang Mai	1,861	6,612	1,502	1,062	3	1,036	12,076
5. Sang Khom	372	2,509	274	0	0	13	3,168
6. Sra Khrai	6,116	238	36	30	2	292	6,714
Sub-Total	87,436	15,325	3,696	2,780	47	5,314	114,598
	76.30	13.37	3.23	2.43	0.04	4.64	100.00
Udon Thani							
Whole Changwat	355,051	211,536	20,353	4,362	31	0	591,333
Study Area							
1. Muang Udon Thani	30,277	7,073	2,055	894	13	0	40,313
2. Kut Chap	13,874	6,779	1,047	14	0	0	21,714
3. Kumphawapi	1,910	1,097	36	13	0	0	3,057
4. Thung Fon	2,230	169	67	19	0	0	2,485
5. Ban Dung	13,285	4,071	683	184	0	0	18,223
6. Ban Phu	37,677	20,391	3,479	738	0	0	62,284
7. Phen	47,504	1,002	426	174	0	0	49,106
8. Sang Khom	15,909	244	235	80	3	0	16,471
9. Nong Wua So	10,099	11,420	886	86	1	0	22,491
10. Nong Han	25,489	4,457	986	348	0	0	31,281
11. Nam Som	1,963	5,733	385	16	0	0	8,098
12. Phibun Rak	10,611	524	240	101	0	0	11,478
Sub-Total	210,829	62,962	10,524	2,668	18	0	287,000
	73.46	21.94	3.67	0.93	0.01	0.00	100.00
Nong Bua Lamphu							
Whole Changwat	156,510	74,065	7,214	1,119	6	2,138	241,052
Study Area							
1. Muang Nong Bua Lamphu	2,962	717	193	34	0	0	3,906
2. Na Klang	15,361	1,182	233	13	0	0	16,789
3. Suwannakhuba	18,117	17,099	1,291	178	0	0	36,685
4. Na Wang	543	948	39	11	0	0	1,540
Sub-Total	36,983	19,945	1,756	236	0	0	58,920
	62.77	33.85	2.98	0.40	0.00	0.00	100.00
Total	335,247	98,232	15,976	5,684	65	5,314	460,518
Ratio (%)	72.80	21.33	3.47	1.23	0.01	1.15	100.00

Source: Agricultural Statistics of Changwat

Area of Changwats/Amphoe by River Basins

Changwat	Amphoe	Study Area (ha)	Huai Mon Basin	Nam Suai Basin	Huai Luang Basin	Mekon Basin
Nong Khai						
Whole Changwat						
Study Area						
	1. Muang Nong Khai	59,670	-	41,523	-	18,147
	2. Tha Bo	35,301	18,294	-	-	17,007
	3. Phon Phisai	44,970	-	10,180	34,390	400
	4. Si Chiang Mai	26,251	22,161	-	-	4,090
	5. Sang Khom	8,656	8,596	-	-	60
	6. Sra Kbrai	13,414	-	12,810	-	604
	Sub-Total	188,262	49,051	64,513	34,390	40,308
Udon Thani						
Whole Changwat						
Study Area						
	1. Muang Udon Thani	84,906	-	2,894	82,012	-
	2. Kut Chap	47,548	2,696	-	44,852	-
	3. Kumhawapi	4,175	-	-	4,175	-
	4. Thung Fon	5,464	-	-	5,464	-
	5. Ban Dung	34,196	-	-	34,196	-
	6. Ban Phu	109,002	84,730	10,493	5,807	7,912
	7. Phen	90,338	-	53,400	36,938	-
	8. Sang Khom	26,490	-	-	26,490	-
	9. Nong Wu So	60,318	-	-	60,318	-
	10. Nong Han	50,219	-	-	50,219	-
	11. Nam Som	19,031	19,031	-	-	-
	12. Phibun Rak	19,552	-	-	19,552	-
	Sub-Total	551,239	106,517	66,787	370,023	7,912
Nong Bua Lamphu						
Whole Changwat						
Study Area						
	1. Muang Nong Bua Lamphu	5,187	-	-	5,187	-
	2. Na Klang	26,215	26,215	-	-	-
	3. Suwannakhuha	86,840	86,840	-	-	-
	4. Na Wang	2,977	2,977	-	-	-
	Sub-Total	121,219	116,032	0	5,187	0
	Total	860,720	271,600	131,300	409,600	48,220

AGRICULTURE

Paddy Production in the Study Area

Changwat/Amphoe Nong Khai (1992/93)	Major Rice (Non-Glutinous)			Major Rice (Glutinous)					
	Planted Area (ha)	Damaged Area (ha)	Harvested Production (ton)	Yield (t/ha)	Planted Area (ha)	Damaged Area (ha)	Harvested Production (ton)	Yield (t/ha)	
Whole Changwat	38,917	5,583	33,334	2.33	160,249	15,223	145,026	329,093	2.27
Study Area									
1. Muang Nong Khai	11,536	0	11,536	2.48	24,796	0	24,796	66,375	2.68
2. Tha Bo	4,910	60	4,851	2.45	14,413	60	14,354	35,952	2.50
3. Phon Phisai	5,238	799	4,440	1.87	28,278	799	27,479	50,768	1.85
4. Si Chiang Mai	1,517	0	1,517	2.62	3,984	0	3,984	9,385	2.36
5. Sang Khom	7	0	7	1.95	603	0	603	985	1.63
Sub-total	23,209	858	22,350	2.36	72,075	858	71,217	163,465	2.30
Udon Thani (1990/91)									
Whole Changwat	71,530		71,530	2.43	250,474		250,474	610,126	2.44
Study Area									
1. Muang Udon Thani	4,432		4,432	2.63	22,596		22,596	52,254	2.31
2. Kut Chap	1,988		1,988	2.59	9,288		9,288	28,446	3.06
3. Kumbhawapi	356		356	2.23	1,404		1,404	3,088	2.20
4. Thung Fon	794		794	2.85	1,159		1,159	3,237	2.79
5. Ban Dung	2,438		2,438	2.31	6,657		6,657	15,312	2.30
6. Ban Phu	7,844		7,844	2.05	23,500		23,500	47,881	2.04
7. Phen	12,333		12,333	2.79	34,335		34,335	90,559	2.64
8. Sang Khom	2,179		2,179	2.57	14,092		14,092	34,524	2.45
9. Nong Wua So	1,626		1,626	3.31	6,935		6,935	20,632	2.97
10. Nong Han	8,722		8,722	2.39	27,884		27,884	71,801	2.57
11. Nam Som	323		323	2.13	1,406		1,406	3,858	2.74
Sub-total	43,034		43,034	2.52	149,256		149,256	371,592	2.49
Nong Bua Lamphu (1990/91)									
Whole Changwat	33,946		33,946	2.51	108,362		108,362	269,927	2.49
Study Area									
1. Muang Nong Bua Lamph	639		639	2.30	2,130		2,130	4,807	2.26
2. Na Kiang	2,847		2,847	2.30	10,094		10,094	23,972	2.37
3. Suwannathuha	4,320		4,320	2.54	13,794		13,794	32,933	2.39
Sub-total	7,806		7,806	2.43	26,018		26,018	61,712	2.37
Total	74,049		73,190	2.46	247,349		246,491	596,769	2.42

Source: Statistical Reports of Changwat

Paddy Production by Amphoe Including into the Project Area

Changwat/Amphoe	Second Rice (Non-Glutinous)				Second Rice (Glutinous)				
	Planted Area (ha)	Damaged Area (ha)	Harvested Area (ha)	Production Yield (t/ha)	Planted Area (ha)	Damaged Area (ha)	Harvested Area (ha)	Production Yield (t/ha)	
Nong Khai (1992/93)	82	-	82	2.05	2.50	533	533	221	0.41
Whole Changwat Study Area	82	0	80	2.50	75	0	75	202	2.69
1. Muang Nong Khai	-	-	-	-	-	-	-	-	-
2. Tha Bo	-	-	-	-	-	-	-	-	-
3. Phon Phisai	-	-	-	-	-	-	-	-	-
4. Si Chiang Mai	-	-	-	-	-	-	-	-	-
5. Sang Khon	-	-	-	-	-	-	-	-	-
Udon Thani (1990/91)	464	3	461	1.098	2.37	2,845	2,828	6,739	2.37
Whole Changwat Study Area	464	3	461	1.098	2.37	2,845	2,828	6,739	2.37
1. Muang Udon Thani	-	-	-	-	-	-	-	-	-
2. Kst Chap	-	-	-	-	-	-	-	-	-
3. Kumphavapi	-	-	-	-	-	-	-	-	-
4. Thung Fon	-	-	-	-	-	-	-	-	-
5. Ban Duog	-	-	-	-	-	-	-	-	-
6. Ban Phu	-	-	-	-	-	-	-	-	-
7. Phai	-	-	-	-	-	-	-	-	-
8. Sang Khon	-	-	-	-	-	-	-	-	-
9. Nong Was So	-	-	-	-	-	-	-	-	-
10. Nong Han	-	-	-	-	-	-	-	-	-
11. Nam Son	-	-	-	-	-	-	-	-	-
Nong Bus Lamphu (1990/91)	-	-	-	-	-	-	-	-	-
Whole Changwat Study Area	-	-	-	-	-	-	-	-	-
1. Muang Nong Bus Lamphu	-	-	-	-	-	-	-	-	-
2. Na Kiang	-	-	-	-	-	-	-	-	-
3. Sawannakhuha	-	-	-	-	-	-	-	-	-

Source: Statistical Reports of Changwat

Upland Paddy Production in the Study Area

	Upland Rice (Non-Glutinous)			Upland Rice (Glutinous)		
	Planted Area (ha)	Damaged Area (ha)	Harvested Area (ha)	Planted Area (ha)	Damaged Area (ha)	Harvested Area (ha)
Changwat/Amphoe	488	10	478	783	1.64	1.89
Nong Khai (1992/93)	-	-	-	-	-	-
Whole Changwat	488	10	478	783	1.64	1.89
Study Area						
1. Muang Nong Khai	-	-	-	-	-	-
2. Tha Bo	-	-	-	8	0	16
3. Phon Phisai	-	-	-	234	0	512
4. Si Chiang Mai	124	10	114	227	2.00	0.00
5. Sang Khom	1	0	1	2	1.50	1.74
Sub-Total	125	10	115	229	1.99	1.97
Udon Thani (1990/91)						
Whole Changwat						
Study Area						
1. Muang Udon Thani	-	-	-	-	-	-
2. Kut Chap	-	-	-	-	-	-
3. Kumphawapi	-	-	-	-	-	-
4. Thung Fon	-	-	-	-	-	-
5. Ban Dung	-	-	-	-	-	-
6. Ban Phu	-	-	-	-	-	-
7. Phen	-	-	-	-	-	-
8. Sang Khom	-	-	-	-	-	-
9. Nong Wu So	-	-	-	-	-	-
10. Nong Han	-	-	-	-	-	-
11. Nam Som	-	-	-	-	-	-
Sub-Total	-	-	-	-	-	-
Nong Bua Lamphu (1990/91)						
Whole Changwat						
Study Area						
1. Muang Nong Bua Lamph	-	-	-	-	-	-
2. Na Xiang	-	-	-	-	-	-
3. Suwannakhuba	-	-	-	-	-	-
Sub-Total	-	-	-	-	-	-
Total	125	10	115	229	1.99	1.97

Source: Statistical Reports of Changwat

Production of Cassava and Sugarcane in Udon Thani and Nong Bua Lamphu in the Study Area Area

Changwat/Amphoe	Cassava			Sugarcane		
	Planted Area (ha)	Production (ton)	Yield (t/ha)	Planted Area (ha)	Production (ton)	Yield (t/ha)
Udon Thani (1990/91)						
Whole Changwat	44,313	734,274	16.57	70,063	4,059,252	57.94
Study Area						
1. Muang Udon Thani	5,382	81,068	15.06	744	37,192	50.00
2. Kut Chap	2,627	40,883	15.56	887	72,578	81.85
3. Kumphawapi	202	4,789	23.75	1,262	61,653	48.84
4. Thung Fon	94	1,610	17.13	79	4,073	51.60
5. Ban Dung	359	5,482	15.25	147	11,334	77.32
6. Ban Phu	4,191	56,043	13.38	273	7,605	27.86
7. Phen	137	1,999	14.56	262	18,392	70.22
8. Sang Khom	49	575	11.78	4	175	43.75
9. Nong Wua So	7,169	144,271	20.12	658	36,663	55.76
10. Nong Han	837	12,454	14.88	1,738	136,764	78.71
11. Nam Som	1,304	21,323	16.35	351	11,974	34.08
Sub-total	22,351	370,502	16.58	6,404	398,403	62.21
Nong Bua Lamphu (1990/91)						
Whole Changwat	8,883	129,113	14.53	3,634	201,542	55.45
Study Area						
1. Muang Nong Bua Lamph	146	2,280	15.64	16	839	53.15
2. Na Klang	357	6,604	18.50	525	31,166	59.39
3. Suwannakhuha	3,874	56,661	14.63	-	-	-
Sub-total	4,377	65,544	14.97	541	32,005	59.20
Total	26,728	436,046	16.31	6,944	430,408	61.98

Source: Statistical Reports of Changwat

Mulberry Plantation in the Study Area

Changwat/Amphoe	Mulberry Plantation (ha)	No. of Silk Worm Households	Raw Silk (kg)	Cocoon Production (kg)
Udon Thani (1991)				
Whole Changwat	1,091	4,592	16,308	28,904
Study Area				
1. Muang Udon Thani	12	56	163	147
2. Kut Chap	154	260	5,136	14,880
3. Kumphawapi	1	6	30	4
4. Thung Fon	4	27	73	-
5. Ban Dung	14	123	116	-
6. Ban Phu	24	71	1,709	-
7. Phen	27	110	124	900
8. Sang Khom	19	108	218	-
9. Nong Wua So	100	329	252	158
10. Nong Han	90	355	1,596	342
12. Nam Som	4	11	28	119
Sub-Total	449	1,456	9,444	16,549
Nong Bua Lamphu (1990/91)				
Whole Changwat	1,289	8,072	22,337	18,982
Study Area				
1. Muang Nong Bua Lamph	30	161	672	740
2. Na Klang	153	1,040	1,499	-
3. Suwannakhuha	71	381	386	1,617
Sub-Total	254	1,582	2,556	2,357
Total	704	3,038	12,001	18,906

Source: Statistical Reports of Changwat

Number of Livestock in the Study Area

Changwat/Anphoe	Cattle	Buffal	Duck	Chicken	Goose	Swine
Nong Khai (1993)						
Whole Changwat	79,473	161,112	235,697	872,950	-	37,427
Study Area						
1. Muang Nong Khai	11,450	15,714	44,180	316,097	-	4,810
2. Tha Bo	3,540	8,892	13,410	66,675	-	5,967
3. Phon Phisai	12,286	24,487	25,401	83,636	-	5,300
4. Si Chiang Mai	6,347	4,001	9,496	34,942	-	1,404
5. Sang Khom	314	299	851	2,314	-	106
Sub-Total	33,938	53,393	93,338	503,664	-	17,586
Udon Thani (1991)						
Whole Changwat	64,842	179,724	264,579	3,090,027	7,441	68,203
Study Area						
1. Muang Udon Thani	7,302	22,908	9,405	1,346,360	714	11,268
2. Kut Chap	2,140	9,601	22,743	67,213	1,250	2,127
3. Kumphawapi	181	835	588	7,445	36	283
4. Thung Fon	346	1,872	2,647	8,691	19	617
5. Ban Dung	1,750	6,642	5,275	31,759	130	1,688
6. Ban Phu	4,227	17,461	40,934	303,262	584	4,587
7. Phen	7,020	20,030	33,000	99,000	570	5,070
8. Sang Khom	4,495	7,325	2,200	11,800	170	3,670
9. Nong Wu So	3,840	7,448	18,907	51,511	549	2,010
10. Nong Han	2,658	4,199	21,779	199,896	33	6,161
11. Nam Son	555	757	3,487	6,235	124	334
Sub-Total	34,513	99,079	160,966	2,133,172	4,180	37,814
Nong Bua Lamphu (1990/91)						
Whole Changwat	24,211	86,776	143,390	578,641	4,337	46,580
Study Area						
1. Muang Nong Bua Lamph	241	1,102	617	6,712	18	407
2. Na Klang	3,343	10,406	11,201	8,961	390	5,844
3. Suwannakhuha	2,440	9,075	19,836	48,125	56	6,947
Sub-Total	6,024	20,584	31,654	63,798	464	13,198
Total	74,476	173,055	285,957	2,700,634	4,643	68,598

Source: Statistical Reports of Changwat

Agricultural Machinery

	Udon Thani (1988)		Nong Khai	
	No. of Holdings	No. of Farm Owned	No. of Holdings	No. of Farm Owned
Tractor	26,370	4,621		
Power Tiller	39,226	12,026		
Water Pump				
Engine Operated	11,132	9,977		
Hand Operated	9,054	13,541	NA	
Natural Energy Operated	-	-		
Seeder	26	26		
Sprayer	5,745	5,026		
Thresher	1,930	131		

Source: Statistical Reports of Changwat, Nong Khai, 1994

Statistical Reports of Changwat, Udon Thani, 1992

Fresh Water Fish Production in the Study Area

Changwat/Amphoe	No. of Households	No. of Ponds	Area (ba)	Inland Capture Production (ton)
Nong Khai (1993)				
Whole Changwat	3,371	5,408	1,158	5,423
Study Area				
1. Muang Nong Khai	648	1,000	298	1,514
2. Tha Bo	907	1,548	297	977
3. Phon Phisai	481	790	162	940
4. Si Chiang Mai	542	1,026	210	459
5. Sang Khon	15	19	3	3
Sub-Total	2,593	4,383	969	3,893
Udon Thani (1991)				
Whole Changwat	2,779	4,295	783	1,630
Study Area				
1. Muang Udon Thani	421	771	155	320
2. Kut Chap	149	239	43	38
3. Kumphawapi	10	18	3	5
4. Thung Fon	10	15	2	5
5. Ban Dung	38	64	11	32
6. Ban Phu	374	515	72	97
7. Phen	229	294	49	86
8. Sang Khon	29	40	4	9
9. Nong Wua So	75	148	19	73
10. Nong Han	265	394	95	253
11. Nam Son	19	26	4	12
Sub-Total	1,620	2,525	457	931
Nong Bua Lamphu (1990/91)				
Whole Changwat	548	833	140	548
Study Area				
1. Muang Nong Bua Lamph	10	16	2	9
2. Na Klang	85	129	23	92
3. Suwannathuha	49	65	8	14
Sub-Total	144	209	33	115
Total	4,357	7,117	1,460	4,939

Source: Statistical Reports of Changwat

Number of Cooperatives by Type

Changwat	Amphoe	Agricultural	Consumer	Services	Thrift & Credit	Others	Total
Nong Khai (1993)							
Whole Changwat		38	2	1	5	1	47
Study Area							
	1. Muang Nong Khai	9	2	1	4	-	16
	2. Tha Bo	7	-	-	-	1	8
	3. Phon Phisai	5	-	-	-	-	5
	4. Si Chiang Mai	4	-	-	-	-	4
	5. Sang Khom	2	-	-	-	-	2
	Sub-total	27	2	1	4	1	35
Udon Thani (1991)							
Whole Changwat		28	4	1	14	2	49
Study Area							
	1. Muang Udon Thani	6	4	1	13	1	25
	2. Kut Chap	2	-	-	-	-	2
	3. Kumphawapi	2	-	-	1	-	3
	4. Thung Fon	2	-	-	-	-	2
	5. Ban Dung	1	-	-	-	-	1
	6. Ban Phu	2	-	-	-	-	2
	7. Phen	1	-	-	-	-	1
	8. Sang Khom	1	-	-	-	-	1
	9. Nong Wua So	1	-	-	-	-	1
	10. Nong Han	1	-	-	-	1	2
	11. Nam Som	1	-	-	-	-	1
	Sub-total	20	4	1	14	2	41
Nong Bua Lamphu (1991)							
Whole Changwat		8	1	-	-	-	9
Study Area							
	1. Muang Nong Bua Lamphu	1	-	-	-	-	1
	2. Na Kiang	1	-	-	-	-	1
	3. Suwannathuba	1	-	-	-	-	1
	Sub-total	3	0	0	0	0	3
Total		50	6	2	18	3	79

Source: Statistical Reports of Changwat, NSO

ECONOMY

Net Income and Expenditure of Farm Households (1991/92)

Changwat	Amphoe	(unit: Bahts/Households/year)						
		Cash Farm Income ①	Cash Farm Expenditure ②	Cash Off-Farm Income ③	Cash Off-Farm Expenditure ④	Net Cash Farm Income ⑤-①-②	Net Cash Household Income ⑥-③+⑤	Saving ⑦=①+③-②+④
Nong Khai		23,334	12,652	23,733	31,760	10,682	34,415	2,655
Whole Changwat								
Study Area								
	1. Muang Nong Khai	16,638	10,662	37,504	39,059	5,976	43,480	4,421
	2. Tha Bo	52,954	18,372	30,537	55,231	34,582	65,119	9,888
	3. Phon Phisai	19,149	9,933	15,138	23,593	9,156	24,294	701
	4. Si Chiang Mai	39,466	13,550	19,207	35,117	25,916	45,123	10,006
	5. Sang Khom	27,064	19,265	23,016	32,880	7,799	30,815	-2,065
	6. Sra Khrui	included in Muan Udon Thani						
Udon Thani		21,634	10,584	22,174	23,543	11,050	33,224	9,681
Whole Changwat								
Study Area								
	1. Muang Udon Thani	19,035	14,567	45,570	39,024	4,468	50,038	11,014
	2. Xat Chap	30,408	23,796	33,613	38,908	6,612	40,225	1,317
	3. Kumphawapi	35,700	2,527	3,843	1,063	33,173	37,016	35,953
	4. Thung Foa	17,017	16,930	17,324	27,237	87	17,411	-9,826
	5. Ban Dung	11,990	10,990	14,478	23,729	1,000	15,478	-8,251
	6. Ban Phu	17,275	4,715	3,183	4,652	12,560	15,743	11,091
	7. Phao	13,659	10,387	36,402	38,105	3,272	38,674	1,569
	8. Sang Khom	5,707	3,455	13,402	18,584	2,352	15,654	-2,930
	9. Nong Wua So	33,027	18,705	48,536	38,584	14,322	60,858	22,274
	10. Nong Han	20,093	11,314	28,407	32,130	8,779	37,186	5,056
	11. Nam Som	31,023	3,076	906	5,755	27,947	28,853	23,098
	12. Phibul Rak	included in Nong Kai						
Nong Bua Lempdu		18,436	6,647	20,733	22,781	11,789	32,522	9,741
Whole Changwat								
Study Area								
	1. Muang Nong Bua Lempdu	25,520	13,607	42,380	35,515	11,913	54,293	18,778
	2. Na Kiang	21,427	1,639	1,557	3,193	19,788	21,345	18,152
	3. Suwannakhuba	14,427	1,662	1,335	2,585	12,765	14,100	11,515
	4. Na Wang	included in Na Kiang						

Source: Guideline for agricultural and cooperation development master plan, 1994-1996.

Agricultural Economic Zone 1 Office, Udon Thani

Note: Adjusted by the Study Team

Loans Operation for Farmers of BAAC

(unit: 1,000 Bahts)

	Short-term Loans		Credit, Cash and Medium-term Loans		Long-term Loans		Payment on Loans	
	Loans Disbursed	Repayment Out-standing	Loans Disbursed	Repayment Out-standing	Loans Disbursed	Repayment Out-standing	Out-standing	Out-standing
Changwat Amploe								
Nong Khai (1993)	829,591	594,846	527,919	570,622	90,551	74,235	104,360	153,541
Whole Changwat								256
Study Area								1,068
1. Muang Nong Khai	122,484	87,578	71,715	73,098	12,599	13,454	14,081	35,234
2. Tha Bo	78,131	61,928	54,182	55,850	12,706	9,525	12,081	10,139
3. Phon Phisai	134,239	117,751	103,623	107,323	9,147	10,055	11,273	15,629
4. Si Chiang Mai	57,550	38,454	31,718	37,859	6,230	6,055	7,071	949
5. Sang Khon	16,722	11,951	8,937	10,479	2,146	749	2,520	3,723
Sub-total	409,126	318,662	270,175	284,609	42,828	39,838	47,026	77,289
Udon Thani (April 1990-March 1991)								
Whole Changwat	1,040,546	884,783	371,149	513,614	583,253	247,430	335,823	138,299
Study Area								40,435
1. Muang Udon Thani	89,410	73,831	27,522	46,309	48,627	18,348	30,279	12,468
2. Kut Chap	61,560	48,886	19,895	29,991	32,873	13,264	19,609	8,075
3. Kumphawapi	144,130	120,315	52,587	67,728	79,342	35,059	44,284	2,915
4. Thang Fon	15,260	12,769	5,085	7,684	8,414	3,390	5,024	2,069
5. Ban Dung	76,633	59,568	24,386	35,182	39,262	16,257	23,005	14,681
6. Ban Phu	127,586	115,288	50,140	65,148	76,022	33,426	42,596	25,113
7. Phen	41,044	30,750	11,476	19,274	20,252	7,650	12,502	8,708
8. Sang Khon	14,607	11,148	4,128	7,020	7,342	2,752	4,590	2,692
9. Nong Wa So	57,487	52,626	22,856	29,770	34,702	15,237	19,465	11,483
10. Nong Han	87,421	69,587	26,475	43,112	45,838	17,650	28,188	15,233
11. Nan Som	63,852	58,198	25,557	32,641	38,380	17,038	21,342	10,842
Sub-total	778,390	653,966	270,107	383,659	431,054	180,070	250,984	141,649
Nong Bua Lamphu (April 1990-March 1991)								
Whole Changwat	316,288	258,481	116,349	142,132	170,498	77,556	92,932	38,272
Study Area								20,496
1. Muang Nong Bua Lamphu	58,827	50,314	24,112	26,202	33,207	16,075	17,132	10,155
2. Na Kiang	198,356	75,237	31,845	42,392	49,602	21,230	28,372	16,628
3. Suwannatheta	61,067	46,564	20,975	25,539	30,714	13,983	16,731	8,934
Sub-total	218,350	172,115	76,932	95,133	113,523	51,288	62,235	35,717
Total	1,406,466	1,144,743	617,214	763,651	587,405	271,196	360,245	212,127
								59,269
								206,277
								46,030

Source: Statistical Reports of Changwat, NSO

OTHERS

Forest Area in the Study Area (1993)

Changwat	Amphoe	Forest Area (ha)	Total Land (ha)	% of the Forest Area
Nong Khai	1. Muang Nong Khai	1,847.7	59,670	3.1
	2. Tha Bo	700.1	35,301	2.0
	3. Phon Phisai	4,568.0	44,970	10.2
	4. Si Chiang Mai	1,450.1	26,251	5.5
	5. Sang Khom	568.8	8,656	6.6
	6. Sra Khrai	1,663.1	13,414	12.4
	Sub-Total	10,797.8	188,262	5.7
Udon Thani	1. Muang Udon Thani	4,534.8	84,906	5.3
	2. Kut Chap	1,763.8	47,548	3.7
	3. Kumphawapi	0.0	4,175	0.0
	4. Thung Fon	162.5	5,464	3.0
	5. Ban Dung	2,225.4	34,196	6.5
	6. Ban Phu	12,177.4	109,002	11.2
	7. Phen	10,708.9	90,338	11.9
	8. Sang Khom	2,225.4	26,490	8.4
	9. Nong Wua So	20,493.5	60,318	34.0
	10. Nong Han	1,339.2	50,219	2.7
	11. Nam Som	5,175.3	19,031	27.2
	12. Phibun Rak	1,903.5	19,552	9.7
Sub-Total	62,709.7	551,239	11.4	
Nong Bua Lamphu	1. Muang Nong Bua Lamphu	736.6	5,187	14.2
	2. Na Kiang	3,038.7	26,215	11.6
	3. Suwannathuha	5,020.7	86,840	5.8
	4. Na Wang	62.5	2,977	2.1
	Sub-Total	8,858.5	121,219	7.3
Total		82,366.0	860,720	9.6

Source. Measured by the Study Team Based on the Map of the Royal Forestry Department

Number and Percentage of Electric Accessible Villages in Non-Municipal Area

Changwat	Amphoe	Number of Village	Number of Electric Accessible Villages	%
Nong Khai (1993)				
Whole Changwat		1,107	1,083	97.8
Study Area				
	1. Muang Nong Khai	183	183	100.0
	2. Tha Bo	89	89	100.0
	3. Phon Phisai	225	218	96.9
	4. Si Chiang Mai	63	61	96.8
	5. Sang Khom	35	35	100.0
	Sub-total	595	586	98.5
Udon Thani (1991)				
Whole Changwat		1,582	1,547	97.8
Study Area				
	1. Muang Udon Thani	228	228	100.0
	2. Kut Chap	76	76	100.0
	3. Kumphawapi	188	185	98.4
	4. Thung Fon	30	30	100.0
	5. Ban Dung	128	126	98.4
	6. Ban Phu	129	127	98.4
	7. Phen	132	128	97.0
	8. Saog Khom	49	49	100.0
	9. Nong Wua So	67	66	98.5
	10. Nong Han	205	197	96.1
	11. Nam Som	66	62	93.9
	Sub-total	1,298	1,274	98.2
Nong Bua Lanphu (1991)				
Whole Changwat		596	573	96.1
Study Area				
	1. Muang Nong Bua Lanphu	153	152	99.3
	2. Na Kiang	140	132	94.3
	3. Suwannakhaha	76	75	98.7
	Sub-total	369	359	97.3
Total		2,262	2,219	98.1

Source: Statistical Reports of Changwat, NSO

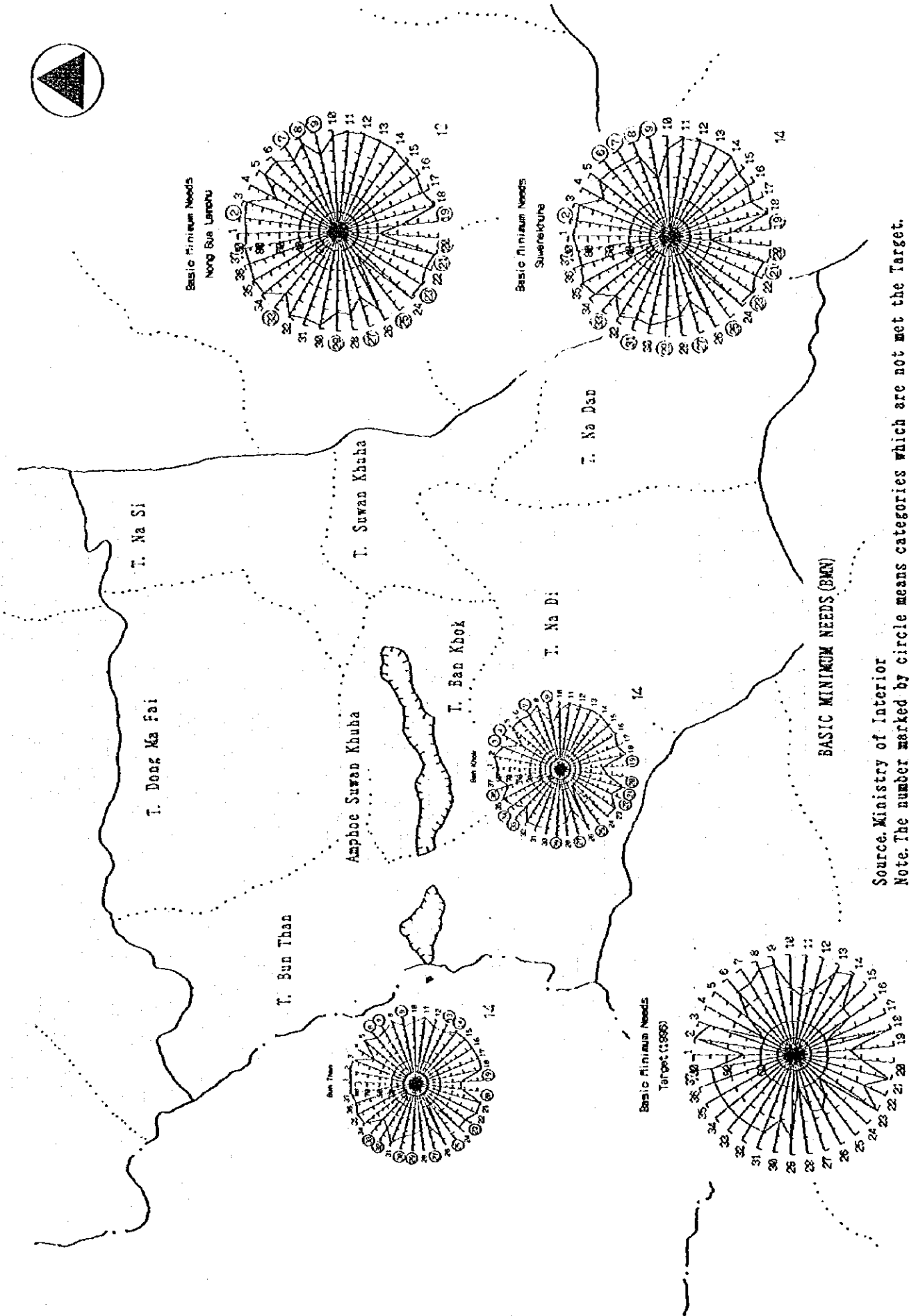
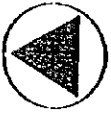
Number of Customer for Water Supply

Changwat	Amphoe	Water Sales (cu. m/year)	No. of Customer
Nong Khai			
Whole Changwat		3,237,607	15,093
Study Area			
	1. Muang Nong Khai	1,567,286	5,880
	2. Tha Bo	600,000	2,893
	5. Phon Phisai	34,801	393
	4. Si Chiang Mai	311,322	1,733
	5. Sang Khom	106,053	640
	Sub-total	2,619,462	11,539
Udon Thani (1991)			
Whole Changwat		7,463,875	20,520
Study Area			
	1. Muang Udon Thani	6,738,522	17,103
	2. Kut Chap	0	0
	3. Kumphawapi	644,061	2,991
	4. Thung Fon	0	0
	5. Ban Dung	0	0
	6. Ban Phu	0	0
	7. Phen	0	0
	8. Sang Khom	0	0
	9. Nong Wua So	81,292	9,489
	10. Nong Han	0	0
	11. Nam Son	0	0
	Sub-total	7,463,875	29,583
Nong Bua Lamphu			
Whole Changwat		364,724	1,617
Study Area			
	1. Muang Nong Bua Lamphu	112,424	472
	2. Na Kiang	114,000	593
	3. Suwannakhuha	0	0
	Sub-total	226,424	1,065
Total		10,309,761	42,187

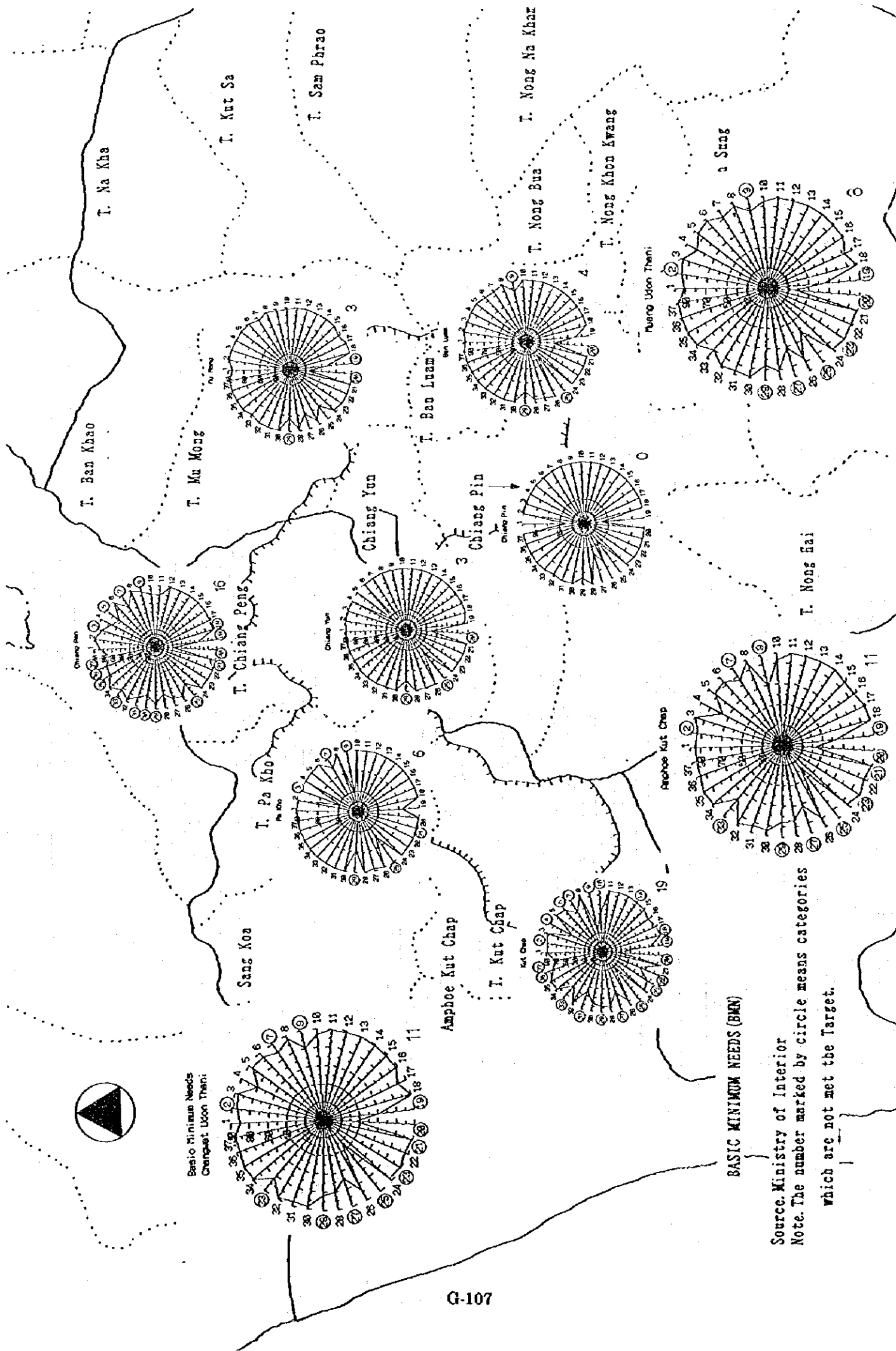
Source: Statistical Reports of Changwat, NSO

Distribution of Working in a Year of Farmer's Wives

	Farm Practices	Child Care	Cooking	Washing	(unit:%)			
					Fetching Water	Animal Care	Cleaning House	None
Huai Luan Basin								
Upper Stream	33.43	4.00	20.43	11.57	8.43	4.14	12.14	5.86
Middle Stream	34.43	6.29	17.86	11.00	7.29	4.00	12.14	7.00
Down Stream	41.50	6.00	18.83	11.50	5.33	4.00	12.83	0.00
Sub-Total	36.20	5.40	19.05	11.35	7.10	4.05	12.35	4.50
Huai Mong Basin								
Upper Stream	37.00	3.00	20.25	13.25	6.50	1.75	18.25	0.00
Middle Stream	37.00	5.00	20.00	11.00	3.75	2.00	11.25	10.00
Down Stream	44.25	4.75	19.25	11.75	5.00	2.25	12.75	0.00
Sub-Total	39.42	4.25	19.83	12.00	5.08	2.00	14.08	3.33
Nan Suai Basin								
Upper Stream	32.47	4.74	21.84	12.89	5.79	3.42	13.16	5.79
Down Stream	42.11	4.21	16.32	13.68	5.00	5.26	13.42	0.00
Sub-Total	37.24	4.47	19.08	13.29	4.34	4.34	13.29	2.89
Total	37.37	4.87	19.29	11.92	3.48	3.48	13.06	3.84



Source, Ministry of Interior
 Note. The number marked by circle means categories which are not met the Target.



Basic Minimum Needs
Chengat Udon Thani

BASIC MINIMUM NEEDS (BMN)

Source: Ministry of Interior
 Note: The number marked by circle means categories
 which are not met the Target.