TABLES

Table 1 PRESENT LAND USE BY STATE IN PENINSULAR MALAYSIA AS OF 1979

Unit: km^2

State	Agricultural Land		Forest Land and Swamp	Other Land	Total
	Annual crop land	Perennial crop land			
Perlis	340	90	210	160	800
Kedah	1,680	2,590	3,840	1,340	9,450
P. Pinang	250	550	70	170	1,040
Perak	1,030	4,390	10,340	5,290	21,050
Selangor	420	2,900	2,360	2,540	8,220
N. Sembilan	270	2,440	1,950	2,000	6,660
Melaka	200	1,250	90	110	1,650
Johor	430	8,060	5,500	5,040	19,030
Pahang	530	4,220	23,990	7,310	36,050
Trengganu	560	1,140	6,610	4,670	12,980
Kelantan	1,180	880	9,490	3,420	14,970
Peninsular	6,890	28,510	64,450	32,050	131,900

Source; Refs. 1 to 5

Table 2 PRESENT AGRICULTURAL LAND USE PATTERN BY STATE IN PENINSULAR MALAYSIA AS OF 1979

Unit: km^2

State	Annual Crops		Perennial Crops				Total
	Paddy	Others	Rubber	Oil Palm	Coconut	Others	
Perlis	287	51	89	-	14	69	510
Kedah	1,390	294	1,968	76	114	35	3,877
P. Pinang	180	73	343	46	155	25	822
Perak	519	514	2,252	900	542	158	4,885
Selangor	226	190	1,276	953	492	125	3,262
N. Sembilan	133	140	2,422	383	31	22	3,131
Melaka	122	82	1,061	83	54	19	1,421
Johor	81	346	4,629	2,605	678	119	8,458
Pahang	250	279	1,746	2,484	73	61	4,893
Trengganu	341	214	519	676	119	26	1,895
Kelantan	751	427	727	142	188	11	2,246
Peninsular	4,280	2,610	17,032	8,348	2,460	670	35,400

Source; Refs. 1 to 4

Table 3 CHANGES IN LAND USE PATTERN IN PENINSULAR MALAYSIA AND PERLIS

Unit: km^2

Land Use Category	Peninsular			Perlis		
	1966	1974	1979	1966	1974	1979
Agricultural Land						
Paddy	3,997	4,283	4,436	274	287	287
Other annual crops	2,577	3,443	2,454	60	72	51
Rubber	17,766	19,400	17,032	74	75	89
Oil Palm	992	4,847	8,348	-	0	-
Coconut	1,762	1,969	2,460	3	1	14
Other perennial crops	244	765	670	1	69	69
Sub-total	27,338	34,707	35,400	412	504	510
Non-agricultural Land						
Forested land	96,358	88,137	64,450	301	253	211
Miscellaneous land	8,204	9,056	32,050	87	43	79
Sub-total	104,562	97,193	96,500	388	296	290
Total for State	131,900	131,900	131,900	800	800	800

Source; Refs. 1 to 5

Table 4 CHANGES IN LAND USE PATTERN IN KEDAH AND PULAU PINANG

Unit: km^2

Land Use Category	Kedah			P. Pinang		
	1966	1974	1979	1966	1974	1979
Agricultural Land						
Paddy	1,301	1,391	1,390	176	180	180
Other annual crops	398	413	294	117	102	73
Rubber	1,849	2,391	1,968	307	298	343
Oil Palm	1	49	76	10	36	46
Coconut	33	25	114	91	97	155
Other perennial crops	7	33	35	17	24	25
Sub-total	3,589	4,302	3,877	718	737	822
Non-agricultural Land						
Forested land	5,306	4,517	3,845	185	178	74
Miscellaneous land	555	631	1,728	137	125	144
Sub-total	5,861	5,148	5,573	322	303	218
Total for State	9,450	9,450	9,450	1,040	1,040	1,040

Source; Refs. 1 to 5

Table 5 CHANGES IN LAND USE PATTERN IN PERAK AND SELANGOR

Unit: km^2

Land Use Category	Perak			Selangor		
	1966	1974	1979	1966	1974	1979
Agricultural Land						
Paddy	521	523	519	222	226	226
Other annual crops	506	721	514	194	267	190
Rubber	2,528	2,764	2,252	1,901	1,543	1,276
Oil Palm	159	529	900	318	828	953
Coconut	423	470	542	474	514	492
Other perennial crops	17	145	158	15	38	125
Sub-total	4,154	5,152	4,885	3,124	3,416	3,262
Non-agricultural Land						
Forested land	14,786	13,920	10,336	4,275	3,928	2,366
Miscellaneous land	2,110	1,978	5,829	821	876	2,592
Sub-total	16,896	15,898	16,165	5,096	4,804	4,958
Total for State	21,050	21,050	21,050	8,220	8,220	8,220

Source; Refs. 1 to 5

Table 6 CHANGES IN LAND USE PATTERN IN NEGERI SEMBILAN AND MELAKA

Unit: km^2

Land Use Category	N. Sembilan			Melaka		
	1966	1974	1979	1966	1974	1979
Agricultural Land						
Paddy	127	132	133	129	122	122
Other annual crops	160	197	140	82	115	82
Rubber	1,999	2,026	2,422	999	975	1,061
Oil Palm	22	256	383	3	40	83
Coconut	6	7	31	46	30	54
Other perennial crops	2	20	22	3	7	19
Sub-total	2,316	2,638	3,131	1,262	1,289	1,421
Non-agricultural Land						
Forested land	3,921	3,280	1,949	289	253	87
Miscellaneous land	423	742	1,580	99	108	142
Sub-total	4,344	4,022	3,529	388	361	229
Total for State	6,669	6,660	6,660	1,650	1,650	1,650

Source; Refs. 1 to 5

Table 7 CHANGES IN LAND USE PATTERN IN JOHOR AND PAHANG

Unit: km^2

Land Use Category	Johor			Pahang		
	1966	1974	1979	1966	1974	1979
Agricultural Land						
Paddy	59	80	81	179	249	250
Other annual crops	257	485	346	274	391	279
Rubber	4,715	4,640	4,629	1,888	2,643	1,746
Oil Palm	411	1,543	2,605	49	1,238	2,484
Coconut	521	612	678	28	51	73
Other perennial crops	169	357	119	2	35	61
Sub-total	6,132	7,717	8,458	2,420	4,607	4,893
Non-agricultural Land						
Forested land	11,554	9,749	5,496	32,229	29,695	23,991
Miscellaneous land	1,344	1,564	5,076	1,401	1,748	7,166
Sub-total	12,898	11,313	10,572	33,630	31,443	31,157
Total for State	19,030	19,030	19,030	36,050	36,050	36,050

Source; Refs. 1 to 5

Table 8 CHANGES IN LAND USE PATTERN IN TRENGGANU AND KELANTAN

Unit: km^2

Land Use Category	Trengganu			Kelantan		
	1966	1974	1979	1966	1974	1979
Agricultural Land						
Paddy	247	341	341	762	752	751
Other annual crops	170	300	214	359	380	427
Rubber	601	749	519	905	1,296	727
Oil Palm	14	275	676	5	53	142
Coconut	67	85	119	70	77	188
Other perennial crops	9	27	26	2	10	11
Sub-total	1,108	1,777	1,895	2,103	2,568	2,246
Non-agricultural Land						
Forested land	11,184	10,504	6,608	12,328	11,860	9,488
Miscellaneous land	688	699	4,477	539	542	3,236
Sub-total	11,872	11,203	11,085	12,867	12,402	12,724
Total for State	12,980	12,980	12,980	14,970	14,970	14,970

Source; Refs. 1 to 5

Table 9 LAND USE PATTERN BY RIVER BASIN AS OF 1974/75 (1/12)

Unit: km^2

Land Use Symbol	Name of Basin Land Use Catagory	Basin 1 Perlis			Basin 2 Lang-kawi
		PS	KH	Total	KH
1. PD	Paddy	153	-	153	32
2. RB	Rubber	75	-	75	43
3. OP	Oil Palm	0	-	0	-
4. CN	Coconut	1	-	1	10
5. CA	Cocoa	-	-	-	-
6. OC	Orchards	2	-	2	-
7. PA	Pineapple	-	-	-	-
8. SC	Sugarcane	67	-	67	0
9. MH	Mixed Horticulture	65	-	65	23
10. DC	Diversified Crops	5	-	5	1
11. MC	Miscellaneous	2	-	2	0
12. FP	Fish Pond	-	-	-	-
AL	Agricultural Land	370	-	370	109
13. UB	Urban	6	-	6	1
14. EB	Estate Building	1	-	1	-
15. MQ	Mining & Quarry	1	-	1	0
16. GL	Grassland	27	-	27	1
17. FR	Forest	112	114	226	267
18. SF	Scrub Forest	135	-	135	36
19. NL	Newly Cleared Land	15	-	15	4
20. SW	Swamp	6	-	6	37
21. OT	Others	3	-	3	20
NA	Non-agricultural Land	306	114	420	366
Total Land Use Area		676	114	790	475

Remarks; PS: Perlis, KH: Kedah

Source; Ref. 1

Table 10 LAND USE PATTERN BY RIVER BASIN AS OF 1974/75 (2/12)

Unit: km^2

Name / Land Use Symbol	Basin 3 Kedah PS	Basin 3 Kedah KH	Basin 3 Kedah Total	Basin 4 Merbok KH	Basin 5 Muda KH	Basin 5 Muda PG	Basin 5 Muda Total
1. PD	134	1,085	1,219	31	192	86	278
2. RB	-	676	676	169	1,219	6	1,225
3. OP	-	1	1	1	30	-	30
4. CN	-	6	6	5	4	3	7
5. CA	-	-	-	-	-	-	-
6. OC	-	11	11	2	9	-	9
7. PA	-	-	-	-	0	-	0
8. SC	-	10	10	-	-	-	-
9. MH	-	199	199	19	130	10	140
10. DC	-	12	12	3	12	0	12
11. MC	-	5	5	0	1	1	2
12. FP	-	0	0	-	-	-	-
AL	134	2,005	2,139	230	1,597	106	1,703
13. UB	-	30	30	4	14	1	15
14. EB	-	2	2	2	6	-	6
15. MQ	-	2	2	8	1	-	1
16. GL	-	97	97	7	59	1	60
17. FR	-	985	985	56	2,244	-	2,244
18. SF	-	275	275	8	140	0	140
19. NL	-	93	93	67	52	-	52
20. SW	-	36	36	54	36	3	39
21. OT	-	36	36	84	36	4	40
NA	-	1,556	1,556	290	2,588	9	2,597
Total	134	3,561	3,695	520	4,185	115	4,300

Remarks; Land use symbol: See land use category in Table 9.
PS: Perlis, KH: Kedah, PG: Pulau Pinang

Source; Ref. 1

Table 11 LAND USE PATTERN BY RIVER BASIN AS OF 1974/75 (3/12)

Unit: km^2

Name Land Use Symbol	Basin 6 Perai			Basin 7 Pulau Pinang	Basin 9 Kurau		
	KH	PG	Total	PG	PG	PK	Total
1. PD	26	63	89	16	15	246	261
2. RB	284	178	462	52	6	778	784
3. OP	17	19	36	-	2	127	129
4. CN	0	56	56	19	7	135	142
5. CA	-	-	-	-	-	6	6
6. OC	0	2	2	13	-	11	11
7. PA	-	6	6	-	0	1	1
8. SC	-	-	-	-	-	29	29
9. MH	7	36	43	35	1	88	89
10. DC	2	7	9	2	0	99	99
11. MC	-	1	1	3	-	3	3
12. FP	-	-	-	0	-	0	0
AL	336	368	704	140	31	1,523	1,554
13. UB	4	35	39	42	1	44	45
14. EB	1	1	2	0	0	6	6
15. MQ	1	2	3	1	0	34	34
16. GL	8	11	19	6	1	42	43
17. FR	27	9	36	69	1	587	588
18. SF	5	7	12	27	0	51	51
19. NL	11	1	12	2	0	114	114
20. SW	24	39	63	9	4	660	664
21. OT	0	5	5	4	1	155	156
NA	81	110	191	160	8	1,693	1,701
Total	417	476	895	300	39	3,216	3,255

Remarks; Land use symbol: See land use category in Table 9.
KH: Kedah, PG: Pulau Pinang, PK: Perak

Source; Ref. 1

Table 12 LAND USE PATTERN BY RIVER BASIN AS OF 1974/75 (4/12)

Unit: km^2

Name / Land Use Symbol	Basin 8 Kerian KH	Basin 8 Kerian PG	Basin 8 Kerian PK	Basin 8 Kerian Total	Basin 10 Perak PK	Basin 12 Tengi SL	Basin 13 Selangor SL
1. PD	25	-	13	38	263	13	2
2. RB	-	56	183	239	1,652	59	439
3. OP	-	15	7	22	245	96	138
4. CN	-	12	0	12	299	54	22
5. CA	-	-	-	-	56	-	4
6. OC	-	2	0	2	20	0	2
7. PA	-	1	-	1	0	-	-
8. SC	-	-	-	-	2	-	-
9. MH	-	4	17	21	190	8	15
10. DC	-	2	2	4	254	2	4
11. MC	-	0	0	0	37	4	6
12. FP	-	-	-	-	2	-	0
AL	25	92	222	339	3,020	236	632
13. UB	2	3	1	6	120	1	15
14. EB	-	1	2	3	12	1	5
15. MQ	4	0	0	4	501	3	73
16. GL	10	2	7	19	276	13	48
17. FR	143	4	443	590	9,412	173	393
18. SF	28	1	26	55	543	14	75
19. NL	-	0	15	15	306	8	33
20. SW	2	5	284	291	477	88	521
21. OT	2	3	93	98	33	28	25
NA	191	19	871	1,081	11,680	329	1,188
Total	216	111	1,093	1,420	14,700	565	1,820

Remarks; Land use symbol: See land use category in Table 9.
KH: Kedah, PG: Pulau Pinang, PK Perak, SL: Selangor

Source; Ref. 1

Table 13 LAND USE PATTERN BY RIVER BASIN AS OF 1974/75 (5/12)

Unit: km^2

Name / Land Use Symbol	Basin 11 Bernam			Basin 14 Buloh	Basin 16 Langat		
	PK	SL	Total	SL	SL	NS	Total
1. PD	1	199	200	1	9	15	24
2. RB	151	18	169	149	433	-	433
3. OP	150	24	174	132	164	-	164
4. CN	36	291	327	54	40	-	40
5. CA	20	7	27	3	-	-	-
6. OC	0	0	0	3	3	-	3
7. PA	-	-	-	2	4	-	4
8. SC	-	-	-	-	-	-	-
9. MH	9	10	19	26	31	-	31
10. DC	12	6	18	5	15	-	15
11. MC	8	4	12	9	22	-	24
12. FP	-	-	-	0	0	-	1
AL	387	559	946	384	721	15	736
13. UB	3	6	9	2	18	-	18
14. EB	4	1	5	1	3	-	3
15. MQ	11	4	15	0	29	-	29
16. GL	30	12	42	7	54	-	54
17. FR	744	561	1,305	74	390	-	390
18. SF	58	6	64	3	26	-	26
19. NL	43	25	68	10	26	-	26
20. SW	635	209	844	71	510	-	510
21. OT	20	17	37	13	23	-	23
NA	1,548	841	2,389	181	1,079	-	1,079
Total	1,935	1,400	3,335	565	1,800	15	1,815

Remarks; Land use symbol: See land use category in Table 9.
PK: Perak, SL: Selangor, NS: Negeri Sembilan

Source; Ref. 1

Table 14 LAND USE PATTERN BY RIVER BASIN AS OF 1974/75 (6/12)

Unit: km^2

Name / Land Use Symbol	Basin 15 Kelang	Basin 17 Sepang			Basin 18 Linggi		
	SL	SL	NS	Total	NS	MA	Total
1. PD	2	-	1	1	34	32	66
2. RB	226	219	-	219	593	198	791
3. OP	171	103	-	103	57	7	64
4. CN	33	20	-	20	1	3	4
5. CA	0	-	-	-	0	-	0
6. OC	4	1	-	1	2	1	3
7. PA	5	0	-	0	-	-	-
8. SC	-	-	-	-	-	-	-
9. MH	33	2	-	2	39	27	66
10. DC	11	9	4	13	7	3	10
11. MC	33	11	1	12	6	3	9
12. FP	1	-	-	-	1	0	1
AL	519	365	6	371	740	274	1,014
13. UB	185	2	-	2	37	3	40
14. EB	7	1	-	1	8	1	9
15. MQ	52	0	-	0	11	0	11
16. GL	64	6	-	6	25	-	25
17. FR	231	102	20	122	124	30	154
18. SF	35	3	-	3	40	-	40
19. NL	53	7	-	7	56	4	60
20. SW	269	126	-	126	44	10	54
21. OT	10	2	-	2	10	3	13
NA	906	249	20	269	355	51	406
Total	1,425	614	26	640	1,095	325	1,420

Remarks; Land use symbol: See land use category in Table 9.
SL: Selangor, NS: Negeri Sembilan, MA: Melaka

Source; Ref. 1

Table 15 LAND USE PATTERN BY RIVER BASIN AS OF 1974/75 (7/12)

Unit: km^2

Name Land Use Symbol	Basin 19 Melaka			Basin 20 Kesang			
	NS	MA	Total	NS	MA	JR	Total
1. PD	6	72	78	-	18	8	26
2. RB	49	462	511	-	315	137	452
3. OP	2	13	15	-	20	14	34
4. CN	0	11	11	-	16	8	24
5. CA	-	-	-	-	-	-	-
6. OC	0	4	4	-	2	4	6
7. PA	-	0	0	-	-	-	-
8. SC	-	-	-	-	-	-	-
9. MH	3	45	48	-	22	6	28
10. DC	1	4	5	-	3	4	7
11. MC	0	6	6	-	1	4	5
12. FP	-	1	1	-	0	-	0
AL	61	618	679	-	397	185	582
13. UB	2	27	29	-	2	-	2
14. EB	0	4	4	-	-	-	-
15. MQ	0	4	4	-	-	-	-
16. GL	6	23	29	-	8	-	8
17. FR	73	34	107	6	40	53	99
18. SF	9	24	33	-	10	-	10
19. NL	20	25	45	-	-	-	-
20. SW	0	71	71	-	4	-	4
21. OT	0	9	9	-	-	-	-
NA	110	221	331	6	64	53	123
Total	171	839	1,010	6	461	238	705

Remarks; Land use symbol: See land use category in Table 9.
NS: Negeri Sembilan, MA: Melaka, JR: Johor

Source; Ref. 1

Table 16 LAND USE PATTERN BY RIVER BASIN AS OF 1974/75 (8/12)

Unit: km^2

Name Land Use Symbol	Basin 21 Muar NS	MA	JR	PH	Total	Basin 22 Batu Pahat JR	Basin 23 Pontian Kechil JR
1. PD	60	-	46	-	106	5	3
2. RB	749	-	1,468	-	2,217	901	987
3. OP	102	-	221	-	323	247	267
4. CN	6	-	89	-	95	318	159
5. CA	-	-	3	-	3	-	5
6. OC	4	-	20	-	24	10	16
7. PA	0	-	16	-	16	24	159
8. SC	-	-	-	-	-	-	1
9. MH	89	-	112	-	201	65	65
10. DC	11	-	21	-	32	24	6
11. MC	8	-	5	-	13	71	36
12. FP	1	-	0	-	1	0	1
AL	1,030	-	2,001	-	3,031	1,665	1,705
13. UB	11	-	29	-	40	25	61
14. EB	5	-	5	-	10	6	5
15. MQ	0	-	6	-	6	2	1
16. GL	68	-	16	-	84	31	47
17. FR	1,360	25	1,375	57	2,817	435	208
18. SF	114	-	72	-	186	101	87
19. NL	183	-	79	-	262	77	150
20. SW	37	-	91	-	128	225	345
21. OT	25	-	6	-	31	33	51
NA	1,803	25	1,679	57	3,565	935	955
Total	2,833	25	3,680	57	6,595	2,600	2,660

Remarks; Land use symbol: See land use category in Table 9.
NS: Negeri Sembilan, MA: Melaka, JR: Johor,
PH: Pahang

Source; Ref. 1

Table 17 LAND USE PATTERN BY RIVER BASIN AS OF 1974/75 (9/12)

Unit: km^2

Name / Land Use Symbol	Basin 24 Johor JR	Basin 25 Sedili Besar JR	Basin 26 Mersing JR	Basin 27 Endau JR	Basin 27 Endau PH	Basin 27 Endau Total	Basin 29 Bebar & Pontian PH
1. PD	3	1	3	11	7	18	2
2. RB	597	58	32	460	3	463	0
3. OP	511	8	2	273	1	274	0
4. CN	22	2	5	9	3	12	2
5. CA	-	-	-	-	-	-	-
6. OC	3	1	0	3	1	4	1
7. PA	0	-	-	0	-	0	-
8. SC	92	-	-	-	-	-	-
9. MH	3	8	2	17	1	18	5
10. DC	17	0	2	7	0	7	1
11. MC	8	-	0	1	4	5	4
12. FP	0	0	-	0	-	0	-
AL	1,256	78	46	781	20	801	15
13. UB	21	2	1	22	0	22	0
14. EB	6	0	0	5	-	5	-
15. MQ	33	15	9	8	1	9	0
16. GL	37	20	18	65	4	69	12
17. FR	988	1,251	544	2,385	497	2,882	610
18. SF	166	86	40	167	29	196	30
19. NL	366	137	11	186	3	189	10
20. SW	342	218	205	259	268	527	1,203
21. OT	35	13	6	31	9	40	15
NA	1,994	1,742	834	3,128	811	3,939	1,880
Total	3,250	1,820	880	3,909	831	4,740	1,895

Remarks; Land use symbol: See land use category in Table 9.
JR: Johor, PH: Pahang

Source; Ref. 1

Table 18 LAND USE PATTERN BY RIVER BASIN AS OF 1974/75 (10/12)

Unit: km^2

Name / Land Use Symbol	Basin 28 Rompin & Pontian JR	PH	Total	Basin 30 Pahang & Penor NS	PH	Total	Basin 31 Kuantan PH
1. PD	-	12	12	16	224	240	4
2. RB	-	5	5	635	2,510	3,145	125
3. OP	-	205	205	95	937	1,032	95
4. CN	-	5	5	0	30	30	11
5. CA	-	-	-	-	18	18	-
6. OC	-	0	0	1	10	11	5
7. PA	-	-	-	-	0	0	0
8. SC	-	-	-	13	-	13	-
9. MH	-	6	6	18	248	266	34
10. DC	-	4	4	7	35	42	9
11. MC	-	3	3	1	36	37	1
12. FP	-	-	-	0	0	0	-
AL	-	240	240	786	4,048	4,834	284
13. UB	-	4	4	6	45	51	19
14. EB	-	1	1	4	15	19	5
15. MQ	-	9	9	9	11	20	21
16. GL	-	48	48	82	385	467	76
17. FR	45	3,210	3,255	1,351	19,589	20,940	1,178
18. SF	-	107	107	84	1,011	1,095	68
19. NL	-	168	168	179	482	661	42
20. SW	-	420	420	18	1,141	1,159	277
21. OT	-	33	33	4	50	54	55
NA	45	4,000	4,045	1,737	22,729	24,466	1,741
Total	45	4,240	4,285	2,523	26,777	29,300	2,025

Remarks; Land use symbol: See land use category in Table 9.
NS: Negeri Sembilan, JR: Johor, PH: Pahang

Source; Ref. 1

Table 19 LAND USE PATTERN BY RIVER BASIN AS OF 1974/75 (11/12)

Unit: km^2

Name bLand Use Symbol	Basin 32 Kemaman TU	Basin 33 Paka TU	Basin 34 Dungun TU	Basin 35 Marang TU	Basin 36 Trengganu TU	Basin 37 Seitu TU	Basin 38 Besut & Keluang TU
1. PD	12	3	16	67	118	44	81
2. RB	147	38	48	85	253	67	111
3. OP	151	4	14	32	63	11	-
4. CN	18	3	6	17	25	11	5
5. CA	-	-	-	9	-	-	-
6. OC	0	0	0	4	9	2	2
7. PA	-	-	-	0	1	0	0
8. SC	-	-	-	-	-	-	-
9. MH	23	3	14	39	84	40	43
10. DC	2	3	4	7	29	3	2
11. MC	0	-	0	0	4	0	0
12. FP	-	-	-	-	-	0	-
AL	353	54	102	260	586	178	244
13. UB	5	1	5	6	9	2	2
14. EB	2	0	0	1	1	0	0
15. MQ	11	3	6	0	1	0	0
16. GL	47	20	30	41	63	57	22
17. FR	1,696	637	1,462	244	3,566	422	656
18. SF	115	27	60	81	292	117	49
19. NL	18	44	15	21	71	14	14
20. SW	297	55	172	93	10	234	219
21. OT	26	9	23	13	51	11	24
NA	2,217	796	1,773	500	4,064	857	986
Total:	2,570	850	1,875	760	4,650	1,035	1,230

Remarks; Land use symbol: See land use category in Table 9.
TU: Trengganu

Source; Ref. 1

Table 20 LAND USE PATTERN BY RIVER BASIN AS OF 1974/75 (12/12)

Unit: km^2

Name Land Use Symbol	Basin 39 Kemasin & Semarak KN	Basin 40 Kelantan KN	Basin 41 Golok KN
1. PD	135	543	74
2. RB	312	940	44
3. OP	0	51	2
4. CN	45	28	4
5. CA	-	-	0
6. OC	4	3	2
7. PA	-	-	1
8. SC	-	-	-
9. MH	184	130	30
10. DC	4	15	4
11. MC	0	12	1
12. FP	-	0	0
AL	684	1,722	162
13. UB	8	19	4
14. EB	0	2	0
15. MQ	0	1	0
16. GL	68	115	4
17. FR	94	10,503	446
18. SF	30	403	124
19. NL	7	177	41
20. SW	109	39	112
21. OT	20	119	2
NA	336	11,378	733
Total	1,020	13,100	895

Remarks; Land use symbol: See land use category in Table 9.
KN: Kelantan

Source; Ref. 1

Table 21 HISTORICAL RECORD ON PLANTED AREA OF WET PADDY IN PENINSULAR MALAYSIA

Unit: 10^3 ha

State	Season	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80
PS	M	26.58	26.58	26.58	26.58	26.58	26.58	26.52
	O	13.36	13.36	16.20	12.56	-	18.33	19.66
KH	M	118.77	118.77	118.77	118.11	120.26	120.32	122.47
	O	90.30	91.89	94.14	89.90	7.64	105.53	93.44
PG	M	17.29	15.39	15.99	13.70	13.68	14.25	11.41
	O	13.76	16.19	14.92	13.22	9.54	13.08	11.41
PK	M	50.05	48.50	32.17	42.29	37.87	41.96	33.24
	O	43.21	24.44	40.77	38.09	26.08	34.76	36.32
SL	M	20.67	20.46	20.27	20.14	18.07	19.25	19.18
	O	20.01	20.09	19.53	20.12	19.51	13.08	19.45
NS	M	9.38	7.65	7.50	7.68	4.65	3.71	2.43
	O	3.64	6.85	2.73	2.32	3.32	3.00	1.49
MA	M	11.49	11.30	11.20	7.72	8.34	8.26	7.75
	O	2.85	2.69	2.12	1.42	1.29	1.05	1.45
JR	M	2.59	3.66	5.54	2.09	2.06	2.56	2.37
	O	1.91	2.09	2.17	1.67	1.88	1.78	1.53
PH	M	19.96	19.95	17.07	15.88	5.91	8.01	6.82
	O	1.32	1.73	1.84	1.82	2.02	1.41	1.61
TU	M	28.84	29.93	26.33	26.63	28.81	22.13	26.17
	O	4.90	6.73	3.88	3.92	5.35	4.22	4.20
KN	M	65.79	70.29	66.46	62.44	69.11	64.47	60.78
	O	23.14	27.34	24.18	27.46	26.57	27.04	19.38
PM	M	371.41	372.48	347.88	345.26	335.34	331.50	319.14
	O	217.20	213.40	222.48	212.50	103.20	223.28	209.94

Remarks; PS: Perlis, KH: Kedah, PG: Pulau Pinang,
PK: Perak, SL: Selangor, NS: Negeri Sembilan,
MA: Melaka, JR: Johor, PH: Pahang,
TU: Trengganu, KN: Kelantan, PM: Peninsular Malaysia,
M : Main season wet paddy, O : Off season wet paddy

Source; Ref. 6

Table 22 TYPICAL CROPPING CALENDAR OF WET PADDY BY STATE IN PENINSULAR MALAYSIA

State		Main Season		Off Season	
		Sowing	Harvesting	Sowing	Harvesting
Perlis		July-Oct	Nov-Mar	Mar-June	Aug-Oct
Kedah		July-Feb	Jan-June	Feb-July	May-Nov
P. Pinang		Sept-Feb	Jan-June	Apr-Sept	Aug-Dec
Perak		July-Jan	Nov-May	Feb-July	July-Nov
Selangor		Aug-Sept	Jan-Feb	Feb-Mar	July-Aug
N. Sembilan		July-Dec	Dec-May	Jan-June	May-Oct
Melaka		July-Aug	Jan-Mar	Mar-Apr	July-Aug
Johor	(1)	Apr-July	Oct-Feb	Apr-May	Aug-Sept
	(2)	Aug-May	Jan-Oct	July	Nov
Pahang		Feb-Nov	June-Mar	Feb-Sept	July-Jan
Trengganu		June-Nov	Dec-May	Apr-June	Sept-Oct
Kelantan		Sept-Dec	Jan-Apr	Mar-July	July-Nov

Source; Ref. 7

Table 23 HISTORICAL RECORD ON DAMAGED AREA BY FLOOD AND DROUGHT BY STATE IN PENINSULAR MALAYSIA (1/3)

Unit: ha

Year & Damage		Peninsular Malaysia Main	Peninsular Malaysia Off	Perlis Main	Perlis Off	Kedah Main	Kedah Off	P. Pinang Main	P. Pinang Off
1973/74	F	11,776	70	358	-	47	-	-	-
	D	1,727	293	-	-	41	61	-	232
	O	3,004	692	-	-	147	-	131	39
	T	16,507	1,055	358	-	235	61	131	271
1974/75	F	3,099	383	-	-	-	-	-	-
	D	977	16	406	-	469	16	-	-
	O	3,355	2,313	85	-	9	6	478	262
	T	7,431	2,712	491	-	478	22	478	262
1975/76	F	689	892	-	136	-	108	-	-
	D	2,836	225	227	-	-	-	142	13
	O	3,498	1,986	142	-	149	-	22	122
	T	7,023	3,103	369	136	149	108	164	135
1976/77	F	3,559	16	2,748	-	-	-	-	2
	D	4,355	1,371	349	-	407	-	100	57
	O	4,085	3,903	203	121	987	3	99	127
	T	11,999	5,290	3,300	121	1,394	3	199	186
1977/78	F	101	2	-	-	-	-	-	-
	D	29,715	84	4,860	-	23,513	-	192	-
	O	3,761	2,742	1,442	-	246	-	86	14
	T	33,577	2,828	6,302	-	23,759	-	278	14
1978/79	F	65	573	-	-	-	4	-	-
	D	1,286	79	162	-	16	-	527	-
	O	2,437	3,034	648	2,096	27	-	-	-
	T	3,788	3,686	810	2,096	43	4	527	-
1979/80	F	1,209	103	-	-	-	-	-	-
	D	2,492	559	10	55	-	-	78	202
	O	2,427	2,533	310	23	-	-	-	273
	T	6,128	3,195	320	78	-	-	78	475

Remarks; F: Flood damage, D: Drought damage, O: Other damage, T: Total damage

Source; Ref. 6

Table 24 HISTORICAL RECORD ON DAMAGED AREA BY FLOOD AND DROUGHT BY STATE IN PENINSULAR MALAYSIA (2/3)

Unit: ha

Year & Damage		Perak		Selangor		N. Sembilan		Melaka	
		Main	Off	Main	Off	Main	Off	Main	Off
1973/74	F	1,034	2	-	-	-	-	-	-
	D	-	-	-	-	-	-	50	-
	O	726	39	-	-	199	116	162	-
	T	1,760	41	-	-	199	116	212	-
1974/75	F	-	-	-	-	3	1	-	-
	D	6	-	-	-	-	-	-	-
	O	94	54	-	8	180	300	23	119
	T	100	54	-	8	183	301	23	119
1975/76	F	-	122	-	-	2	-	-	26
	D	237	53	-	-	-	19	17	20
	O	663	128	41	70	125	212	74	42
	T	900	303	41	70	127	231	91	88
1976/77	F	20	12	-	-	-	-	-	2
	D	32	721	-	-	403	55	8	23
	O	94	110	5	3,116	340	68	53	27
	T	146	843	5	3,116	743	123	61	52
1977/78	F	57	1	-	-	43	-	-	-
	D	8	16	-	2	305	-	151	-
	O	352	87	20	1,839	107	39	33	14
	T	417	104	20	1,841	455	39	184	14
1978/79	F	41	-	-	-	-	-	-	-
	D	110	-	-	3	58	31	29	2
	O	262	56	284	64	71	70	12	5
	T	413	56	284	67	129	101	41	7
1979/80	F	-	42	-	-	-	-	-	-
	D	14	243	-	-	1	12	122	-
	O	501	329	45	1,470	15	13	5	41
	T	515	614	45	1,470	16	25	127	41

Remarks; F: Flood damage, D: Drought damage, O: Other damage, T: Total damage

Source; Ref. 6

Table 25 HISTORICAL RECORD ON DAMAGED AREA BY FLOOD AND DROUGHT BY STATE IN PENINSULAR MALAYSIA (3/3)

Unit: ha

Year & Damage		Johor		Pahang		Trengganu		Kelantan	
		Main	Off	Main	Off	Main	Off	Main	Off
1973/74	F	-	-	1,642	-	410	68	8,285	-
	D	-	-	-	-	-	-	1,636	-
	O	92	-	24	-	124	14	1,399	484
	T	92	-	1,666	-	534	82	11,320	484
1974/75	F	-	-	-	-	453	382	2,643	-
	D	-	-	-	-	32	-	64	-
	O	584	11	439	48	842	859	621	646
	T	584	11	439	48	1,327	1,241	3,328	646
1975/76	F	-	162	360	-	249	4	78	334
	D	72	-	4	-	956	109	1,181	11
	O	47	28	264	72	1,596	1,218	375	94
	T	119	190	628	72	2,801	1,331	1,634	439
1976/77	F	44	-	20	-	-	-	727	-
	D	4	32	2,678	483	-	-	374	-
	O	76	51	521	-	1,194	68	513	212
	T	124	83	3,219	483	1,194	68	1,614	212
1977/78	F	-	1	-	-	-	-	1	-
	D	4	-	550	57	132	9	-	-
	O	8	92	81	26	842	368	544	263
	T	12	93	631	83	974	377	545	263
1978/79	F	4	-	-	15	12	20	8	534
	D	9	1	-	-	71	6	304	36
	O	69	22	83	192	462	187	519	342
	T	82	23	83	207	545	213	831	912
1979/80	F	109	61	-	-	254	-	846	-
	D	-	-	-	-	61	4	2,206	43
	O	49	64	240	51	683	47	579	222
	T	158	125	240	51	998	51	3,631	265

Remarks; F: Flood damage, D: Drought damage, O: Other damage, T: Total damage

Source; Ref. 6

Table 26 HISTORICAL RECORD ON HARVESTED AREA OF WET PADDY IN PENINSULAR MALAYSIA

Unit: 10^3 ha

State	Season	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80
PS	M	26.22	26.09	26.21	23.28	20.28	25.77	26.20
	O	13.36	13.36	16.06	12.43	-	16.23	19.59
KH	M	118.59	118.30	118.63	116.71	94.46	120.28	122.47
	O	90.24	91.87	94.03	89.89	7.64	105.52	93.44
PG	M	17.16	14.91	15.82	13.50	13.40	13.73	11.33
	O	13.48	15.93	14.79	13.04	9.53	13.08	10.94
PK	M	48.28	48.40	31.27	42.15	37.45	41.54	32.72
	O	43.17	24.39	40.46	37.24	25.96	34.71	35.70
SL	M	20.67	20.46	20.23	20.13	18.05	18.96	19.13
	O	20.01	20.08	19.46	17.00	17.66	13.01	17.98
NS	M	9.18	7.46	7.38	6.94	4.19	3.58	2.41
	O	3.53	6.55	2.50	2.25	3.28	2.90	1.47
MA	M	11.28	11.28	11.10	9.66	8.16	8.20	7.62
	O	2.05	2.57	2.04	1.37	1.28	1.04	1.40
JR	M	2.50	3.08	5.42	1.97	1.97	2.48	2.21
	O	1.35	2.08	1.98	1.58	1.80	1.76	1.41
PH	M	18.30	19.52	16.45	12.66	5.28	7.93	6.58
	O	1.32	1.68	1.77	1.34	1.94	1.20	1.56
TU	M	28.31	28.60	23.53	25.44	27.84	21.58	25.17
	O	4.82	5.49	2.67	3.85	4.97	4.00	4.15
KN	M	54.46	66.95	64.82	60.83	68.56	63.64	57.15
	O	22.66	26.69	23.75	27.25	26.31	26.13	19.12
PM	M	354.95	365.05	340.86	333.27	299.64	327.69	312.99
	O	216.00	210.69	219.51	207.24	100.37	219.58	206.76

Remarks; PS: Perlis, KH: Kedah, PG: Pulau Pinang,
PK: Perak, SL: Selangor, NS: Negeri Sembilan,
MA: Melaka, JR: Johor, PH: Pahang,
TU: Trengganu, KN: Kelantan, PM: Pneinsular Malaysia,
M : Main season wet paddy, O : Off season wet paddy

Source; Ref. 6

Table 27 HISTORICAL RECORD ON AVERAGE PADDY YIELD BY STATE IN PENINSULAR MALAYSIA

Unit: tons/ha

State	Season	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80
PS	M	3.46	3.36	3.35	3.17	2.46	3.56	3.62
	O	3.17	3.26	4.21	4.02	-	3.59	3.72
KH	M	3.57	3.41	3.42	3.10	3.22	3.69	3.75
	O	3.75	3.62	4.23	3.95	3.93	3.91	4.04
PG	M	3.42	3.31	3.34	2.91	3.31	2.97	2.41
	O	3.67	3.00	3.21	2.80	3.34	2.75	2.37
PK	M	2.78	2.74	2.72	2.67	2.52	2.72	2.75
	O	2.86	2.74	2.63	2.98	3.01	2.53	2.61
SL	M	3.53	3.05	3.17	3.34	3.60	3.56	3.02
	O	3.55	3.50	3.17	2.83	3.36	2.77	2.68
NS	M	2.09	2.33	2.75	2.36	2.33	2.61	2.65
	O	2.50	2.52	2.66	2.97	2.99	2.99	2.57
MA	M	2.54	2.33	2.20	1.96	2.15	2.81	2.33
	O	2.40	2.25	2.12	2.19	2.41	2.45	2.80
JR	M	3.02	2.50	2.07	1.98	3.28	2.40	2.71
	O	2.23	2.74	2.01	2.12	2.62	2.52	1.81
PH	M	2.16	1.90	1.91	1.88	1.25	1.80	1.82
	O	2.28	2.18	2.14	1.40	1.64	2.71	2.41
TU	M	1.86	1.90	1.94	1.67	2.11	2.47	2.59
	O	2.13	1.54	1.93	3.00	2.36	3.21	2.82
KN	M	2.18	1.81	1.89	1.89	2.21	2.40	2.72
	O	2.49	2.68	2.37	1.78	2.45	3.00	3.33
PM	M	2.94	2.75	2.78	2.62	2.73	3.12	3.19
	O	3.28	3.18	3.45	3.37	2.95	3.37	3.02

Remarks; PS: Perlis, KH: Kedah, PG: Pulau Pinang,
PK: Perak, SL: Selangor, NS: Negeri Sembilan,
MA: Melaka, JR: Johor, PH: Pahang,
TU: Trengganu, KN: Kelantan, PM: Peninsular Malaysia,
M : Main season wet paddy, O : Off season wet paddy

Source; Ref. 6

Table 28 HISTORICAL RECORD ON PADDY PRODUCTION BY STATE IN PENINSULAR MALAYSIA

Unit: 10^3 tons

State	Season	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80
PS	M	91.9	89.2	89.0	84.2	65.3	102.4	96.2
	O	42.3	43.6	68.2	50.5	-	65.9	73.1
KH	M	423.9	413.4	406.0	368.7	387.7	444.5	459.8
	O	338.4	332.5	397.9	354.6	30.0	413.0	377.3
PG	M	59.1	50.9	53.3	39.8	45.3	42.3	27.5
	O	50.5	48.8	47.9	37.1	31.9	36.0	27.1
PK	M	139.4	132.9	87.6	112.7	95.5	113.9	91.6
	O	123.7	67.1	107.4	113.5	78.5	87.9	94.6
SL	M	73.0	62.5	64.3	67.2	65.1	68.6	57.9
	O	71.1	70.4	61.9	56.9	65.5	36.2	52.1
NS	M	27.1	17.8	20.7	18.1	10.8	9.7	6.4
	O	9.1	17.3	7.3	6.9	9.9	8.9	3.8
MA	M	29.2	26.3	24.6	19.1	17.9	23.2	18.1
	O	4.9	6.1	4.5	3.1	3.1	2.6	4.1
JR	M	7.8	9.2	11.5	4.1	6.7	6.1	6.4
	O	3.4	5.7	4.4	3.5	4.9	4.5	2.8
PH	M	43.1	37.8	32.6	29.9	7.4	14.4	12.4
	O	3.0	3.8	3.9	2.5	3.3	3.8	3.9
TU	M	53.7	56.9	51.2	44.4	60.9	54.7	67.7
	O	10.5	10.4	7.5	11.8	12.6	13.5	11.9
KN	M	143.2	127.4	125.9	118.3	153.0	154.8	165.5
	O	57.6	73.2	57.2	75.3	65.0	81.0	64.5
PM	M	1,091.4	1,024.3	966.7	906.5	915.6	1,034.6	1,009.5
	O	714.5	678.9	768.1	715.7	304.7	753.3	715.2

Remarks; PS: Perlis, KH: Kedah, PG: Pulau Pinang,
PK: Perak, SL: Selangor, NS: Negeri Sembilan,
MA: Melaka, JR: Johor, PH: Pahang,
TU: Trengganu, KN: Kelantan, PM: Peninsular Malaysia,
M : Main season wet paddy, O : Off season wet paddy

Source; Ref. 6

Table 29 HISTORICAL RECORD ON CONSUMPTION, PRODUCTION AND IMPORTS OF RICE IN PENINSULAR MALAYSIA

Unit: 10^3 tons

Year	Population (10^3)	Rice Consumption		Rice Production	Rice Imports	Self-sufficiency Rate (%)
		Total	Per Capita (kg/y)			
1967	8,217	961	117	670	291	70
1968	8,439	1,035	123	793	242	77
1969	8,584	1,099	128	875	224	80
1970	8,775	1,198	137	930	268	78
1971	9,018	1,151	128	1,006	145	87
1972	9,263	1,118	121	1,018	100	91
1973	9,502	1,284	135	1,124	160	88
1974	9,742	1,391	143	1,183	208	85
1975	9,997	1,179	118	1,117	62	95
1976	10,242	1,252	122	1,136	116	91
1977	10,510	1,223	116	1,060	163	87
1978	10,762	1,086	101	799	287	74
1979	11,042	1,271	115	1,170	101	92

Remarks; Population estimated by MOA show mid-year population the end of June.

Total rice consumption includes some amount of stock carried over from the previous year.

Self-sufficiency rate is obtained by dividing rice production by rice consumption in the same year.

Source; Ref. 6

Table 30 HISTORICAL RECORD ON MAJOR TREE CROP PLANTING AREAS BY PRODUCER IN PENINSULAR MALAYSIA

Unit: 10^3 ha

Crop and Producer	1972	1973	1974	1975	1976	1977	1978	1979
Rubber								
Estates	610	589	574	563	553	539	523	508
FELDA	76	89	94	105	115	125	145	157
RISDA	483	511	535	556	570	583	597	611
FELCRA	15	22	24	26	26	28	31	35
Smallholders	518	483	465	445	420	409	403	392
Total	1,702	1,694	1,692	1,695	1,684	1,684	1,699	1,703
Oil Palm								
Estates	245	275	324	355	377	404	439	463
FELDA	97	124	156	181	207	239	255	283
RISDA	-	0	2	5	8	19	26	24
Smallholders	7	13	18	27	37	36	41	65
Total	349	412	500	568	629	698	761	835
Coconut								
Estates	21	19	18	17	17	17	17	17
Smallholders	193	199	201	216	219	220	228	229
Total	214	218	219	233	236	237	245	246
Cocoa								
Estates	-	-	-	-	-	-	-	20
FELDA	-	-	-	-	-	-	-	8
Smallholders	-	-	-	-	-	-	-	20
Total	-	-	-	-	-	-	-	48

Remarks; Data on cocoa planting area are not available up to 1978.

Source; Refs. 3 and 4

Table 31 EXPORTS OF MAJOR CROPS IN PENINSULAR MALAYSIA

Unit: 10^3 tons

Year	Rubber (DRC)	Palm		Coconut		Cocoa Beans
		Oil	Kernel	Copra	Oil	
1972	1,319	625	50	0.3	25.2	-
1973	1,561	725	66	0.3	27.9	-
1974	1,506	813	92	1.0	43.7	-
1975	1,399	829	109	0.1	35.7	-
1976	1,544	749	124	0.6	31.2	8.5
1977	1,578	578	105	0.9	25.0	7.4
1978	1,538	430	130	4.1	19.6	9.7
1979	1,578	203	199	1.3	60.6	14.5

Source; Refs. 3 & 4

Table 32 PLANTED AREA OF RUBBER BY PRODUCER BY STATE AS OF 1979

Unit: 10^3 ha

State	Estates	FELDA	RISDA	FELCRA	Small-holders	Total
Perlis	0.6	-	-	-	8.3	8.9
Kedah	74.7	8.2	62.8	4.6	46.5	196.8
P. Pinang	6.4	-	12.5	-	15.4	34.3
Perak	60.2	8.9	89.7	4.4	62.0	225.2
Selangor	60.8	3.5	41.3	-	22.0	127.6
N. Sembilan	79.3	58.7	56.5	6.7	41.0	242.2
Melaka	29.7	4.8	44.6	0.8	26.2	106.1
Johor	119.2	27.4	190.7	10.6	115.0	462.9
Pahang	45.8	40.5	45.4	4.8	38.1	174.6
Trengganu	10.7	4.8	26.7	2.4	7.3	51.9
Kelantan	20.7	-	40.4	0.8	10.8	72.7
Total	508.1	156.8	610.6	35.1	392.6	1,703.2

Source; Ref. 3

Table 33 RUBBER PRODUCTION BY PRODUCER BY STATE IN 1976 AND 1979

Unit: 10^3 DRC tons

State	1976 Estates	1976 Small-holders	1976 Total	1979 Estates	1979 Small-holders	1979 Total
Perlis	0.6	5.7	6.3	0.5	7.2	7.7
Kedah	92.3	115.0	207.3	99.4	117.1	216.5
P. Pinang	10.9	37.5	48.4	9.3	35.0	44.3
Perak	85.7	141.0	226.7	76.0	140.7	216.7
Selangor	88.4	52.5	140.9	73.4	49.8	123.2
N. Sembilan	107.2	96.3	203.5	98.6	92.9	191.5
Melaka	44.1	62.1	106.2	38.6	59.4	98.0
Johor	164.9	249.5	414.4	153.0	260.6	413.6
Pahang	37.6	81.4	119.0	39.4	86.3	125.7
Trengganu	3.3	19.7	23.0	3.0	16.5	19.5
Kelantan	16.6	23.9	40.5	16.2	24.5	40.7
Total	651.6	884.6	1,536.2	607.4	890.0	1,497.4

Source; Ref. 3

Table 34 PLANTED AREA OF OIL PALM BY PRODUCER BY STATE AS OF 1979

Unit: 10^3 ha

State	Estates	FELDA	RISDA	FELCRA	Small-holders	Total
Perlis	-	-	-	-	-	-
Kedah	7.5	-	-	-	0.1	7.6
P. Pinang	3.9	-	-	-	0.7	4.6
Perak	68.3	11.6	1.3	2.9	5.9	90.0
Selangor	79.8	5.5	-	-	10.0	95.3
N. Sembilan	27.6	10.7	-	-	-	38.3
Melaka	7.5	-	-	0.7	0.1	8.3
Johor	167.7	70.5	2.8	5.4	14.1	260.5
Pahang	68.0	152.7	11.2	0.4	16.1	248.4
Trengganu	25.8	25.1	8.5	3.6	4.6	67.6
Kelantan	7.4	6.6	-	-	0.2	14.2
Total	463.5	282.7	23.8	13.0	51.8	834.8

Source; Ref. 4

Table 35 OIL PALM PRODUCTION BY PRODUCER BY STATE IN 1976 AND 1979

Unit: 10^3 FFB tons

State	Estates	FELDA	RISDA	FELCRA	Total
(1) 1976					
Perlis	-	-	-	-	-
Kedah	77	-	-	-	77
P. Pinang	43	-	-	-	43
Perak	662	64	-	-	726
Selangor	1,191	110	-	-	1,301
N. Sembilan	257	14	-	-	271
Melaka	60	-	-	0	60
Johor	1,615	304	-	3	1,922
Pahang	318	734	-	9	1,061
Trengganu	234	100	-	1	335
Kelantan	61	0	-	-	61
Total	4,518	1,326	-	13	5,857
(2) 1979					
Perlis	-	-	-	-	-
Kedah	96	-	-	-	96
P. Pinang	43	-	-	-	43
Perak	1,064	60	-	0	1,124
Selangor	1,378	104	-	-	1,482
N. Sembilan	394	113	-	-	507
Melaka	97	-	-	15	112
Johor	2,479	549	10	34	3,072
Pahang	612	1,518	3	7	2,140
Trengganu	270	131	11	7	419
Kelantan	79	25	-	-	104
Total	6,512	2,500	24	63	9,099

Source; Ref. 4

Table 36 PLANTED AREA OF COCONUT BY PRODUCER BY STATE IN 1976 AND 1979

Unit: ha

State	1976			1979		
	Estates	Small-holders	Total	Estates	Small-holders	Total
Perlis	-	1,390	1,390	-	1,400	1,400
Kedah	200	11,500	11,700	100	11,300	11,400
P. Pinang	510	14,870	15,380	550	14,900	15,450
Perak	11,550	33,850	45,400	11,920	42,300	54,220
Selangor	3,780	45,950	49,730	3,840	45,400	49,240
N. Sembilan	-	2,980	2,980	-	3,100	3,100
Melaka	-	5,280	5,280	-	5,400	5,400
Johor	450	66,640	67,090	330	67,500	67,830
Pahang	150	6,940	7,090	-	7,300	7,300
Trengganu	200	11,590	11,790	100	11,800	11,900
Kelantan	400	18,390	18,790	200	18,600	18,800
Total	17,240	219,380	236,620	17,040	229,000	246,040

Source; Ref. 4

Table 37 PLANTED AREA OF COCOA BY PRODUCER BY STATE AS OF 1979

Unit: ha

State	Estates	FELDA	RISDA	FELCRA	Small-holders	Total
Perlis	-	-	-	-	-	-
Kedah	-	-	-	-	160	160
P. Pinang	120	-	-	-	430	550
Perak	10,380	-	-	-	5,400	15,780
Selangor	4,900	-	-	-	7,570	12,470
N. Sembilan	100	-	-	-	40	140
Melaka	1,770	-	-	-	120	1,890
Johor	2,290	2,500	-	-	5,640	10,430
Pahang	300	5,420	-	-	270	5,990
Trengganu	750	-	-	-	30	780
Kelantan	-	-	-	-	40	40
Total	20,610	7,920	-	-	19,700	48,230

Source; Ref. 4

Table 38 AREAL EXTENT OF SOILS BY STATE IN PENINSULAR MALAYSIA (1/2)

Unit: km^2

Soils	PS	KH	PG	PK	SL	NS
A. Alluvial Soils						
Aa	184	1,057	407	1,355	2,183	68
Ab	-	-	1	1,580	1,958	114
Ac	148	1,038	86	1,542	381	725
Ad	265	54	190	1,556	-	27
Sub-Total	597	2,149	684	6,033	4,522	934
B. Sedentary Soils						
Ba	87	3,856	89	1,901	1,526	3,086
Bb	-	-	-	1,495	279	334
Bc	118	3,390	184	10,788	1,496	2,218
Sub-Total	205	7,246	273	14,184	3,301	5,638
C. Urban and Mined Land						
Ca	8	82	87	738	409	93
Total	810	9,477	1,044	20,955	8,232	6,665

Remarks;
- Aa: Alluvial soils on coastal plains
- Ab: Alluvial soils on coastal and/or riverine
- Ac: Alluvial soils on riverine flood plain or low riverine terraces
- Ad: Alluvial soils on intermediate and higher terraces
- Ba: Sedentary soils on undulating plains to rolling land
- Bb: Sedentary soils on rolling and low hilly land
- Bc: Sedentary soils on hills and mountains
- Ca: Soils on urban and mined land
- PS: Perlis, KH: Kedah, PG: Pulau Pinang,
- PK: Perak, SL: Selangor, NS: Negeri Sembilan

Source; Ref. 8

Table 39 AREAL EXTENT OF SOILS BY STATE IN PENINSULAR MALAYSIA (2/2)

Unit: km^2

Soils	MA	JR	PH	TU	KN	PM
A. Alluvial Soils						
Aa	204	1,939	591	669	249	8,906
Ab	85	3,259	3,473	926	79	11,475
Ac	92	1,473	2,872	1,466	1,326	11,149
Ad	-	1,003	1,039	11	236	4,381
Sub-Total	381	7,674	7,975	3,072	1,890	35,911
B. Sedentary Soils						
Ba	1,181	8,213	8,831	1,577	1,380	31,727
Bb	-	943	5,509	2,678	1,991	13,229
Bc	47	2,052	13,535	5,565	9,734	49,127
Sub-Total	1,228	11,208	27,875	9,820	13,105	94,083
C. Urban and Mined Land						
Ca	41	262	131	55	34	1,940
Total	1,650	19,144	35,981	12,947	15,029	131,934

Remarks; Aa: Alluvial soils on coastal plains
Ab: Alluvial soils on coastal and/or riverine
Ac: Alluvial soils on riverine flood plain or low riverine terraces
Ad: Alluvial soils on intermediate and higher terraces

Ba: Sedentary soils on undulating plains to rolling land
Bb: Sedentary soils on rolling and low hilly land
Bc: Sedentary soils on hills and mountains

Ca: Soils on urban and mined land

MA: Melaka, JR: Johor, PH: Pahang,
TU: Trengganu, KN: Kelantan, PM: Peninsular Malaysia

Source; Ref. 8

Table 40 LAND CLASSIFICATION CRITERIA FOR MAJOR CROPS (1/2)

	Rubber	Oil Palm	Coconut
1. Slope	0^{o} - 12^{o} (12^{o} - 35^{o})	0^{o} - 12^{o} (12^{o} - 20^{o})	0^{o} - 12^{o} (12^{o} - 20^{o})
2. Drainage	Well to somewhat excessive (Imperfect)	Imperfect to well (somewhat excessive)	Imperfect to well (Poorly drained with free flowing water and excessive
3. Effective Soil Depth	100 cm or more (50-100 cm)	100 cm or more (50-100 cm)	100 cm or more (50-100 cm)
4. Texture and Structure	Exclude structure less sands and clays	Fine to medium, moderate to well structured, sandy loam or finer textures (Weak and coarse strong structures)	Exclude massive clays (Massive clays)
5. Salinity	2 mmhos or less in top 100 cm (2 mmhos within 75-100 cm depth)	2 mmhos or less in top 100 cm (2 mmhos within 75-100 cm)	2 mmhos or less in top 50 cm (2 mmhos in top 25 cm)
6. Depth to Acid Sulphate Layer	100 cm or more (75-100 cm)	100 cm or more (75-100 cm)	100 cm or more (75-100 cm)
7. Peat Thickness	No peat (Up to 25 cm thick)	25 cm or less (25-50 cm)	No peat (Up to 25 cm thick)
8. Stoniness	Up to 25% and uniformly distributed or present below 75 cm depth (25-75%)	Up to 25% and uniformly distributed or present below 75 cm depth (25-75%)	Up to 25% and uniformly distributed or present below 75 cm depth (25-75%)
9. Nutrient Imbalance	Exclude excessive trace elements or low nutrient-retaining capacity (0.25% Mg and acute nutrient deficiencies)	Exclude excessive trace elements or low nutrient-retaining capacity (Acute nutrient deficiencies)	Exclude excessive trace elements (Low nutrient-retaining capacity and/or acute nutrient deficiencies)

Remarks; Description in p renthesis mean marginal limits.

Source; Ref. 9

Table 41 LAND CLASSIFICATION CRITERIA FOR MAJOR CROPS (2/2)

	Cocoa	Pepper	Rice
1. Slope			
	0^{o} - 12^{o} (12^{o} - 20^{o})	0^{o} - 6^{o} (6^{o} - 12^{o})	0^{o} - 2^{o} (-)
2. Drainage			
	Imperfect to well (Somewhat excessive)	Imperfect to well (Somewhat excessive)	Drainage control necessary
3. Effective Soil Depth			
	100 cm or more (50-100 cm)	50 cm or more (25-50 cm)	25 cm or more (-)
4. Texture and Structure			
	Fine to medium, moderate to well structured, sandy loam or finer textures (Weak and coarse strong structure)	Exclude structureless sands and clays (-)	Sandy clay or finer textures (Sandy clay loam or coarser textures)
5. Salinity			
	2mmhos or less in top 100 cm (2mmhos within 75-100 cm depth)	2mmhos or less in top 50 cm (2mmhos within 25-50 cm depth)	4mmhos or less in top 25 cm (-)
6. Depth to Acid Sulphate Layer			
	100 cm or more (75-100 cm)	50 cm or more (25-50 cm)	25 cm or more (-)
7. Peat Thickness			
	No peat (Up to 25 cm thick)	No peat (-)	No peat (-)
8. Stoniness			
	Up to 25% and uniformly distributed or present below 75 cm depth (25-75 cm)	Up to 10% and uniformly distributed or present below 50 cm depth (10-25% and/or below 25 cm depth)	No restriction allowed within 25 cm depth (Up to 25% if uniformly distributed)
9. Nutrient Imbalance			
	Exclude excessive trace elements or low nutrient-retaining capacity (Acute nutrient deficiencies)	Exclude excessive trace elements or low nutrient-retaining capacity (Acute nutrient deficiencies)	Exclude excessive trace elements or low nutrient-retaining capacity (Acute nutrient deficiencies)

Remarks; Description in parentheses mean marginal limits.

Source; Ref. 9

Table 42 PROVISIONAL ESTIMATE OF AREAL EXTENT BY LAND CAPABILITY GRADE FOR RUBBER IN PENINSULAR MALAYSIA

Unit: km^2

State	Land Capability Grade S	SM	M	SU	MU	U	Sub-Total
(1) Alluvial Soils							
Perlis	65	-	294	8	126	104	597
Kedah	215	-	921	300	32	681	2,149
P. Pinang	17	7	188	52	112	308	684
Perak	152	346	626	926	1,544	2,439	6,033
Selangor	-	944	76	229	715	2,558	4,522
N. Sembilan	5	-	156	435	46	292	934
Melaka	-	-	18	56	149	158	381
Johor	694	494	295	883	1,765	3,543	7,674
Pahang	388	-	869	1,724	1,504	3,490	7,975
Trengganu	506	-	299	500	74	1,693	3,072
Kelantan	389	-	318	110	80	993	1,890
Peninsular	2,431	1,791	4,060	5,223	6,147	16,259	35,911
(2) Sedentary Soils							
Perlis	6	58	-	-	17	114	195
Kedah	527	1,736	321	-	943	3,692	7,219
P. Pinang	-	89	-	-	-	180	269
Perak	1	2,674	203	-	2	11,399	14,279
Selangor	2	1,598	-	-	7	1,682	3,289
N. Sembilan	288	1,128	1,047	-	368	2,802	5,633
Melaka	20	725	105	-	286	92	1,228
Johor	483	6,017	1,054	-	829	2,711	11,094
Pahang	815	8,032	3,684	-	677	14,736	27,944
Trengganu	1,240	601	923	-	-	7,089	9,853
Kelantan	100	1,970	1,195	-	79	9,702	13,046
Peninsular	3,482	24,628	8,532	-	3,208	54,199	94,049
(3) Urban and Mined Land							
Peninsular	-	-	-	-	-	1,940	1,940
Grand Total	5,913	26,419	12,592	5,223	9,355	72,398	131,900

Source; Refs. 8 to 10

Table 43 PROVISIONAL ESTIMATE OF AREAL EXTENT BY LAND CAPABILITY GRADE FOR OIL PALM AND COCOA IN PENINSULAR MALAYSIA

Unit: km^2

State	Land Capability Grade S	SM	M	SU	MU	U	Sub-Total
(1) Allervial Soils							
Perlis	218	-	141	-	134	104	597
Kedah	799	-	337	-	332	681	2,149
P.Pinang	153	-	59	-	164	308	684
Perak	497	-	626	-	2,471	2,439	6,033
Selangor	945	-	76	-	945	2,556	4,522
N.Sembilan	-	-	160	-	482	292	934
Melaka	-	-	18	-	205	158	381
Johor	370	-	1,113	-	2,648	3,543	7,674
Pahang	8	-	1,248	-	3,228	3,491	7,975
Trengganu	633	68	840	-	506	1,025	3,072
Kelantan	486	-	222	-	189	993	1,890
Peninsular	4,109	68	4,840	-	11,304	15,590	35,911
(2) Sedentary Soils							
Perlis	6	58	-	-	17	114	195
Kedah	386	1,737	462	-	943	3,691	7,219
P.Pineng	-	89	-	-	-	180	269
Perak	1	2,677	200	-	2	11,399	14,279
Selangor	2	1,567	31	-	7	1,682	3,289
N.Sembilan	181	1,309	752	-	589	2,802	5,633
Melaka	11	714	114	-	286	103	1,228
Johor	458	5,723	1,372	-	830	2,711	11,094
Pahang	517	7,654	4,476	-	504	14,793	27,944
Trengganu	-	1,204	1,558	-	-	7,091	9,853
Kelantan	40	1,769	1,458	-	78	9,701	13,046
Peninsular	1,602	24,501	10,423	-	3,256	54,267	94,049
(3) Urban and Mined Land							
Peninsular	-	-	-	-	-	1,940	1,940
Grand Total	5,711	24,569	15,263	-	14,560	71,797	131,900

Source; Refs. 8 to 10

Table 44 PROVISIONAL ESTIMATE OF AREAL EXTENT BY LAND CAPABILITY GRADE FOR COCONUT IN PENINSULAR MALAYSIA

Unit: km^2

State	Land Capability Grade S	SM	M	SU	MU	U	Sub-Total
(1) Alluvial Soils							
Perlis	359	134	3	-	-	101	597
Kedah	1,135	332	120	-	-	562	2,149
P. Pinang	212	121	17	-	43	291	684
Perak	815	707	343	-	1,763	2,405	6,033
Selangor	1,021	944	76	-	1,873	608	4,522
N. Sembilan	158	481	145	-	84	66	934
Melaka	18	141	21	-	64	137	381
Johor	1,483	2,533	490	-	2,207	961	7,674
Pahang	1,179	3,228	1,117	-	2,295	156	7,975
Trengganu	805	574	835	-	858	-	3,072
Kelantan	708	189	604	-	389	-	1,890
Peninsular	7,893	9,384	3,771	-	9,576	5,287	35,911
(2) Sedentary Soils							
Perlis	6	58	-	-	17	114	195
Kedah	527	1,737	320	-	943	3,692	7,219
P. Pineng	-	89	-	-	-	180	269
Perak	1	2,677	200	-	2	11,399	14,279
Selangor	2	1,599	-	-	7	1,681	3,289
N. Sembilan	293	1,249	712	-	589	2,790	5,633
Melake	19	725	105	-	285	94	1,228
Johor	484	6,114	956	-	830	2,710	11,094
Pahang	717	8,072	3,858	-	504	14,793	27,944
Trengganu	34	1,206	1,524	-	-	7,089	9,853
Kelantan	100	1,972	1,195	-	78	9,701	13,046
Peninsular	2,183	25,498	8,870	-	3,255	54,243	94,049
(3) Urban and Mined Land							
Peninsular	-	-	-	-	-	1,940	1,940
Grand Total	10,076	34,882	12,641	-	12,831	61,470	131,900

Source; Refs. 8 to 10

Table 45 PROVISIONAL ESTIMATE OF AREAL EXTENT BY LAND CAPABILITY GRADE FOR RICE IN PENINSULAR MALAYSIA

Unit: km^2

State	Land Capability Grade S	SM	M	SU	MU	U	Sub-Total
(1) Alluvial Soils							
Perlis	557	-	-	32	-	8	597
Kedah	1,416	8	-	120	-	605	2,149
P. Pinang	356	-	-	72	-	256	684
Perak	3,160	-	-	-	743	2,130	6,033
Selangor	1,811	-	-	-	1,873	838	4,522
N. Sembilan	768	-	-	4	82	80	934
Melaka	186	1	-	96	-	98	381
Johor	4,729	78	-	211	-	2,656	7,674
Pahang	2,584	187	-	-	2,295	2,909	7,975
Trengganu	1,039	268	-	-	858	907	3,072
Kelantan	1,417	99	-	-	79	295	1,890
Peninsular	18,023	641	-	535	5,930	10,782	35,911
(2) Sedentary Soils							
Perlis	-	-	-	-	-	195	195
Kedah	-	-	-	-	-	7,219	7,219
P. Pinang	-	-	-	-	-	269	269
Perak	-	-	-	-	-	14,279	14,279
Selangor	-	-	-	-	-	3,289	3,289
N. Sembilan	-	-	-	390	-	5,243	5,633
Melaka	-	-	-	-	-	1,228	1,228
Johor	-	-	-	891	-	10,203	11,094
Pahang	-	-	-	830	-	27,114	27,944
Trengganu	-	-	-	620	-	9,233	9,853
Kelantan	-	-	-	-	-	13,046	13,046
Peninsular	-	-	-	2,731	-	91,318	94,049
(3) Urban and Mined Land							
Peninsular	-	-	-	-	-	1,940	1,940
Grand Total	18,023	641	-	3,266	5,930	104,074	131,900

Source; Refs. 8 to 10

Table 46 ESTIMATED AREA OF IRRIGATED PADDY FIELD

Unit: ha

Basin No.	Name of Basin	Scheme	1980 Main Season	1980 Off Season	1990 Main Season	1990 Off Season	2000 Main Season	2000 Off Season
1	Perlis	Minor	6,815	-	11,708	2,266	13,355	2,428
2	P. Langkawi	Minor	2,692	319	3,120	319	3,120	319
3	Kedah	Major	95,860	91,580	95,860	91,580	95,860	91,580
		Minor	1,083	473	7,166	1,820	13,000	3,426
4	Merbok	Minor	2,074	399	2,624	825	2,624	825
5	Muda	Minor	15,670	13,590	22,506	13,619	23,612	17,112
6	Perai	Minor	5,893	5,678	6,351	5,678	6,351	5,678
7	P. Pinang	Minor	1,189	566	1,189	821	1,189	870
8	Kerian	Minor	982	977	1,956	1,813	2,321	1,951
9	Kurau+	Major	23,490	21,142	23,490	21,142	23,490	21,142
		Minor	2,543	2,543	2,700	2,700	2,700	2,700
10	Perak	Major	6,555	5,900	16,269	13,994	16,269	15,614
		Minor	16,663	11,993	17,044	12,997	17,044	12,997
11	Bernam	Major	19,263	19,263	19,263	19,263	19,263	19,263
12-15		-	-	-	-	-	-	-
16	Langat	Minor	1,481	983	1,503	1,005	1,519	1,005
17	Sepang	Minor	81	69	81	69	81	69
18	Linggi	Minor	4,067	2,072	4,321	2,391	4,380	2,391
19	Melaka	Minor	6,366	1,366	7,197	3,049	7,537	3,171
20	Kesang	Minor	2,339	1,649	2,600	1,792	2,600	1,792
21	Muar	Minor	7,006	3,541	8,633	5,777	9,056	5,963
22	Batu Pahat	Minor	142	142	142	142	142	142
23	Pontian Kechil	Minor	176	176	176	176	176	176
24	Johor	Minor	109	-	109	-	109	-
25-26		-	-	-	-	-	-	-
27	Endau	Major	-	-	11,540	7,896	13,564	11,540
		Minor	1,150	1,150	304	304	304	304
28	Rompin	Major	-	-	5,859	5,859	5,859	5,859
		Minor	-	-	69	-	69	-
29	Bebar	Minor	221	-	869	-	869	-
30	Pahang	Major	-	-	5,261	2,023	13,354	7,284
		Minor	19,870	1,980	20,918	8,172	22,108	8,055
31	Kuantan	Minor	511	-	827	-	827	-
32	Kemaman	Minor	635	379	671	415	671	415
33	Paka	Minor	162	-	162	-	162	-
34	Dungun	Minor	66	32	1,280	639	1,467	826
35	Marang	Minor	695	238	1,375	622	2,104	1,351
36	Trengganu	Minor	9,195	3,811	11,177	4,744	11,177	5,181
37	Setiu	Minor	1,841	431	2,619	836	3,200	1,417
38	Besut	Major	5,058	4,047	5,058	4,047	5,058	4,047
		Minor	1,008	583	1,453	927	1,453	927
39	Kemasin	Major	-	-	8,904	4,857	8,904	4,857
		Minor	-	-	1,831	462	6,096	2,345
40	Kelantan	Major	29,630	28,628	29,630	28,628	29,630	28,628
		Minor	8,581	447	12,814	3,502	17,046	6,556
41	Golok	Minor	607	-	13,426	5,047	26,245	10,094
	Total		301,769	226,147	392,055	282,218	435,965	310,300

Table 47 ANTICIPATED PADDY YIELD FOR MAJOR AND MINOR IRRIGATION SCHEMES

Unit: ton/ha/season

State and Scheme	Present			Without Project			With Project	
	Rainfed	Irrigated		Rainfed	Irrigated		Irrigated	
	Main	Main	Off	Main	Main	Off	Main	Off
(1) Minor Irrigation Scheme								
Perlis	2.5	3.0	3.2	2.6	3.2	3.5	4.2	4.7
Kedah	2.2	2.6	2.8	2.3	2.7	3.1	3.7	4.2
P. Pinang	2.4	2.8	3.0	2.5	3.0	3.3	4.0	4.5
Perak	1.9	2.1	2.4	2.0	2.3	2.7	3.5	4.0
Selangor	1.9	-	-	2.0	-	-	-	-
N. Sembilan	1.9	2.5	2.8	2.1	2.7	3.1	3.7	4.1
Melaka	1.9	2.5	2.8	2.1	2.7	3.1	3.7	4.1
Johor	1.8	2.4	2.7	2.0	2.6	3.0	3.6	4.0
Pahang	1.5	1.9	2.2	1.7	2.1	2.5	3.4	3.8
Trengganu	1.5	2.0	2.2	1.7	2.2	2.5	3.2	3.6
Kelantan	1.4	1.5	1.8	1.6	2.0	2.3	3.3	3.7
(2) Major Irrigation Scheme								
Muda	-	3.9	4.1	-	4.0	4.2	4.5	4.9
Kerian	-	3.2	3.3	-	3.3	3.7	4.2	4.7
Trans Perak	-	-	-	-	-	-	3.8	4.2
Sungai Manik	-	2.7	2.8	-	3.0	3.4	3.9	4.4
Tanjong Karang	-	3.6	4.1	-	3.7	4.2	4.4	4.8
Sawa Endau	-	-	-	-	-	-	3.8	4.2
Rompin Endau	-	-	-	-	-	-	3.8	4.2
Trans Pahang	-	-	-	-	-	-	3.8	4.2
Besut	-	2.9	3.2	-	3.0	3.4	3.6	4.1
Kemasin Semarak	-	-	-	-	-	-	3.5	4.0
North Kelantan	-	2.3	3.1	-	2.8	3.3	3.8	4.2
KADA II	-	3.4	3.6	-	3.5	3.8	4.1	4.4

Table 48 PROSPECTED PADDY PRODUCTION IN PENINSULAR MALAYSIA

Unit: 10^3 tons

Schemes	1980 EX	1980 PR	1985 EX	1985 PR	1990 EX	1990 PR	2000 EX	2000 PR
Major Schemes								
- Irrigated	1,284.6	-	877.8	559.4	689.4	980.8	66.8	1,886.1
Minor Schemes								
- Irrigated	425.8	-	456.7	95.7	418.6	313.6	373.1	557.9
- Rainfed	253.3	-	213.9	-	104.1	-	-	-
Sub-total	679.1	-	670.6	95.7	522.7	313.6	373.1	557.9
Annual Production								
- Paddy	1,963.7	-	1,548.4	655.1	1,212.1	1,294.4	439.9	2,444.0
	1,963.7		2,203.5		2,506.5		2,883.9	
(Milling rate)	(60%)		(65%)		(65%)		(65%)	
- Rice	1,178.2		1,432.3		1,629.2		1,874.5	

Remarks; EX: Existing schemes, PR: Proposed schemes

Table 49 PROSPECTED PADDY PRODUCTION IN PERLIS

Unit: 10^3 tons

Schemes	1980 EX	1980 PR	1985 EX	1985 PR	1990 EX	1990 PR	2000 EX	2000 PR
Major Schemes								
- Irrigated	69.8	-	71.6	-	71.6	-	-	95.0
Minor Schemes								
- Irrigated	20.5	-	21.8	2.8	14.6	33.8	14.0	48.5
- Rainfed	21.2	-	20.0	-	9.3	-	-	-
Sub-total	41.7	-	41.8	2.8	23.9	33.8	14.0	48.5
Annual Production								
- Paddy	111.5	-	113.4	2.8	95.5	33.8	14.0	143.5
	111.5		116.2		129.3		157.5	
(Milling rate)	(60%)		(65%)		(65%)		(65%)	
- Rice	66.9		75.5		84.0		102.4	

Remarks; EX: Existing schemes, PR: Proposed schemes

Table 50 PROSPECTED PADDY PRODUCTION IN KEDAH

Unit: 10^3 tons

Schemes	1980 EX	1980 PR	1985 EX	1985 PR	1990 EX	1990 PR	2000 EX	2000 PR
Major Schemes								
- Irrigated	680.4	-	612.8	109.2	533.5	199.3	0.5	767.1
Minor Schemes								
- Irrigated	54.4	-	57.5	18.4	54.9	59.8	41.2	129.2
- Rainfed	94.6	-	71.9	-	32.9	-	-	-
Sub-total	149.0	-	129.4	18.4	87.8	59.8	41.2	129.2
Annual Production								
- Paddy	829.4	-	742.2	127.6	621.3	259.1	41.7	896.3
	829.4		869.8		880.4		938.0	
(Milling rate)	(60%)		(65%)		(65%)		(65%)	
- Rice	497.6		565.4		572.3		609.7	

Remarks; EX: Existing schemes, PR: Proposed schemes

Table 51 PROSPECTED PADDY PRODUCTION IN PULAU PINANG

Unit: 10^3 tons

Schemes	1980 EX	1980 PR	1985 EX	1985 PR	1990 EX	1990 PR	2000 EX	2000 PR
Major Schemes								
- Irrigated	5.5	-	5.2	1.7	5.2	1.8	5.2	1.8
Minor Schemes								
- Irrigated	85.9	-	93.3	-	92.5	3.5	92.4	4.4
- Rainfed	3.0	-	2.6	-	1.0	-	-	-
Sub-total	88.9	-	95.9	-	93.5	3.5	92.4	4.4
Annual Production								
- Paddy	94.4	-	101.1	1.7	98.7	5.3	97.6	6.2
	94.4		102.8		104.0		103.8	
(Milling rate)	(60%)		(65%)		(65%)		(65%)	
- Rice	56.6		65.8		67.6		67.5	

Remarks; EX: Existing schemes, PR: Proposed schemes

Table 52 PROSPECTED PADDY PRODUCTION IN PERAK

Unit: 10^3 tons

Schemes	1980 EX	1980 PR	1985 EX	1985 PR	1990 EX	1990 PR	2000 EX	2000 PR
Major Schemes								
- Irrigated	167.8	-	5.4	214.2	5.4	279.0	5.4	318.4
Minor Schemes								
- Irrigated	78.7	-	87.3	5.4	85.8	11.3	85.4	13.2
- Rainfed	6.3	-	4.9	-	0.5	-	-	-
Sub-total	85.0	-	92.2	5.4	86.3	11.3	85.4	13.2
Annual Production								
- Paddy	252.8	-	97.6	219.6	91.7	290.3	90.8	331.6
	252.8		317.2		382.0		422.4	
(Milling rate)	(60%)		(65%)		(65%)		(65%)	
- Rice	151.7		206.2		248.3		274.5	

Remarks; EX: Existing schemes, PR: Proposed schemes

Table 53 PROSPECTED PADDY PRODUCTION IN SELANGOR

Unit: 10^3 tons

Schemes	1980 EX	1980 PR	1985 EX	1985 PR	1990 EX	1990 PR	2000 EX	2000 PR
Major Schemes								
- Irrigated	148.3	-	30.2	134.0	30.2	142.1	30.2	142.1
Minor Schemes								
- Irrigated	-	-	-	-	-	-	-	-
- Rainfed	6.4	-	4.5	-	2.2	-	-	-
Sub-total	6.4	-	4.5	-	2.2	-	-	-
Annual Production								
- Paddy	154.7	-	34.7	134.0	32.4	142.1	30.2	142.1
	154.7		168.7		174.5		172.3	
(Milling rate)	(60%)		(65%)		(65%)		(65%)	
- Rice	92.8		109.7		113.4		112.0	

Remarks; EX: Existing schemes, PR: Proposed schemes

Table 54 PROSPECTED PADDY PRODUCTION IN NEGERI SEMBILAN

Unit: 10^3 tons

Schemes	1980 EX	1980 PR	1985 EX	1985 PR	1990 EX	1990 PR	2000 EX	2000 PR
Major Schemes								
- Irrigated	-	-	-	-	-	-	-	-
Minor Schemes								
- Irrigated	45.4	-	47.3	6.8	45.4	13.9	44.3	17.5
- Rainfed	4.3	-	3.3	-	1.4	-	-	-
Sub-total	49.7	-	50.6	6.8	46.8	13.9	44.3	17.5
Annual Production								
- Paddy	49.7	-	50.6	6.8	46.8	13.9	44.3	17.5
	49.7		57.4		60.7		61.8	
(Milling rate)	(60%)		(65%)		(65%)		(65%)	
- Rice	29.8		37.3		39.5		40.2	

Remarks; EX: Existing schemes, PR: Proposed schemes

Table 55 PROSPECTED PADDY PRODUCTION IN MELAKA

Unit: 10^3 tons

Schemes	1980 EX	1980 PR	1985 EX	1985 PR	1990 EX	1990 PR	2000 EX	2000 PR
Major Schemes								
- Irrigated	-	-	-	-	-	-	-	-
Minor Schemes								
- Irrigated	27.6	-	26.6	10.0	24.3	19.8	24.0	23.1
- Rainfed	6.9	-	5.6	-	2.5	-	-	-
Sub-total	34.5	-	32.2	10.0	26.8	19.8	24.0	23.1
Annual Production								
- Paddy	34.5	-	32.2	10.0	26.8	19.8	24.0	23.1
	34.5		42.2		46.6		47.1	
(Milling rate)	(60%)		(65%)		(65%)		(65%)	
- Rice	20.7		27.4		30.3		30.6	

Remarks; EX: Existing schemes, PR: Proposed schemes

Table 56 PROSPECTED PADDY PRODUCTION IN JOHOR

Unit: 10^3 tons

Schemes	1980 EX	1980 PR	1985 EX	1985 PR	1990 EX	1990 PR	2000 EX	2000 PR
Major Schemes								
- Irrigated	-	-	-	-	-	25.9	-	56.2
Minor Schemes								
- Irrigated	21.1	-	22.1	4.5	18.5	10.1	18.4	11.5
- Rainfed	6.0	-	5.0	-	3.0	-	-	-
Sub-total	27.1	-	27.1	4.5	21.5	10.1	18.4	11.5
Annual Production								
- Paddy	27.1	-	27.1	4.5	21.5	36.0	18.4	67.7
	27.1		31.6		57.5		86.1	
(Milling rate)	(60%)		(65%)		(65%)		(65%)	
- Rice	16.3		20.5		37.4		56.0	

Remarks; EX: Existing schemes, PR: Proposed schemes

Table 57 PROSPECTED PADDY PRODUCTION IN PAHANG

Unit: 10^3 tons

Schemes	1980 EX	1980 PR	1985 EX	1985 PR	1990 EX	1990 PR	2000 EX	2000 PR
Major Schemes								
- Irrigated	-	-	-	3.1	-	73.4	-	171.6
Minor Schemes								
- Irrigated	38.4	-	40.3	10.4	25.5	48.5	19.5	68.8
- Rainfed	8.8	-	9.0	-	3.3	-	-	-
Sub-total	47.2	-	49.3	10.4	28.8	48.5	19.5	68.8
Annual Production								
- Paddy	47.2	-	49.3	13.5	28.8	121.9	19.5	240.4
	47.2		62.8		150.7		259.9	
(Milling rate)	(60%)		(65%)		(65%)		(65%)	
- Rice	28.3		40.8		98.0		168.9	

Remarks; EX: Existing schemes, PR: Proposed schemes

Table 58 PROSPECTED PADDY PRODUCTION IN TRENGGANU

Unit: 10^3 tons

Schemes	1980 EX	1980 PR	1985 EX	1985 PR	1990 EX	1990 PR	2000 EX	2000 PR
Major Schemes								
- Irrigated	27.6	-	25.5	3.9	25.5	4.1	25.5	4.1
Minor Schemes								
- Irrigated	39.2	-	41.1	13.6	37.7	32.6	33.9	51.9
- Rainfed	23.2	-	17.7	-	9.4	-	-	-
Sub-total	62.4	-	58.8	13.6	47.1	32.6	33.9	51.9
Annual Production								
- Paddy	90.0	-	84.3	17.5	72.6	36.7	59.4	56.0
	90.0		101.8		109.3		115.4	
(Milling rate)	(60%)		(65%)		(65%)		(65%)	
- Rice	54.0		66.2		71.0		75.0	

Remarks; EX: Existing schemes, PR: Proposed schemes

Table 59 PROSPECTED PADDY PRODUCTION IN KELANTAN

Unit: 10^3 tons

Schemes	1980 EX	1980 PR	1985 EX	1985 PR	1990 EX	1990 PR	2000 EX	2000 PR
Major Schemes								
- Irrigated	185.2	-	127.1	93.3	18.0	255.2	-	329.8
Minor Schemes								
- Irrigated	14.6	-	19.4	23.8	19.4	80.3	-	189.8
- Rainfed	72.6	-	69.4	-	38.6	-	-	-
Sub-total	87.2	-	88.8	23.8	58.0	80.3	-	189.8
Annual Production								
- Paddy	272.4	-	215.9	117.1	76.0	335.5	-	519.6
	272.4		333.0		411.5		519.6	
(Milling rate)	(60%)		(65%)		(65%)		(65%)	
- Rice	163.4		216.5		267.5		337.7	

Remarks; EX: Existing schemes, PR: Proposed schemes

Table 60 PROJECTED PLANTING AREA OF OIL PALM BY STATE IN PENINSULAR MALAYSIA

Unit: ha

State	1980	1985	1990	2000
Perlis	-	-	-	-
Kedah	7,600	7,600	7,900	8,700
P. Pinang	4,600	4,600	4,800	5,300
Perak	99,200	115,300	118,000	130,100
Selangor	94,600	92,000	91,000	89,000
N. Sembilan	41,700	60,700	72,200	79,000
Melaka	8,200	8,200	8,700	9,500
Johor	271,800	278,100	286,500	315,900
Pahang	257,700	267,800	273,200	301,000
Trengganu	70,100	72,700	74,400	82,000
Kelantan	18,400	22,900	24,100	26,500
Total	873,900	929,900	960,800	1,047,000

Table 61 OIL PALM YIELD ESTIMATED FOR PRESENT CONDITION AND ANTICIPATED FOR FUTURE CONDITION

Unit: FFB ton/ha

Year	Present Yield			Future Yield		
	Small Holder	FELDA	Estate	Small Holder	FELDA	Estate
1	15.1	18.1	22.0	15.1	18.1	22.0
2	15.1	18.1	22.0	15.1	18.1	22.0
3	15.1	18.1	22.0	15.1	18.1	22.0
4	15.1	18.1	22.0	15.1	18.1	22.0
5	15.1	18.1	22.0	15.1	18.1	22.0
6	15.1	18.1	22.0	15.1	18.1	22.0
7	15.1	18.1	22.0	15.8	18.7	22.5
8	15.4	18.5	22.4	16.5	19.2	23.1
9	15.9	19.1	23.1	17.5	20.4	24.5
10	16.4	19.7	23.9	18.5	21.6	25.5
11	16.4	19.7	23.9	18.5	21.6	25.5
12	16.1	19.3	23.4	18.5	21.6	25.5
13	16.1	19.3	23.4	18.3	21.3	25.2
14	15.9	19.1	23.1	18.3	21.3	25.2
15	15.6	18.7	22.7	18.0	21.0	24.9
16	15.6	18.7	22.7	18.0	21.0	24.9
17	15.6	18.7	22.7	17.5	20.4	24.5
18	15.4	18.5	22.4	17.3	20.2	24.2
19	15.4	18.5	22.4	17.0	19.8	23.8
20	15.1	18.1	22.0	16.8		23.5
21	14.9	17.9	21.7	16.8	19.6	23.5
22	14.9	17.9	21.7	16.8	19.6	23.5
23	14.6	17.5	21.2	16.5	19.2	23.1
24	14.6	17.5	21.2	16.5	19.2	23.1
25	14.6	17.5	21.2	16.5	19.2	23.1
Annual average yield	15.4	18.4	22.4	16.8	19.7	23.6

Table 62 PROJECTED PRODUCTION OF OIL PALM BY STATE IN PENINSULAR MALAYSIA

Unit: 10^3 FFB tons

State	1980	1985	1990	2000
Perlis	-	-	-	-
Kedah	36	60	60	60
P. Pinang	15	89	91	250
Perak	584	1,318	1,470	2,425
Selangor	1,445	1,888	1,945	3,325
N. Sembilan	295	721	960	1,150
Melaka	61	106	108	108
Johor	2,036	3,469	3,501	6,400
Pahang	3,073	4,476	4,509	5,100
Trengganu	511	1,148	1,156	1,250
Kelantan	128	310	363	465
Total	8,184	13,585	14,163	20,533

Table 63 ESTIMATED PROCESSING REQUIREMENT OF OIL PALM BY BASIN IN PENINSULAR MALAYSIA

Unit: 10^3 FFB tons

Basin No.	Name of Basin	No. of Mills	Annual Processing Requirement 1980	1985	1990	2000
5	Muda	1	36	60	60	60
6	Perai	3	10	73	76	235
8	Kerian	2	30	75	90	90
9	Kurau	6	95	304	406	675
10	Perak	13	323	664	688	1,135
11	Bernam	5	503	690	653	1,164
13	Selangor	3	116	160	131	228
14	Buloh	5	265	372	399	689
15	Kelang	2	289	300	300	507
16	Langat	7	281	496	544	930
17	Sepang	5	139	185	278	441
18	Linggi	3	85	208	343	345
20	Kesang	1	39	60	60	60
21	Muar	2	286	508	579	601
22	Batu Pahat	4	202	380	381	700
23	Pontian Kechil	5	343	530	530	1,015
24	Johor	11	987	1,479	1,482	2,700
25	Sedili Besar	1	-	-	-	300
27	Endau	11	270	707	735	1,343
28	Rompin	4	511	545	545	1,136
30	Bebar	27	2,442	4,019	4,142	4,212
31	Kuantan	2	293	312	222	252
32	Kemaman	3	259	550	550	595
34	Dungun	2	35	244	244	264
35	Marang	1	94	103	103	111
36	Trengganu	2	123	251	259	280
40	Kelantan	3	21	186	231	296
41	Golok	1	107	124	132	169
Total		135	8,184	13,585	14,163	20,533

Table 64 PROJECTED PLANTING AREA OF RUBBER BY STATE IN PENINSULAR MALAYSIA

Unit: ha

State	1980	1985	1990	2000
Perlis	8,900	8,900	8,900	8,900
Kedah	196,800	192,600	192,300	187,000
P. Pinang	34,300	31,600	31,000	29,900
Perak	225,000	220,400	217,700	212,200
Selangor	127,600	123,200	121,800	119,000
N. Sembilan	242,200	233,200	225,500	223,500
Melaka	106,100	105,600	104,500	102,100
Johor	462,900	460,500	458,700	448,900
Pahang	174,600	166,100	154,400	150,800
Trengganu	51,900	47,100	42,600	41,600
Kelantan	72,700	64,800	59,100	57,800
Total	1,703,200	1,654,000	1,616,600	1,581,700

Table 65 RUBBER YIELD ESTIMATED FOR PRESENT CONDITION AND ANTICIPATED FOR FUTURE CONDITION

Unit: kg/ha

Year	Present Yield			Future Yield		
	Small Holder	FELDA	Estate	Small Holder	FELDA	Estate
1	570	790	990	570	790	990
2	570	790	990	570	790	990
3	570	790	990	570	790	990
4	570	790	990	570	790	990
5	570	790	990	570	790	990
6	570	790	990	570	790	990
7	610	830	1,045	620	880	1,080
8	650	880	1,110	670	960	1,160
9	695	930	1,180	730	1,030	1,230
10	740	980	1,250	790	1,090	1,290
11	740	980	1,250	790	1,090	1,290
12	730	975	1,240	780	1,080	1,280
13	720	970	1,230	770	1,070	1,270
14	710	965	1,220	765	1,060	1,260
15	700	960	1,210	760	1,050	1,250
16	690	955	1,200	755	1,040	1,240
17	680	950	1,190	750	1,030	1,230
18	670	945	1,185	745	1,020	1,225
19	660	940	1,180	740	1,010	1,220
20	650	935	1,175	735	1,005	1,215
21	640	930	1,170	730	1,000	1,210
22	630	925	1,165	725	995	1,205
23	620	920	1,160	720	990	1,200
24	610	915	1,155	715	985	1,195
25	600	910	1,150	710	980	1,190
26	590	905	1,145	705	975	1,185
27	580	900	1,140	700	970	1,180
28	570	900	1,135	695	965	1,175
29	570	900	1,130	690	960	1,170
30	570	900	1,130	690	960	1,170
Annual average yield	635	901	1,136	672	965	1,169

Table 66 PROJECTED PRODUCTION OF RUBBER BY STATE IN PENINSULAR MALAYSIA

Unit: 10^3 DRC tons

State	1980	1981	1990	2000
Perlis	2	2	3	5
Kedah	220	244	266	406
P. Pinang	118	127	135	223
Perak	200	211	221	313
Selangor	206	216	225	255
N. Sembilan	159	168	178	205
Melaka	132	139	145	161
Johor	291	314	338	375
Pahang	84	100	116	212
Trengganu	8	9	10	14
Kelantan	20	22	24	34
Total	1,440	1,552	1,661	2,203

Table 67 ESTIMATED PROCESSING REQUIREMENT OF RUBBER BY BASIN IN PENINSULAR MALAYSIA

Unit: 10^3 DRC tons

Basin No.	Name of Basin	No. of Factories	Annual Processing Requirement 1980	1985	1990	2000
3	Kedah	2	7.7	8.5	9.3	12.8
4	Merbok	7	67.8	75.0	82.3	116.2
5	Muda	13	85.9	99.2	112.6	159.6
6	Perai	14	110.3	113.7	117.0	227.7
7	Pulau Pinang	1	41.2	45.7	50.1	70.6
8	Kerian	3	27.6	30.4	33.3	47.4
9	Kurau	11	71.3	78.8	86.4	122.3
10	Perak	14	120.0	123.6	127.3	180.1
11	Bernam	2	6.2	6.8	7.5	10.6
13	Selangor	4	13.9	15.3	16.8	23.9
14	Buloh	3	19.1	19.9	20.8	23.1
15	Kelang	11	130.9	137.1	143.3	159.2
16	Langat	9	45.2	45.3	45.4	50.5
17	Sepang	2	10.8	11.4	12.1	13.4
18	Linggi	15	103.4	108.2	113.0	125.5
19	Melaka	13	135.8	142.1	148.4	164.9
20	Kesang	4	16.1	17.1	18.1	20.1
21	Muar	20	133.2	143.2	153.3	170.3
22	Batu Pahat	8	27.7	30.0	32.3	35.9
23	Pontian Kechil	12	82.4	89.5	96.6	107.3
24	Johor	8	28.5	30.8	33.2	36.9
27	Endau	3	34.5	37.4	40.3	44.8
30	Pahang	16	65.1	77.1	89.1	160.6
31	Kuantan	3	27.3	32.7	38.2	71.4
36	Trengganu	1	8.5	9.4	10.3	14.4
39	Kemasin	1	4.1	4.6	5.1	7.1
40	Kelantan	6	15.5	17.2	18.9	26.4
Total		206	1,440.0	1,550.0	1,660.0	2,230.0

Table 68 DERIVATION OF ECONOMIC FARMGATE PRICE OF RICE (1980 CONSTATNT VALUE)

	1980	1981 and thereafter
In US$/ton		
Export price Thai 5% broken, F.O.B. Bangkok	464	551
10% discount for quality	418	496
Freight, Bangkok to Port Klang	50	50
Insurance	2	2
C.I.F. Port Kelang	470	548
In M$/ton		
C.I.F. Port Kelang	1,034	1,206
Port Kelang handling charge	21	21
Transport to Ampang Godown	9	9
Value at Ampang Godown	1,064	1,236
Average haulage to Ampang Godown	50	
Loading	2	
Gunny sack cost	9	
Milling cost including millers' profit	98	
Less value of by-products	- 53	
Net cost to Ampang Godown	106	
Rice price (ready to mill)	958	1,130
Paddy price (65% milling rate)	623	735
Drying cost	13	
10% weight loss	53	
Handling (into driers and off-trucks)	11	
Transport from purchasing center to mill	8	
Commission for buying agents	8	
Net delivery cost from buying center to mill	93	
Price delivered at buying center	530	642
Transport farm to buying center	2	2
Economic farmgate price of paddy	528	640

Table 69 DERIVATION OF ECONOMIC FARMGATE PRICE OF RUBBER (1980 CONSTANT VALUE)

	1980	1981 and thereafter
In US$/kg		
RRSI rubber spot, New York	1.44	1.67
Ocean freight and insurance	0.07	0.07
F.O.B. Port Klang	1.43	1.60
In M$/kg		
F.O.B. Port Klang	3.15	3.52
Handling charges, Port Klang	0.02	0.02
Transport to Port Klang	0.05	0.05
Processing cost	0.26	0.26
Processing losses	0.09	0.09
Economic dry rubber price ex-farmgate	2.73	3.10

Table 70 DERIVATION OF ECONOMIC FARMGATE PRICE OF COPRA (1980 CONSTANT VALUE)

	1980	1981 and thereafter
In US$/ton		
Copra C.I.F. Europe	594	616
Ocean freight and insurance	33	33
F.O.B. Port Klang	561	583
In M$/ton		
F.O.B. Port Klang	1,284	1,283
Handling charges, Port Klang	13	13
Transport to Port Klang	50	50
Drying and sacking cost at drying unit	40	40
Transport from farm to drying unit	5	5
Commission to buying agent	11	11
Economic farmagate price	1,115	1,164

Table 71 DERIVATION OF ECONOMIC FARMGATE PRICE OF PALM OIL, PALM KERNEL AND FRUIT BUNCH OF OIL PALM (1980 CONSTANT VALUE)

	1980	1981 and thereafter
(1) PALM OIL		
In US$/ton		
Malaysian palm oil C.I.F. Europe	611	594
Ocean freight and insurance	32	32
F.O.B. Port Klang	579	562
In M$/ton		
F.O.B. Port Klang	1,274	1,236
Handling charge, Port Klang	13	13
Transport to Port Klang	50	50
Economic price ex-mill	1,211	1,173
(2) PALM KERNEL		
In US$/ton		
Nigerian palm kernels C.I.F. Europe	462	454
Ocean freight and insurance	50	50
F.O.B. Port Klang	412	404
In M$/ton		
F.O.B. Port Klang	906	889
Handling charge, Port Klang	16	16
Transport to Port Klang	50	50
Economic price ex-mill	840	823
(3) FRESH FRUIT BUNCH		
In M$/ton		
18.5% of oil plus 3.5% of kernel	253	246
processing costs and margins	35	35
Economic price ex-mill	218	211

Table 72 DERIVATION OF ECONOMIC FARMGATE PRICE OF COCOA (1980 CONSTANT VALUE)

	1980	1981 and thereafter
In US$/kg		
Cocoa beans C.I.F. New York	3.52	1.83
5% discount for lower quality	3.34	1.74
Ocean freight and insurance	0.07	0.07
F.O.B. Port Klang	3.27	1.67
In M$/kg		
F.O.B. Port Klang	7.19	3.67
Handling charges, Port Klang	0.02	0.02
Transport to Port Klang	0.05	0.05
Fermenting, drying cost and transport from farm to buying center	0.12	0.12
Economic farmgate price of dry beans	7.00	3.58

Table 73 FARM LABOUR REQUIREMENT FOR PADDY CULTIVATION IN MINOR IRRIGATION SCHEME AND RAINFED AREAS UNDER PRESENT CONDITION

Unit: man-day/ha

State	Land Preparation	Trans-planting	Miscel-laneous	Harvest-ing	Total
(1) Main Season in Irrigated Area					
Perlis	20	18	6	38	82
Kedah	20	16	6	32	74
P. Pinang	18	16	6	34	74
Perak	16	16	6	28	66
Selangor	-	-	-	-	-
N. Sembilan	26	16	6	26	74
Melaka	22	16	6	28	72
Johor	16	16	6	30	68
Pahang	16	16	6	28	66
Trengganu	16	16	6	28	66
Kelantan	12	16	6	20	54
(2) Off Season in Irrigated Area					
Perlis	20	18	6	40	84
Kedah	20	16	6	34	76
P. Pinang	18	16	6	38	78
Perak	16	16	6	30	68
Selangor	18	16	6	26	66
N. Sembilan	26	16	6	30	78
Melaka	22	16	6	32	76
Johor	16	16	6	32	70
Pahang	16	16	6	30	68
Trengganu	16	16	6	30	68
Kelantan	14	16	6	22	58
(3) Main Season in Rainfed Area					
Perlis	20	18	6	38	82
Kedah	20	16	6	30	72
P. Pinang	18	16	6	30	70
Perak	16	16	6	26	64
Selangor	-	-	-	-	-
N. Sembilan	26	16	6	24	72
Melaka	26	16	6	24	68
Johor	16	16	6	30	68
Pahang	12	16	6	20	54
Trengganu	12	16	6	20	54
Kelantan	12	14	6	18	50

Table 74 FARM LABOUR REQUIREMENT FOR PADDY CULTIVATION IN MINOR IRRIGATION SCHEME AND RAINFED AREAS UNDER FUTURE CONDITION

Unit: Man-day/ha

State	Without Project					With Project				
	LP	TP	MS	HV	Total	LP	TP	MS	HV	Total
(1) Main Season in Irrigated Area										
Perlis	20	18	6	38	82	20	18	6	42	86
Kedah	20	18	6	32	76	20	18	6	36	80
P. Pinang	20	18	6	34	78	18	18	6	38	80
Perak	20	18	6	28	72	16	18	6	34	74
Selangor	-	-	-	-	-	-	-	-	-	-
N. Sembilan	26	18	8	38	90	26	18	6	34	84
Melaka	24	18	8	34	84	22	18	6	38	84
Johor	22	18	6	34	80	16	18	6	36	76
Pahang	20	18	6	28	72	16	18	6	36	76
Trengganu	20	18	6	28	72	16	18	6	34	74
Kelantan	20	18	6	22	66	18	18	6	36	78
(2) Off Season in Irrigated Area										
Perlis	20	18	6	40	84	20	18	6	44	88
Kedah	20	18	6	34	78	20	18	6	38	82
P. Pinang	20	18	6	38	82	18	18	6	42	84
Perak	20	18	6	30	74	16	18	6	38	78
Selangor	-	-	-	-	-	-	-	-	-	-
N. Sembilan	26	18	8	40	92	26	18	6	38	88
Melaka	24	18	8	36	86	22	18	6	42	88
Johor	22	18	6	36	82	16	18	6	36	76
Pahang	20	18	6	30	74	16	18	6	38	78
Trengganu	20	18	6	30	74	16	18	6	38	78
Kelantan	20	18	6	26	70	18	18	6	40	82
(3) Main Season in Rainfed Area										
Perlis	20	18	6	38	82	-	-	-	-	-
Kedah	20	18	6	30	74	-	-	-	-	-
P. Pinang	20	18	6	30	74	-	-	-	-	-
Perak	20	18	6	26	70	-	-	-	-	-
Selangor	-	-	-	-	-	-	-	-	-	-
N. Sembilan	26	18	8	34	86	-	-	-	-	-
Melaka	22	18	6	28	74	-	-	-	-	-
Johor	22	18	6	30	76	-	-	-	-	-
Pahang	20	18	6	24	68	-	-	-	-	-
Trengganu	20	18	6	24	68	-	-	-	-	-
Kelantan	20	18	6	20	64	-	-	-	-	-

Remarks; LP: Land preparation, TP: Transplanting, MS: Miscellaneous, and HV: Harvesting

Table 75 FARM LABOUR REQUIREMENT FOR PADDY CULTIVATION UNDER MAJOR IRRIGATION SCHEME

Unit: Man-day/ha

Scheme	Main Season LP	TP	MS	HV	Total	Off Season LP	TP	MS	HV	Total
(1) Future Condition With Project										
Muda	20	16	6	46	88	20	16	6	48	90
Krian	16	16	6	42	80	16	16	6	44	82
Trans Perak	16	16	6	36	74	16	16	6	38	76
Sungai Manik	16	16	6	38	76	16	16	6	40	78
Tanjong Karang	22	18	6	44	90	22	18	6	46	92
Sawa Endau	16	18	6	38	78	16	18	6	40	80
Rompin Endau	16	18	6	44	84	16	18	6	46	86
Trans Pahang	16	18	6	44	84	16	18	6	46	86
Besut	16	18	6	44	84	16	18	6	46	86
Kemasin Semarak	16	16	6	40	78	16	16	6	42	80
North Kelantan	16	16	6	40	78	16	16	6	44	82
KADA II	16	16	6	44	82	16	16	6	46	84
(2) Future Condition Without Project										
Muda	30	28	30	58	146	32	28	30	60	150
Krian	24	20	30	54	128	32	26	30	54	142
Sungai Manik	24	26	30	56	136	32	30	30	60	152
Tanjong Karang	26	20	30	60	136	32	32	30	64	158
Besut	28	20	30	56	134	28	22	30	58	140
North Kelantan	14	12	6	32	64	16	14	6	32	68
KADA II	24	20	30	56	130	28	26	30	58	142
(3) Present Condition										
Muda	22	20	16	46	104	22	20	16	48	106
Krian	18	16	16	42	92	18	16	16	42	92
Sungai Manik	18	16	16	38	88	18	16	16	38	88
Tanjong Karang	22	20	16	48	106	22	20	16	50	108
Besut	20	18	16	44	98	20	18	16	46	100
North Kelantan	18	16	16	40	90	18	18	16	42	94
KADA II	18	18	16	44	96	18	18	16	46	98

Remarks; LP: Land preparation, TP: Transplanting,
MS: Miscellaneous, HV: Harvesting

Table 76 FARM LABOUR REQUIREMENT FOR TREE CROP PLANTATION

Unit: man-day/ha

Year from Planting	Rubber			Oil Palm			Coconut		Cocoa		
	SM	FL	ES	SM	FL	ES	SM	ES	SM	ESS	ESI
(1) Present Condition											
1	72	74	116	100	136	186	140	162	86	130	58
2	48	50	90	40	60	88	56	72	54	82	26
3	28	30	68	30	48	74	50	66	54	82	26
4	22	24	62	40	60	88	40	56	54	82	26
5 - 6	14	16	50	76	106	150	42	58	50	76	22
7 - 8	66	84	128	90	122	166	46	62	56	84	28
9 - 10	56	68	110	90	122	166	50	66	56	84	28
11 - 15	60	74	116	80	112	150	56	72	56	84	26
16 - 20	60	74	116	72	102	138	50	66	54	82	26
21 - 25	58	72	114	60	84	120	50	66	54	82	26
26 - 30	46	60	102	-	-	-	50	66	54	82	26
31 - 50	-	-	-	-	-	-	46	62	-	-	-
(2) Future Condition											
1	74	76	116	106	142	190	148	170	86	130	58
2	50	50	88	42	62	88	64	82	54	82	26
3	30	30	62	32	50	72	58	74	56	84	28
4	24	24	56	42	62	88	46	62	58	88	30
5 - 6	16	20	44	82	112	152	48	64	52	78	24
7 - 8	68	88	128	94	128	170	50	66	62	94	34
9 - 10	58	70	110	94	128	170	54	70	62	94	34
11 - 15	62	76	116	86	118	152	58	74	62	94	32
16 - 20	62	76	116	76	106	142	54	70	58	88	30
21 - 25	60	74	114	64	90	122	54	70	58	88	30
26 - 30	48	62	110	-	-	-	54	70	58	88	30
31 - 50	-	-	-	-	-	-	50	66	-	-	-

Remarks; SM: Smallholder, FL: FELDA, ESS: Estate solo crop, ESI: Estate intercrop

Table 77 ECONOMIC PRODUCTION COST FOR PADDY CULTIVATION UNDER MINOR IRRIGATION SCHEME AND RAINFED AREAS BY STATE (1/2)

Unit: M$/ha/season

State & Item	Present			Future Without Project			Future With Project	
	Rainfed	Irrigated		Rainfed	Irrigated		Irrigated	
	Main	Main	Off	Main	Main	Off	Main	Off
Perlis								
Materials	238	240	274	277	282	294	276	310
Labour	533	533	546	533	533	546	559	572
Total	771	773	820	810	815	840	835	882
Kedah								
Materials	191	209	244	249	268	303	218	282
Labour	468	481	494	481	494	507	520	533
Total	659	690	738	730	762	810	738	815
P. Pinang								
Materials	163	184	220	252	273	293	227	263
Labour	455	481	507	481	507	533	520	546
Total	618	665	727	733	780	826	747	809
Perak								
Materials	172	186	235	221	235	284	241	278
Labour	416	429	442	455	468	481	481	507
Total	588	615	677	676	703	765	722	785
Selangor								
Materials	-	-	179	-	-	-	-	-
Labour	-	-	429	-	-	-	-	-
Total	-	-	608	-	-	-	-	-
N. Sembilan								
Materials	194	236	265	234	276	295	273	297
Labour	468	481	507	559	585	598	546	572
Total	662	717	772	793	861	893	819	869
Melaka								
Materials	191	234	255	229	271	290	277	300
Labour	442	468	494	481	546	559	546	572
Total	633	702	749	710	817	849	823	872
Johor								
Materials	176	195	246	193	224	245	258	273
Labour	442	442	455	494	520	533	494	494
Total	618	637	701	687	744	778	752	767

Source; Ref. 15

Table 78 ECONOMIC PRODUCTION COST FOR PADDY CULTIVATION UNDER MINOR IRRIGATION SCHEME AND RAINFED AREAS BY STATE (2/2)

Unit: M$/ha/season

State & Item	Present			Future Without Project			Future With Project	
	Rainfed	Irrigated		Rainfed	Irrigated		Irrigated	
	Main	Main	Off	Main	Main	Off	Main	Off
Pahang								
Materials	144	179	228	187	229	263	245	256
Labour	351	429	442	442	468	481	494	507
Total	495	608	670	629	697	744	739	763
Trengganu								
Materials	144	201	228	203	261	274	222	282
Labour	351	429	442	442	468	481	481	507
Total	495	630	670	645	729	755	703	789
Kelantan								
Materials	131	135	189	152	208	242	223	281
Labour	325	351	377	416	429	455	507	533
Total	456	486	566	568	637	697	730	814

Source; Ref. 15

Table 79 ECONOMIC PRODUCTION COST FOR PADDY CULTIVATION UNDER MAJOR IRRIGATION SCHEME

Unit: M$/ha/season

State & Item	Present		Future Without Project		Future With Project	
	Main	Off	Main	Off	Main	Off
Muda						
Materials	237	273	338	377	280	317
Labour	676	689	949	975	572	585
Total	913	962	1,287	1,352	852	902
Krian						
Materials	197	231	305	352	249	285
Labour	598	598	832	923	520	533
Total	795	829	1,137	1,275	769	818
Trans Perak						
Materials	-	-	-	-	251	281
Labour	-	-	-	-	481	494
Total	-	-	-	-	732	775
Sungai Manik						
Materials	211	240	301	354	258	289
Labour	572	572	884	988	494	507
Total	783	812	1,185	1,342	752	796
Tanjong Karang						
Materials	262	280	363	389	298	317
Labour	689	702	884	1,027	585	598
Total	951	982	1,247	1,416	883	915
Sawa Endau						
Materials	-	-	-	-	281	325
Labour	-	-	-	-	507	520
Total	-	-	-	-	788	845
Rompin Endau						
Materials	-	-	-	-	257	309
Labour	-	-	-	-	546	559
Total	-	-	-	-	803	868
Trans Pahang						
Materials	-	-	-	-	257	309
Labour	-	-	-	-	546	559
Total	-	-	-	-	803	868
Besut						
Materials	282	300	293	410	238	336
Labour	637	650	871	910	546	559
Total	919	950	1,164	1,320	784	895
Kemasin Semarak						
Materials	-	-	-	-	267	336
Labour	-	-	-	-	507	520
Total	-	-	-	-	774	856
North Kelantan						
Materials	255	279	194	277	303	329
Labour	585	611	416	442	507	533
Total	840	890	610	719	810	862
KADA II						
Materials	276	294	376	403	312	331
Labour	624	637	845	923	533	546
Total	900	931	1,221	1,326	845	877

Table 80 ECONOMIC AVERAGE ANNUAL PRODUCTION COST FOR TREE CROP PLANTATION IN PENINSULAR MALAYSIA

Unit: M$/ha/y

Crop/Item	Private Estate		FELDA & FELCRA	Small-holders
	Solo Corp	Intercrop		
(1) Rubber				
Materials	199	-	128	101
Labour	690	-	415	338
Total	889	-	543	439
(2) Oil Palm				
Materials	501	-	443	408
Labour	894	-	648	463
Total	1,395	-	1,095	871
(3) Coconut				
Materials	515	-	-	290
Labour	431	-	-	327
Total	946	-	-	617
(4) Cocoa				
Materials	1,267	724	1,267	844
Labour	545	176	545	360
Total	1,812	900	1,812	1,204

Table 81 ECONOMIC NET PRODUCTION VALUE OF PADDY UNDER PRESENT CONDITION IN EXISTING MINOR IRRIGATION SCHEME AREAS BY STATE

Unit: M$/ha

Season	State	Yield (ton/ha)	Price (M$/ton)	Gross Value	Production Cost	Net Value
Off	Perlis	3.2	528	1,690	820	870
	Kedah	2.8	528	1,478	738	740
	Pulau Pinang	3.0	528	1,584	727	516
	Perak	2.4	528	1,267	677	590
	Selangor	-	-	-	-	-
	Negeri Sembilan	2.8	528	1,478	772	706
	Melaka	2.8	528	1,478	749	729
	Johor	2.7	528	1,426	701	725
	Pahang	2.2	528	1,162	670	492
	Trengganu	2.2	528	1,162	670	492
	Kelantan	1.8	528	950	566	384
Main	Perlis	3.0	528	1,584	773	811
	Kedah	2.6	528	1,373	690	683
	Pulau Pinang	2.8	528	1,478	665	813
	Perak	2.1	528	1,109	615	494
	Selangor	-	-	-	-	-
	Negeri Sembilan	2.5	528	1,320	717	603
	Melaka	2.5	528	1,320	702	618
	Johor	2.4	528	1,267	637	630
	Pahang	1.9	528	1,003	608	395
	Trengganu	2.0	528	1,056	630	426
	Kelantan	1.5	528	792	486	306
Rainfed	Perlis	2.5	528	1,320	771	549
	Kedah	2.2	528	1,162	659	501
	Pulau Pinang	2.4	528	1,267	618	649
	Perak	1.9	529	1,003	588	415
	Selangor	1.9	528	1,003	608	395
	Negeri Sembilan	1.9	529	1,003	662	341
	Melaka	1.9	528	1,003	633	370
	Johor	1.8	528	950	618	332
	Pahang	1.5	528	792	495	297
	Trengganu	1.5	528	792	496	297
	Kelantan	1.4	528	739	456	283

Table 82 ECONOMIC NET PRODUCTION VALUE OF PADDY UNDER FUTURE CONDITION WITHOUT PROPOSED MINOR IRRIGATION SCHEMES BY STATE

Unit: M$/ha

Season	State	Yield (ton/ha)	Price (M$/ton)	Gross Value	Production Cost	Net Value
Off	Perlis	3.5	640	2,240	840	1,400
	Kedah	3.1	640	1,984	810	1,174
	Pulau Pinang	3.3	640	2,112	826	1,286
	Perak	2.7	640	1,729	765	963
	Selangor	-	-	-	-	-
	Negeri Sembilan	3.1	640	1,984	893	1,091
	Melaka	3.1	640	1,984	849	1,135
	Johor	3.0	640	1,920	778	1,142
	Pahang	2.5	640	1,600	744	856
	Trengganu	2.5	640	1,600	755	845
	Kelantan	2.3	640	1,472	697	775
Main	Perlis	3.2	640	2,048	815	1,233
	Kedah	2.7	640	1,728	762	966
	Pulau Pinang	3.0	640	1,920	780	1,140
	Perak	2.3	640	1,472	703	769
	Selangor	-	-	-	-	-
	Negeri Sembilan	2.7	640	1,728	861	867
	Melaka	2.7	640	1,728	817	911
	Johor	2.6	640	1,664	744	920
	Pahang	2.1	640	1,344	697	647
	Trengganu	2.2	640	1,408	729	679
	Kelantan	2.0	640	1,280	637	643
Rainfed	Perlis	2.6	640	1,664	810	854
	Kedah	2.3	640	1,472	730	742
	Pulau Pinang	2.5	640	1,600	733	867
	Perak	2.0	640	1,280	676	604
	Selangor	-	-	-	-	-
	Negeri Sembilan	2.1	640	1,344	793	551
	Melaka	2.0	640	1,280	710	570
	Johor	2.0	640	1,280	687	593
	Pahang	1.7	640	1,088	629	459
	Trengganu	1.7	640	1,088	645	443
	Kelantan	1.6	640	1,024	568	456

Table 83 ECONOMIC NET PRODUCTION VALUE OF PADDY UNDER FUTURE CONDITION WITH PROPOSED MINOR IRRIGATION SCHEMES BY STATE

Unit: M$/ha

Season	State	Yield (ton/ha)	Price (M$/ton)	Gross Value	Production Cost	Net Value
Off	Perlis	4.7	640	3,008	882	2,126
	Kedah	4.2	640	2,688	815	1,873
	Pulau Pinang	4.5	640	2,880	809	2,071
	Perak	4.0	640	2,560	785	1,775
	Selangor	-	-	-	-	-
	Negeri Sembilan	4.1	640	2,624	869	1,755
	Melaka	4.1	640	2,624	872	1,752
	Johor	4.0	640	2,560	767	1,793
	Pahang	3.8	640	2,432	763	1,669
	Trengganu	3.6	640	2,304	789	1,515
	Kelantan	3.7	640	2,368	814	1,554
Main	Perlis	4.2	640	2,688	835	1,853
	Kedah	3.7	640	2,368	738	1,630
	Pulau Pinang	4.0	640	2,560	747	1,813
	Perak	3.5	640	2,240	722	1,518
	Selangor	-	-	-	-	-
	Negeri Sembilan	3.7	640	2,368	819	1,549
	Melaka	3.7	640	2,368	823	1,545
	Johor	3.6	640	2,304	752	1,552
	Pahang	3.4	640	2,176	739	1,437
	Trengganu	3.2	640	2,048	703	1,345
	Kelantan	3.3	640	2,112	730	1,382

Table 84 ECONOMIC NET PRODUCTION VALUE OF PADDY UNDER PRESENT AND FUTURE CONDITIONS WITHOUT PROPOSED MAJOR IRRIGATION SCHEMES

Unit: M$/ha

Season	Scheme	Yield (ton/ha)	Price (M$/ton)	Gross Value	Production Cost	Net Value
(1) Present Condition						
Off	Muda	4.1	528	2,165	962	1,203
	Krian	3.3	528	1,742	829	913
	Sungai Manik	2.8	528	1,478	812	926
	Tanjong Karang	4.1	528	2,165	982	1,183
	Besut	3.2	528	1,690	950	740
	North Kelantan	3.1	528	1,637	890	747
	KADA II	3.6	528	1,901	931	970
Main	Muda	3.9	528	2,059	913	1,146
	Krian	3.2	528	1,690	795	895
	Sungai Manik	2.7	528	1,426	783	643
	Tanjong Karang	3.6	528	1,901	951	950
	Besut	2.9	528	1,531	919	612
	North Kelantan	2.3	528	1,214	840	324
	KADA II	3.4	528	1,795	900	895
(2) Future Condition without Proposed Schemes						
Off	Muda	4.2	640	2,688	1,352	1,336
	Krian	3.7	640	2,368	1,275	1,093
	Sungai Manik	3.4	640	2,176	1,342	834
	Tanjong Karang	4.2	640	2,688	1,416	1,272
	Besut	3.4	640	2,176	1,320	856
	North Kelantan	3.3	640	2,112	719	1,393
	KADA II	3.8	640	2,432	1,326	1,106
Main	Muda	4.0	640	2,560	1,287	1,273
	Krian	3.3	640	2,112	1,137	975
	Sungai Manik	3.0	640	1,920	1,185	735
	Tanjong Karang	3.7	640	2,368	1,247	1,121
	Besut	3.0	640	1,920	1,164	756
	North Kelantan	2.8	640	1,792	610	1,182
	KADA II	3.5	640	2,240	1,221	1,019

Table 85 ECONOMIC NET PRODUCTION VALUE OF PADDY UNDER FUTURE CONDITION WITH PROPOSED MAJOR IRRIGATION SCHEMES

Unit: M$/ha

Season	Scheme	Yield (ton/ha)	Price (M$/ ton)	Gross Value	Production Cost	Net Value
Off	Muda	4.9	640	3,136	902	2,234
	Krian	4.7	640	3,008	818	2,190
	Trans Perak	4.2	640	2,688	775	1,913
	Sungai Manik	4.4	640	2,816	796	2,020
	Tanjong Karang	4.8	640	3,072	915	2,157
	Sawa Endau	4.2	640	2,688	845	1,843
	Rompin Endau	4.2	640	2,688	868	1,820
	Trans Pahang	4.2	640	2,688	868	1,820
	Besut	4.1	640	2,624	895	1,729
	Kemasin Semarak	4.0	640	2,560	856	1,704
	North Kelantan	4.2	640	2,688	862	1,826
	KADA II	4.4	640	2,816	877	1,939
Main	Muda	4.5	640	2,880	852	2,028
	Krian	4.2	640	2,688	769	1,919
	Trans Perak	3.8	640	2,432	732	1,700
	Sungai Manik	3.9	640	2,496	752	1,744
	Tanjong Karang	4.4	640	2,816	883	1,933
	Sawa Endau	3.8	640	2,432	788	1,644
	Rompin Endau	3.8	640	2,432	803	1,629
	Trans Pahang	3.8	640	2,432	803	1,629
	Besut	3.6	640	2,304	784	1,520
	Kemasin Semarak	3.5	640	2,240	774	1,466
	North Kelantan	3.8	640	2,432	810	1,622
	KADA II	4.1	640	2,624	845	1,779

Table 86 AVERAGE ANNUAL NET PRODUCTION VALUE OF TREE CROPS

Unit: M$/ha

Crop	Farm Type	Yield (kg)	Gross Income	Production Cost	Net Income
(1) Present Condition					
Rubber	Smallholder	635	1,734	439	1,295
	FELDA	900	2,457	543	1,914
	Estate	1,135	3,099	889	2,210
Oil Palm	Smallholder	15,400	3,357	871	2,486
	FELDA	18,400	4,011	1,095	2,916
	Estate	22,400	4,883	1,395	3,488
Coconut	Smallholder	900	1,004	617	387
	Estate	1,400	1,561	946	615
Cocoa	Smallholder	550	3,850	1,204	2,646
	Estate Solo	1,200	8,400	1,812	6,588
	Estate Intercrop	1,170	8,190	900	7,290
(2) Future Condition					
Rubber	Smallholder	670	2,077	467	1,610
	FELDA	965	2,992	572	2,420
	Estate	1,170	3,627	867	2,760
Oil Palm	Smallholder	16,800	3,545	945	2,600
	FELDA	19,700	4,157	1,178	2,979
	Estate	23,600	4,980	1,467	3,513
Coconut	Smallholder	1,000	1,164	671	493
	Estate	1,550	1,804	1,001	803
Cocoa	Smallholder	620	2,220	1,252	968
	Estate Solo	1,310	4,690	1,883	2,807
	Estate Intercrop	1,275	4,565	840	3,725

Table 87 AVERAGE ANNUAL NET PRODUCTION VALUE OF ORCHARD

Unit: M$/ha

Kind	Net Return	Weighted Ratio	Weighted Value
Banana	1,670	0.35	585
Orange	1,900	0.05	95
Pomelo	5,670	0.02	115
Rambutan	930	0.26	240
Chempedak	130	0.03	5
Duku Langsat	460	0.04	20
Durian	1,130	0.24	270
Papaya	290	0.01	5
Total			1,335

Remarks; Weighted ratio is based on the proportion of planting area.

Table 88 TYPE OF IRRIGATION DEVELOPMENT FOR PADDY CULTIVATION

Type	Without Development	With Development
(1)	Minor Irrigation Development Scheme	
A	Rainfed single cropping	Irrigated single cropping
B	Rainfed single cropping	Irrigated double cropping
C	Irrigated single cropping	Irrigated double cropping
D	Newly reclaimed land	Irrigated single cropping
E	Newly reclaimed land	Irrigated double cropping
(2)	Major Irrigation Development Scheme	
F	Rainfed single cropping	Irrigated single cropping
G	Rainfed single cropping	Irrigated double cropping
H	Irrigated single cropping	Irrigated double cropping
I	Newly reclaimed land	Irrigated single cropping
J	Newly reclaimed land	Irrigated double cropping
K	Irrigated single cropping of minor schemes	Irrigated double cropping
L	Irrigated double cropping of minor schemes	Irrigated double cropping
N	Irrigated double cropping	Irrigated double cropping on tertiary developed field

Table 89 INCREASE IN IRRIGATION AREA UNDER MINOR SCHEMES BY BASIN BY TYPE OF IRRIGATION DEVELOPMENT IN PENINSULAR MALAYSIA (1/4)

Unit: ha

State	Basin No.	Type of Scheme	Development Area 4MP	5MP	6MP	7MP	Total
Perlis	1	A	780	4,113	618	1,029	6,540
		C	-	2,266	162	-	2,428
Total for Perlis			780	6,379	780	1,029	8,968
Kedah	2	A	428	-	-	-	428
	3	A	1,070	4,276	2,917	2,917	11,180
		B	559	178	-	-	737
		C	65	545	803	803	2,216
	Sub-total		1,694	4,999	3,720	3,720	14,133
	4	A	-	550	-	-	550
		C	-	426	-	-	426
	Sub-total		-	976	-	-	976
	5	A	2,050	4,786	553	553	7,942
		C	29	-	1,745	1,748	3,522
	Sub-total		2,079	4,786	2,298	2,301	11,464
	8	A	-	-	365	-	365
		B	441	-	-	-	441
	Sub-total		441	-	365	-	806
Total for Kedah			4,642	10,761	6,383	6,021	27,807
P. Pinang	6	A	-	458	-	-	458
	7	C	-	255	49	-	304
Total for P. Pinang			-	713	49	-	762
Perak	8	A	-	138	-	-	138
		B	395	-	-	-	395
		C	-	-	138	-	138
	Sub-total		395	138	138	-	671
	9	B	157	-	-	-	157
	10	B	341	-	-	-	341
		C	-	663	-	-	663
	Sub-total		341	663	-	-	1,004
Total for Perak			893	801	138	-	1,832

Table 90 INCREASE IN IRRIGATION AREA UNDER MINOR SCHEMES BY BASIN BY TYPE OF IRRIGATION DEVELOPMENT IN PENINSULAR MALAYSIA (2/4)

Unit: ha

State	Basin No.	Type of Scheme	Development Area 4MP	5MP	6MP	7MP	Total
N. Sembilan	16	A	-	22	16	-	38
		C	22	-	-	-	22
	Sub-total		22	22	16	-	60
	18	A	9	13	59	-	81
		C	22	-	-	-	22
	Sub-total		31	13	59	-	103
	19	A	20	-	-	-	20
		C	20	-	-	-	20
	Sub-total		40	-	-	-	40
	21	A	223	224	322	-	769
		C	694	694	166	-	1,554
	Sub-total		917	918	488	-	2,323
	30	A	-	196	-	-	196
		C	100	-	-	-	100
	Sub-total		100	196	-	-	296
Total for N. Sembilan			1,110	1,149	563	-	2,822
Melaka	18	A	-	232	-	-	232
		C	297	-	-	-	297
	Sub-total		297	232	-	-	529
	19	A	377	434	340	-	1,151
		C	831	832	122	-	1,785
	Sub-total		1,208	1,266	462	-	2,936
	20	A	-	182	-	-	182
		C	143	-	-	-	143
	Sub-total		143	182	-	-	325
Total for Melaka			1,648	1,680	462	-	3,790
Johor	20	A	79	-	-	-	79
	21	A	489	691	101	-	1,281
		C	424	424	20	-	868
	Sub-total		913	1,115	121	-	2,149
Total for Johor			992	1,115	121	-	2,228

Table 91 INCREASE IN IRRIGATION AREA UNDER MINOR SCHEMES BY BASIN BY TYPE OF IRRIGATION DEVELOPMENT IN PENINSULAR MALAYSIA (3/4)

Unit: ha

State	Basin No.	Type of Scheme	Development Area 4MP	5MP	6MP	7MP	Total
Pahang	28	A	69	-	-	-	69
	29	D	324	324	-	-	648
	30	A	-	-	955	956	1,911
		C	1,049	5,043	-	-	6,092
		D	1,436	1,439	1,056	1,056	4,987
	Sub-total		2,485	6,482	2,011	2,012	12,990
	31	D	158	158	-	-	316
Total for Pahang			3,036	6,964	2,011	2,012	14,023
Trengganu	32	A	36	-	-	-	36
		C	-	36	-	-	36
	Sub-total		36	36	-	-	72
	34	A	641	-	-	-	641
		B	206	367	187	-	760
		C	-	34	-	-	34
	Sub-total		847	401	187	-	1,435
	35	A	192	192	364	365	1,113
		C	466	467	364	365	1,662
	Sub-total		658	659	728	730	2,775
	36	A	991	991	-	-	1,982
		C	466	467	218	219	1,370
	Sub-total		1,457	1,458	218	219	3,352
	37	A	389	389	290	291	1,359
		C	202	203	290	291	986
	Sub-total		591	592	580	582	2,345
	38	A	-	445	-	-	445
		C	-	344	-	-	344
	Sub-total		-	789	-	-	789
Total for Trengganu			3,589	3,935	1,713	1,531	10,768

Table 92 INCREASE IN IRRIGATION AREA UNDER MINOR SCHEMES BY BASIN BY TYPE OF IRRIGATION DEVELOPMENT IN PENINSULAR MALAYSIA (4/4)

Unit: ha

State	Basin No.	Type of Scheme	Development Area 4MP	5MP	6MP	7MP	Total
Kelantan	39	A	1,369	-	1,191	1,191	3,751
		B	462	-	941	942	2,345
	Sub-total		1,831	-	2,132	2,133	6,096
	40	A	1,178	-	589	589	2,356
		B	1,447	1,608	1,527	1,527	6,109
	Sub-total		2,625	1,608	2,116	2,116	8,465
	41	A	2,534	5,238	3,886	3,886	15,544
		B	-	5,047	2,523	2,524	10,094
	Sub-total		2,534	10,285	6,409	6,410	25,638
Total for Kelantan			6,990	11,893	10,657	10,659	40,199
Total for Peninsular Malaysia			23,680	45,390	22,877	21,252	113,199

Table 93 INCREASE IN IRRIGATION AREA UNDER MAJOR SCHEMES BY BASIN BY TYPE OF IRRIGATION DEVELOPMENT IN PENINSULAR MALAYSIA (1/2)

Unit: ha

Name of Scheme	Basin No.	Type of Scheme	Development Area 4MP	5MP	6MP	7MP	Total
Muda II	1 & 3	N	12,239	9,452	35,800	35,800	93,291
Kerian & Sg. Manik	8 & 9 10	N	26,916	-	-	-	26,916
Trans Perak IV	10	F	-	1,620	-	-	1,620
		G	-	367	-	-	367
		H	-	-	1,620	-	1,620
		J	-	7,727	-	-	7,727
	Sub-total		-	9,714	1,620	-	11,334
Tanjong Karang	11 & 12	N	15,441	-	-	-	15,441
Sawa Endau	27	I	-	2,024	-	-	2,024
		J	-	3,198	2,024	-	5,222
		L	-	846	-	-	846
	Sub-total		-	6,068	2,024	-	8,092
Rompin Endau	27	F	-	700	-	-	700
		H	-	-	1,620	-	1,620
		I	-	920	-	-	920
		J	-	3,852	-	-	3,852
	Sub-total		-	5,472	1,620	-	7,092
	28	G	500	631	-	-	1,131
		J	-	4,728	-	-	4,728
	Sub-total		500	5,359	-	-	5,859
Total for the Scheme			500	10,831	-	-	12,951

Table 94 INCREASE IN IRRIGATION AREA UNDER MAJOR SCHEMES BY BASIN BY TYPE OF IRRIGATION DEVELOPMENT IN PENINSULAR MALAYSIA (2/2)

Unit: ha

Name of Scheme	Basin No.	Type of Scheme	Development Area 4MP	5MP	6MP	7MP	Total
Trang Pahang	30	F	-	2,039	-	-	2,038
		I	-	1,200	2,225	607	4,032
		J	-	-	2,428	-	2,428
		K	-	2,023	405	2,311	4,739
		L	-	-	-	117	117
	Sub-total		-	5,261	5,058	3,035	13,354
Besut	38	N	536	-	-	-	536
Kemasin Semarak	39	F	-	4,047	-	-	4,047
		G	1,485	3,373	-	-	4,857
	Sub-total		1,485	7,420	-	-	8,904
North Kelantan	40	N	11,700	-	-	-	11,700
KADA II	40	N	-	14,946	14,947	-	29,893
Total for Peninsular Malaysia			68,816	63,692	61,069	38,835	232,412

Table 95 INCREMENTAL ECONOMIC BENEFIT ATTRIBUTABLE TO DEVELOPMENT OF MINOR IRRIGATION SCHEMES

Unit: M$/ha

State	Type of Irrigation Development				
	A	B	C	D	E
Perlis	999	3,125	2,126	1,853	3,979
Kedah	888	2,761	1,873	1,630	3,503
P. Pinang	946	3,017	2,071	1,813	3,884
Perak	914	2,689	1,775	1,518	3,293
Selangor	-	-	-	-	-
N. Sembilan	998	2,753	1,755	1,549	3,304
Melaka	975	2,727	1,752	1,545	3,297
Johor	959	2,752	1,793	1,552	3,345
Pahang	978	2,647	1,669	1,437	3,106
Trengganu	902	2,417	1,515	1,345	2,860
Kelantan	926	2,480	1,554	1,382	2,936

Table 96 INCREMENTAL ECONOMIC BENEFIT ATTRIBUTABLE TO DEVELOPMENT OF MAJOR IRRIGATION SCHEMES

Unit: M$/ha

Scheme	Type of Irrigation Development							
	F	G	H	I	J	K	L	N
Muda	-	-	-	-	-	-	-	1,653
Krian	-	-	-	-	-	-	-	2,041
Trans Perak	1,096	3,009	1,913	-	3,613	-	-	-
Sg. Manik	-	-	-	-	-	-	-	2,195
T. Karang	-	-	-	-	-	-	-	1,697
Sawa Endau	-	-	-	1,644	3,487	-	142	-
Rompin Endau	1,170	2,990	1,820	1,629	3,449	-	-	-
Trans Pahang	1,170	-	-	1,629	3,449	2,012	343	-
Besut	-	-	-	-	-	-	-	1,637
K. Semarak	1,010	2,714	-	-	-	-	-	-
N. Kelantan	-	-	-	-	-	-	-	873
KADA II	-	-	-	-	-	-	-	1,593

Table 97 RESULTS OF ECONOMIC BENEFIT AND COST ESTIMATE FOR PROPOSED MINOR IRRIGATION SCHEMES IN PENINSULAR MALAYSIA (1/4)

Unit: 10^6M$

State	Basin No.	Type of Scheme	Total Incremental Benefit	Annual Equivalent Benefit	Annual Equivalent Cost	B/C Ratio
Perlis	1	A	6.54			
		C	5.16			
Total for Perlis			11.70	5.98	4.62	1.29
Kedah	2	A	0.38	0.30	0.39	0.77
	3	A	9.93			
		B	2.03			
		C	4.14			
	Sub-total		16.10	7.34	6.85	1.07
	4	A	0.49			
		C	0.80			
	Sub-total		1.29	0.69	0.48	1.44
	5	A	7.05			
		C	6.59			
	Sub-total		13.64	5.99	5.92	1.01
	8	A	0.32			
		B	1.22			
	Sub-total		1.54	1.04	0.59	1.76
Total for Kedah			32.95	15.36	14.23	1.08
P. Pinang	6	A	0.43	0.23	0.29	0.79
	7	C	0.63	0.55	0.10	5.50
Total for P. Pinang			1.06	0.78	0.39	2.00
Perak	8	A	0.13			
		B	1.19			
		C	0.24			
	Sub-total		1.56	1.15	0.44	2.61
	9	B	0.47	0.37	0.14	2.64
	10	B	1.03			
		C	1.18			
	Sub-total		2.21	1.45	0.53	2.74
Total for Perak			4.24	2.97	1.11	2.68

Table 98 RESULTS OF ECONOMIC BENEFIT AND COST ESTIMATE FOR PROPOSED MINOR IRRIGATION SCHEMES IN PENINSULAR MALAYSIA (2/4)

Unit: 10^6M$

State	Basin No.	Type of Scheme	Total Incremental Benefit	Annual Equivalent Benefit	Annual Equivalent Cost	B/C Ratio
N. Sembilan	16	A	0.04			
		C	0.04			
	Sub-total		0.08	0.05	0.03	1.67
	18	A	0.08			
		C	0.04			
	Sub-total		0.12	0.06	0.03	2.00
	19	A	0.02			
		C	0.04			
	Sub-total		0.06	0.05	0.02	2.50
	21	A	0.76			
		C	2.73			
	Sub-total		3.49	2.13	0.61	3.49
	30	A	0.20			
		C	0.18			
	Sub-total		0.38	0.22	0.14	1.57
Total for N. Sembilan			4.13	2.51	0.83	3.02
Melaka	18	A	0.23			
		C	0.52			
	Sub-total		0.75	0.54	0.31	1.74
	19	A	1.12			
		C	3.13			
	Sub-total		4.25	2.66	1.48	1.80
	20	A	0.18			
		C	0.25			
	Sub-total		0.43	0.32	0.20	1.60
Total for Melaka			5.43	3.52	1.99	1.77
Johor	20	A	0.08	0.04	0.06	0.67
	21	A	1.23			
		C	1.56			
	Sub-total		2.79	1.79	0.66	2.71
Total for Johor			2.87	1.83	0.72	2.54

Table 99 RESULTS OF ECONOMIC BENEFIT AND COST ESTIMATE FOR PROPOSED MINOR IRRIGATION SCHEMES IN PENINSULAR MALAYSIA (3/4)

Unit: 10^6M$

State	Basin No.	Type of Scheme	Total Incremental Benefit	Annual Equivalent Benefit	Annual Equivalent Cost	B/C Ratio
Pahang	28	A	0.07	0.06	0.06	1.00
	29	D	0.94	0.74	0.54	1.37
	30	A	1.86			
		C	10.17			
		D	7.16			
	Sub-total		19.19	9.92	5.94	1.67
	31	D	0.46	0.31	0.26	1.19
Total for Pahang			20.66	11.03	6.80	1.62
Trengganu	32	A	0.03			
		C	0.05			
	Sub-total		0.08	0.04	0.03	1.33
	34	A	0.58			
		B	1.84			
		C	0.05			
	Sub-total		2.47	1.63	1.09	1.50
	35	A	1.00			
		C	2.52			
	Sub-total		3.52	1.69	1.07	1.58
	36	A	1.78			
		C	2.08			
	Sub-total		3.86	2.33	1.99	1.17
	37	A	1.22			
		C	1.50			
	Sub-total		2.72	1.29	1.06	1.22
	38	A	0.40			
		C	0.52			
	Sub-total		0.92	0.49	0.39	1.26
Total for Trengganu			13.57	7.47	5.63	1.33

Table 100 RESULTS OF ECONOMIC BENEFIT AND COST ESTIMATE FOR PROPOSED MINOR IRRIGATION SCHEMES IN PENINSULAR MALAYSIA (4/4)

Unit: 10^6M$

State	Basin No.	Type of Scheme	Total Incremental Benefit	Annual Equivalent Benefit	Annual Equivalent Cost	B/C Ratio
Kelantan	39	A	3.47			
		B	5.82			
	Sub-total		9.29	3.96	3.18	1.25
	40	A	2.19			
		B	15.16			
	Sub-total		17.35	8.43	4.90	1.72
	41	A	14.40			
		B	25.04			
	Sub-total		39.44	17.00	13.25	1.28
Total for Kelantan			66.08	29.39	21.33	1.38
Total for Peninsular Malaysia			162.69	80.84	57.65	1.40

Table 101 RESULTS OF ECONOMIC BENEFIT AND COST ESTIMATE FOR PROPOSED MAJOR IRRIGATION SCHEMES IN PENINSULAR MALAYSIA (1/2)

Unit: 10^6M$

Name of Scheme	Basin No.	Type of Scheme	Total Incremental Benefit	Annual Equivalent Benefit	Annual Equivalent Cost	B/C Ratio
Muda II	1 & 3	N	154.21	59.50	20.24	2.94
Kerian & Sg. Manik	10	N	55.95	23.83	4.63	5.15
Trans Perak IV	10	F	1.78			
		G	1.10			
		H	3.10			
		J	27.92			
	Sub-total		33.90	17.58	6.79	2.59
Tg. Karang	11 & 12	N	26.20	20.88	4.63	4.51
Sawa Endau	27	I	3.33			
		J	18.21			
		L	0.12			
	Sub-total		21.66	10.33	4.43	2.33
Rompin Endau	27	F	0.82			
		H	2.95			
		I	1.50			
		J	13.29			
	Sub-total		18.56	9.69	3.71	2.61
	28	G	3.39			
		J	16.31			
	Sub-total		19.70	10.64	3.95	2.69
Total for the Scheme			38.26	20.33	7.66	2.65

Table 102 RESULTS OF ECONOMIC BENEFIT AND COST ESTIMATE FOR PROPOSED MAJOR IRRIGATION SCHEMES IN PENINSULAR MALAYSIA (2/2)

Unit: 10^6M$

Name of Scheme	Basin No.	Type of Scheme	Total Incremental Benefit	Annual Equivalent Benefit	Annual Equivalent Cost	B/C Ratio
Trang Pahang	30	F	2.38			
		I	6.56			
		J	8.38			
		K	9.54			
		L	0.04			
	Sub-total		26.90	10.40	5.51	1.89
Besut	38	N	0.88	0.70	0.19	3.68
Kemasin Semarak	39	F	4.09			
		G	13.18			
	Sub-total		17.27	10.29	5.97	1.72
North Kelantan	40	N	10.16	6.93	2.58	2.69
KADA II	40	N	47.62	21.23	7.75	2.74
Total for Peninsular Malaysia			433.01	202.00	70.38	2.87

Table 103 NUMBER OF FARM HOUSEHOLDS BENEFITED BY MINOR IRRIGATION DEVELOPMENT IN PENINSULAR MALAYSIA (1/4)

Unit: No. of households

State	Basin No.	Type of Scheme	Period of Scheme Completed 4MP	5MP	6MP	7MP	Total
Perlis	1	A	624	3,290	494	823	5,231
		C	-	1,813	130	-	1,943
Total for Perlis			624	5,103	624	823	7,174
Kedah	2	A	342	-	-	-	342
	3	A	856	3,421	2,334	2,334	8,945
		B	447	142	-	-	589
		C	52	436	642	642	1,772
	Sub-total		1,355	3,999	2,976	2,976	11,306
	4	A	-	440	-	-	440
		C	-	341	-	-	341
	Sub-total		-	781	-	-	781
	5	A	1,640	3,829	442	442	6,353
		C	23	-	1,396	1,398	2,817
	Sub-total		1,663	3,829	1,838	1,840	9,170
	8	A	-	-	292	-	292
		B	353	-	-	-	353
	Sub-total		353	-	292	-	645
Total for Kedah			3,713	8,609	5,106	4,816	22,244
P. Pinang	6	A	-	366	-	-	366
	7	C	-	204	39	-	243
Total for P. Pinang			-	570	39	-	609
Perak	8	A	-	110	-	-	110
		B	316	-	-	-	316
		C	-	-	110	-	110
	Sub-total		316	110	110	-	536
	9	B	126	-	-	-	126
	10	B	273	-	-	-	273
		C	-	530	-	-	530
	Sub-total		273	530	-	-	803
Total for Perak			715	640	110	-	1,465

Table 104 NUMBER OF FARM HOUSEHOLDS BENEFITED BY MINOR IRRIGATION DEVELOPMENT IN PENINSULAR MALAYSIA (2/4)

Unit: No. of households

State	Basin No.	Type of Scheme	Period of Scheme Completed 4MP	5MP	6MP	7MP	Total
N. Sembilan	16	A	-	18	13	-	31
		C	18	-	-	-	18
	Sub-total		18	18	13	-	49
	18	A	7	10	47	-	64
		C	18	-	-	-	18
	Sub-total		25	10	47	-	82
	19	A	16	-	-	-	16
		C	16	-	-	-	16
	Sub-total		32	-	-	-	32
	21	A	178	179	258	-	615
		C	555	555	133	-	1,243
	Sub-total		733	734	391	-	1,858
	30	A	-	157	-	-	157
		C	80	-	-	-	80
	Sub-total		80	157	-	-	237
Total for N. Sembilan			888	919	451	-	2,258
Melaka	18	A	-	186	-	-	186
		C	238	-	-	-	238
	Sub-total		238	186	-	-	424
	19	A	302	347	272	-	921
		C	665	666	98	-	1,429
	Sub-total		967	1,013	370	-	2,350
	20	A	-	146	-	-	146
		C	114	-	-	-	114
	Sub-total		114	146	-	-	260
Total for Melaka			1,319	1,345	370	-	3,034
Johor	20	A	63	-	-	-	63
	21	A	391	553	81	-	1,025
		C	339	339	16	-	694
	Sub-total		730	892	97	-	1,719
Total for Johor			793	892	97	-	1,782

Table 105 NUMBER OF FARM HOUSEHOLDS BENEFITED BY MINOR IRRIGATION DEVELOPMENT IN PENINSULAR MALAYSIA (3/4)

Unit: No. of households

State	Basin No.	Type of Scheme	Period of Scheme Completed 4MP	5MP	6MP	7MP	Total
Pahang	28	A	55	-	-	-	55
	29	D	133	133	-	-	266
	30	A	-	-	764	765	1,529
		C	839	4,034	-	-	4,873
		D	591	592	435	435	2,053
	Sub-total		1,430	4,626	1,199	1,200	8,455
	31	D	65	65	-	-	130
Total for Pahang			1,683	4,824	1,199	1,200	8,906
Trengganu	32	A	29	-	-	-	29
		C	-	29	-	-	29
	Sub-total		29	29	-	-	58
	34	A	513	-	-	-	513
		B	165	294	150	-	609
		C	-	27	-	-	27
	Sub-total		678	321	150	-	1,149
	35	A	154	154	291	292	891
		C	373	374	291	292	1,330
	Sub-total		527	528	582	584	2,221
	36	A	793	793	-	-	1,586
		C	373	374	174	175	1,096
	Sub-total		1,166	1,167	174	175	2,682
	37	A	311	311	232	233	1,087
		C	162	162	232	233	789
	Sub-total		473	473	464	466	1,876
	38	A	-	356	-	-	356
		C	-	275	-	-	275
	Sub-total		-	631	-	-	631
Total for Trengganu			2,873	3,149	1,370	1,225	8,617

Table 106 NUMBER OF FARM HOUSEHOLDS BENEFITED BY MINOR IRRIGATION DEVELOPMENT IN PENINSULAR MALAYSIA (4/4)

Unit: No. of households

State	Basin No.	Type of Scheme	Period of Scheme Completed 4MP	5MP	6MP	7MP	Total
Kelantan	39	A	1,095	-	953	953	3,001
		B	370	-	753	754	1,877
	Sub-total		1,465	-	1,706	1,707	4,878
	40	A	942	-	471	471	1,884
		B	1,158	1,286	1,222	1,222	4,888
	Sub-total		2,100	1,286	1,693	1,693	6,772
	41	A	2,027	4,190	3,109	3,109	12,435
		B	-	4,038	2,018	2,019	8,075
	Sub-total		2,027	8,228	5,127	5,128	20,510
Total for Kelantan			5,592	9,514	8,526	8,528	32,160
Total for Peninsular Malaysia			18,200	35,565	17,892	16,592	88,249

Table107 NUMBER OF FARM HOUSEHOLDS BENEFITED BY MAJOR IRRIGATION DEVELOPMENT IN PENINSULAR MALAYSIA (1/2)

Unit: No. of households

Name of Scheme	Basin No.	Type of Scheme	Period of Scheme Completed 4MP	5MP	6MP	7MP	Total
Muda II	1 & 3	N	9,791	7,562	28,640	28,640	74,633
Kerian & Sg. Manik	8, 9 & 10	N	21,533	-	-	-	21,533
Trans Perak IV	10	F	-	1,296	-	-	1,296
		G	-	294	-	-	294
		H	-	-	1,296	-	1,296
		J	-	3,180	-	-	3,180
	Sub-total		-	4,770	1,296	-	6,066
Tg. Karang	11 & 12	N	12,353	-	-	-	12,353
Sawa Endau	27	I	-	833	-	-	833
		J	-	1,316	833	-	2,149
		L	-	677	-	-	677
	Sub-total		-	2,826	833	-	3,659
Rompin Endau	27	F	-	560	-	-	560
		H	-	-	1,296	-	1,296
		I	-	379	-	-	379
		J	-	1,585	-	-	1,585
	Sub-total		-	2,524	1,296	-	3,820
	28	G	400	505	-	-	905
		J	-	1,946	-	-	1,946
	Sub-total		400	2,451	-	-	2,851
Total for the Scheme			400	4,975	1,296	-	6,671

Table 108 NUMBER OF FARM HOUSEHOLDS BENEFITED BY MAJOR IRRIGATION DEVELOPMENT IN PENINSULAR MALAYSIA (2/2)

Unit: No. of households

Name of Scheme	Basin No.	Type of Scheme	Period of Scheme Completed				Total
			4MP	5MP	6MP	7MP	
Trang Pahang	30	F	-	1,630	-	-	1,630
		I	-	494	916	250	1,660
		J	-	-	999	-	999
		K	-	1,618	324	1,849	3,791
		L	-	-	-	94	94
	Sub-total		-	3,742	2,239	2,193	8,174
Besut	38	N	429	-	-	-	429
Kemasin Semarak	39	F	-	3,238	-	-	3,238
		G	1,187	2,698	-	-	3,885
	Sub-total		1,187	5,936	-	-	7,123
North Kelantan	40	N	9,360	-	-	-	9,360
KADA II	40	N	-	11,957	11,958	-	23,915
Total for Peninsular Malaysia			55,053	41,768	46,262	30,833	173,916

Table 109 ECONOMIC PRODUCTION VALUE OF PADDY DAMAGED BY FLOOD BY STATE (1980 PRICE LEVEL)

Unit: M$/ha

State	Heading Stage NPV	Heading Stage PCL	Heading Stage Total	Harvesting Stage NPV	Harvesting Stage PCL	Harvesting Stage Total	Average
(1) Irrigated Main Season Wet Paddy (Minor Scheme)							
Perlis	811	445	1,256	811	466	1,277	1,267
Kedah	683	417	1,100	683	430	1,113	1,107
P. Pinang	813	359	1,172	813	382	1,195	1,184
Perak	494	362	856	494	378	872	864
Selangor	-	-	-	-	-	-	-
N. Sembilan	603	450	1,053	603	479	1,082	1,068
Melaka	618	424	1,042	618	452	1,070	1,056
Johor	630	368	998	630	385	1,015	1,007
Pahang	395	362	757	395	371	766	762
Trengganu	426	367	793	426	388	814	804
Kelantan	306	309	615	306	313	619	617
(2) Rainfed Main Season Wet Paddy							
Perlis	549	445	994	549	465	1,014	1,004
Kedah	501	405	905	501	415	916	911
P. Pinang	649	354	1,003	649	369	1,018	1,011
Perak	415	357	772	415	368	783	778
Selangor	395	370	765	395	385	780	773
N. Sembilan	341	438	779	341	452	793	786
Melaka	370	412	782	370	425	795	789
Johor	332	368	700	332	376	708	704
Pahang	297	320	617	297	323	620	619
Trengganu	297	320	617	297	323	620	619
Kelantan	283	224	507	283	296	579	543

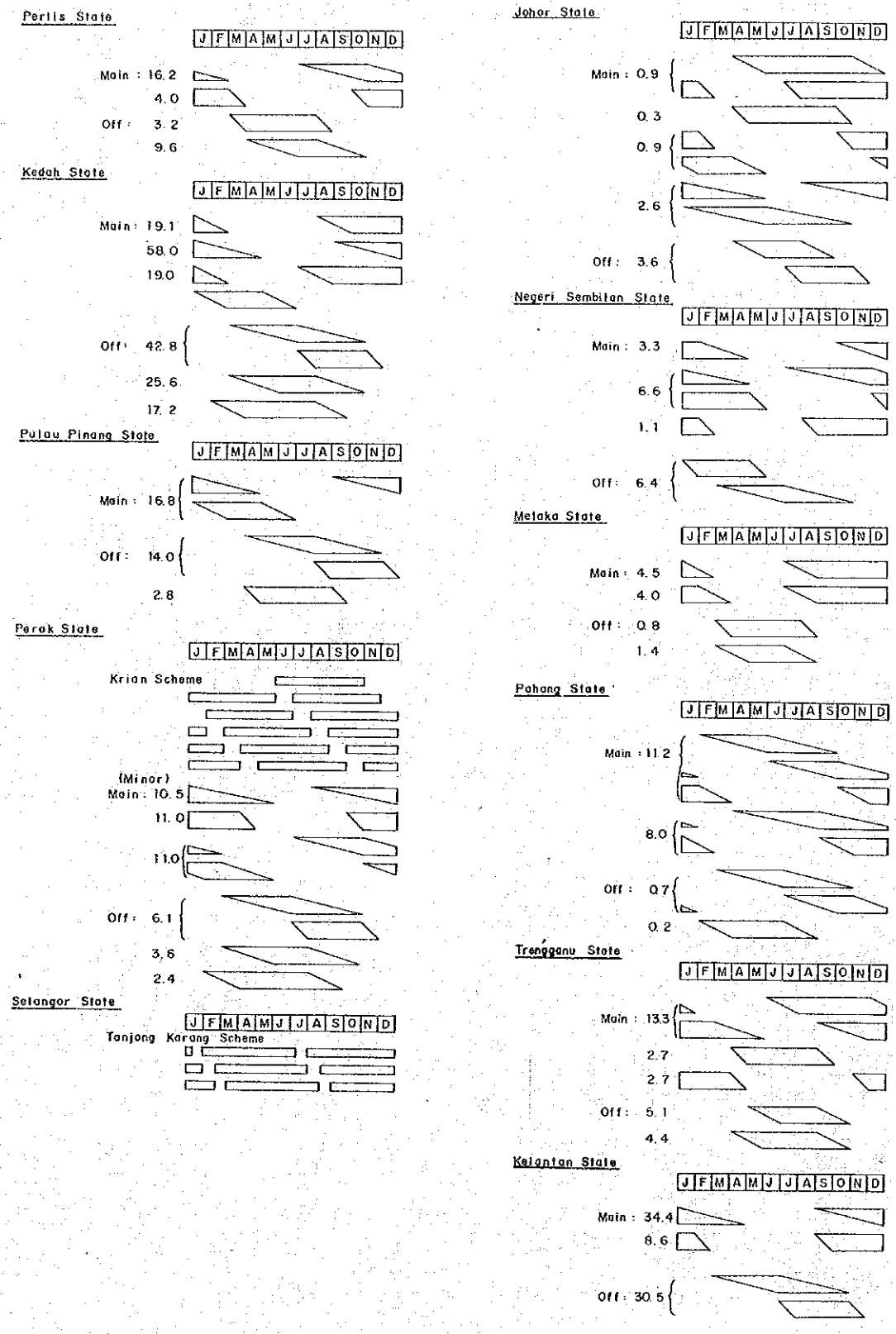
Remarks; NPV: Net production value
PCL: Production cost to be born after flood

Table 110 ECONOMIC PRODUCTION VALUE OF TREE CROPS FOR ESTIMATING FLOOD LOSSES

Unit: M$/ha

Crops	Value	Remarks
1. Mixed Horticulture	2,900	Replanting cost of coconut and production loss of orchard
2. Rubber		
- Mortality	1,400	Replanting cost
- Production loss	1,670	Net production value
- Price (M$/kg)	2.73	
- Yield	800	
3. Oil Palm		
- Mortality	1,930	Replanting cost
- Production loss	2,120	Net production value
4. Coconuts		
- Mortality	3,440	Replanting cost
- Production loss	530	Net production value
5. Other Crops	3,540	Net production value

FIGURES



Remarks ; Unit = 10^3 ha

Fig. 1 Present Cropping Schedule

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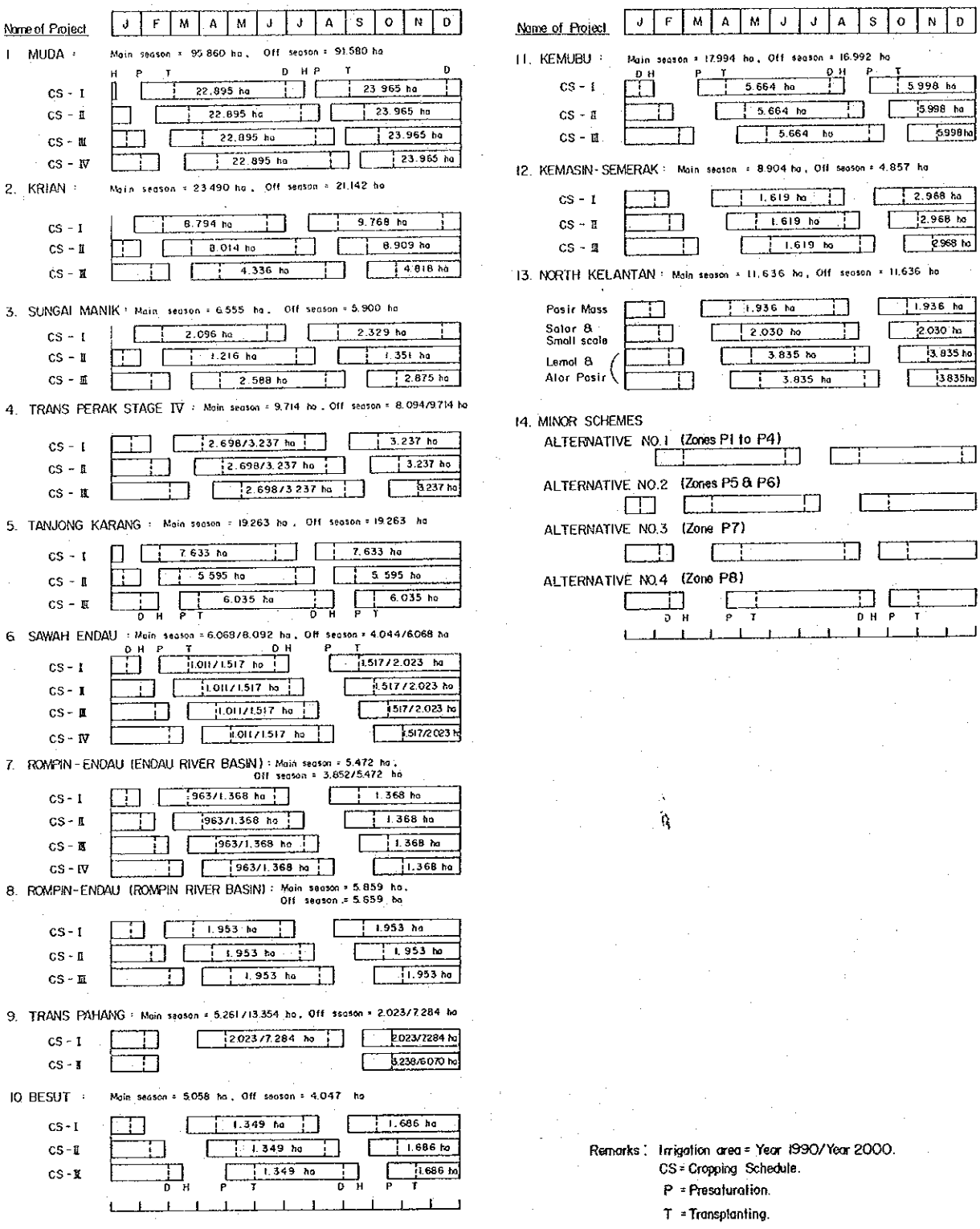

Remarks : Irrigation area = Year 1990/Year 2000.
CS = Cropping Schedule.
P = Presaturation.
T = Transplanting.
D = Drainage
H = Harvesting

Fig. 2 Assumed Cropping Schedule for Irrigation Projects

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PART 2

SABAH AND SARAWAK

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This sectoral report presents the results of agricultural development study covering the present situation of agriculture and the future agricultural development programs in the States of Sabah and Sarawak. Major agricultural commodities of regional importance comprise rubber and oil palm in Sabah and Sarawak, cocoa in Sabah and pepper in Sarawak as export-oriented crops, and rice as staple food crop for domestic consumption in both the States. Aiming at provision of basic input data for projection of future water demand in sectors agriculturally concerned, the Study was made in line with the outcomes of various technical papers previously prepared by both the States. The results of the Study are composed of the projection of future irrigated paddy field which is required in estimating irrigation water demand and the projection of rubber and oil palm harvests which is needed for the estimate of processing water requirement as a component of industrial water supply.

2. BACKGROUND OF AGRICULTURE

2.1 Role of Agriculture in Sabah

The role of agricultural sector in the regional economy of Sabah is to provide: (1) alleviation of rural poverty, (2) continuous creation of employment opportunities, (3) improvement of the State's foreign-exchange earning capacity and (4) reduction of the over independence on timber export revenue.

The agricultural sector produced M$109 x 10^6 at 1970 constant prices with a share of 13.0% of gross domestic value (GDP) in 1970, M$176 x 10^6 at 1970 constant prices sharing 13.7% of GDP in 1975 and M$227 x 10^6 at 1970 constant prices with the share of 12.6% of GDP in 1980. This sector has maintained the third position in gaining the State's GDP next to commerce, service and logging sectors.

Export earnings by the agricultural sector comprise palm oil, rubber, cocoa beans and coconut products. In 1980, the State of Sabah gained M$4,474 x 10^6 in total by exports of commodities. Among the total export value, primary agricultural products earned M$353 x 10^6 in 1980 corresponding to 7.9% of the total. The agricultural export earnings comprise M$169 x 10^6 from palm oil and palm kernel, M$82 x 10^6 from rubber, M$68 x 10^3 from cocoa beans and M$34 x 10^6 from copra and coconut oil.

According to the 1970 population census and Sabah Economic Planning Unit (SEPU), total labour force in Sabah increased from 0.21 x 10^6 persons in 1970 to 0.30 x 10^6 in 1975 and 0.36 x 10^6 in 1980. The agricultural sector employed 0.11 x 10^6 persons or 51% of the total labour force in 1970, 0.15 x 10^6 or 50% in 1975 and 0.15 x 10^6 or 42% in 1980. The primary employment has remained dominant in the structure of employment in the State of Sabah.

2.2 Role of Agriculture in Sarawak

The agricultural sector has played and is still playing a very important role in the State's economy of Sarawak, promising a livelihood dependent on rice cultivation to about 80% of the total population.

The agricultural sector produced M$147 x 10^6 at 1970 constant prices with a share of 16.2% of GDP in 1971, M$163 x 10^6 at 1970 constant prices sharing 14.5% in 1975 and M$172 x 10^6 at 1970 constant prices with the share of 12.4% in 1977. This sector has kept the second place in producing the State's GDP next to mining and quarrying sector.

The total exports of Sarawak are reported to be M$3,080 x 10^6 in 1979 and M$2,028 x 10^6 in the first half of 1980. The principal exports of agricultural products are pepper, rubber, palm oil, coconut oil and sago flour. The export earnings in 1979 amounted to M$136 x 10^6 from black and white peppers, M$88 x 10^6 from rubber, M$32 x 10^6 from palm oil including palm kernel and M$17 x 10^6 from coconut oil and sago flour.

According to the 1970 population census, total labour force in Sarawak was 0.37 x 10^6 persons in 1970 among which 0.25 x 10^6 or 67% of the total were engaged in agriculture, forestry, hunting, fishing and agricultural product processing. The preliminary figures of the 1976 agricultural census show that the total labour force in 1976 was 0.44 x 10^6 persons among which 0.30 x 10^6 persons corresponding to 69% of the total were agricultural, animal husbandry and forestry workers, fishermen and hunters.

2.3 Organizations Responsible for Agriculture in Sabah

There exist several agricultural agencies involved in the provision of necessary supporting services in agricultural development activities in Sabah. These agencies involved under the Ministry of Agriculture are Department of Agriculture (DOA), Department of Veterinary and Animal Industry, Department of Fishery, Drainage and Irrigation Department (DID) and Sabah Rubber Fund Board. Sabah Land Development Board (SLDB) and Rural Development Corporation (KPD) are also functioning as key agencies involved in the implementation of agricultural development schemes under the control of Chief Minister's Department. The Ministry of Culture, Youth and Sports is an executing agency for youth settlement schemes and the Ministry of Industrial and Rural Development manages youth brigade work force scheme. Other State's agencies involved are Sabah Forestry Development Authority (SAFODA) which is responsible for stabilizing the shifting cultivator, Sabah Economic Development Corporation (SEDCO) in charge of sugarcane growing and handling of edible oils, Sabah Foundations providing scholarships for training, and Sabah Marketing Corporation Sdn. Bhd. (SAMA) undertaking marketing activities including exports and imports of agricultural products for all State Government and/or semi-Government agricultural agencies as well as for private enterprises. In addition to the above, Federal Land Development Authority (FELDA) is executing tree crop development schemes for settlers in collaboration with SLDB. National Padi and Rice Authority (LPN) subrogated the responsibility of Sabah Padi Board at the beginning of 1982 and has been fully executing procurement activities of paddy in Sabah since then.

2.4 Organizations Responsible for Agriculture in Sarawak

The Ministry of Agriculture and Community Development controls Department of Agriculture (DOA) and Department of Drainage and Irrigation (DID). Besides the Ministry, there are several other institutions directly or indirectly involved in agricultural development. The Ministry of Lands and Mineral Resources has two agricultural development agencies such as Sarawak Land Development Board (SLDB) and Sarawak Land Consolidation and Rehabilitation Authority (SALCRA). The Federal Government establishes several agencies involved in agricultural development in Sarawak such as LPN, Federal Agriculture Marketing Authority (FAMA) and Pepper Marketing Board.

3. PRESENT STATUS OF AGRICULTURAL PRODUCTION

3.1 Present Land Use

An inventory of present land use was prepared for 26 river basins, being abbreviated as Basin hereinafter, in the State of Sabah and 21 Basins in the State of Sarawak on the basis of statistics, land use maps and previous studies. As shown in Table 1, the whole area of Sabah totaling 73,700 km^2 comprises forest land of 55,200 km^2, agricultural land of 11,400 km^2 including tree crop, horticulture and garden crop, annual crop and shifting cultivation areas, and miscellaneous land of 7,100 km^2 consisting of urban and associated lands, grassland, unused and unclassified lands and others.

Of 124,400 km^2 in total in Sarawak, 94,300 km^2 are forest land, 25,100 km^2 are agricultural land, and the remaining 5,000 km^2 are urban, grassland and unused land as shown in Table 1.

Agricultural land use pattern in Sabah has been showing a significant change since the early stage of 1970s as portrayed in Table 2. Though cropped areas of paddy, rubber and coconut have slightly increased during this period, substantial increase in planted area of oil palm was seen in the first part of the decade, tapering off towards 1977 when cocoa began its rise.

In Sarawak, as shown in Table 3, oil palm and cocoa plantations have also covered vast areas in recent years as a result of commencement of intensive land development schemes. Cocoa is grown under mono cropping condition and also intercropped in coconut area.

3.2 Rice

3.2.1 Rice cultivation area in Sabah

There are three different kinds of rice cultivation practice identified in Sabah. The first one is "wet padi" which is planted on low-lying level land with irrigation facilities in some part. The other two are "hill padi" and "Kendinga padi". Out of these, the former is a typical crop prevailing in shifting cultivation area and grown as a sole crop under rainfed condition. The latter is used as an intercrop in association with maize in upland crop area. Historical record on planted area of rice is as shown in Table 4 by each type. Table 5 indicates the rice cultivation area by District in Sabah as of 1979. Among the total planted area of wet paddy of 30,200 ha, the Residencies of West Coast and Kudat hold 22,200 ha or 74% of the total and the Residency of Interior follows these two Residencies with an area of 7,000 ha. On the contrary, wet paddy cultivation is very limited in the Residencies of Tawau and Sandakan due to undulating and hilly topography in Tawau and because of flooded and/or swampy land with a thinly populated circumstances in Sandakan.

3.2.2 Rice cropping calender in Sabah

Cropping calenders prevailing in single cropping areas of Sabah are summarized in Table 6. As seen in Table 6, land preparation work is done with a range of about three months depending upon rainfall as well as availability of natural river flow in the respective rice cultivation areas. Transplanting period is from end-July to mid-November and harvest season starts from mid-November with four-month duration.

As of 1980, 20,800 ha or 65% of the total wet paddy field of 31,600 ha were provided with irrigation facilities, among which 9,700 ha or 31% could also expect irrigation water supply during the dry season. The double cropping area of wet paddy, as shown in Table 4, has fluctuated between 1,300 and 5,700 ha during the period from 1968 to 1980. In Sabah, there is no existing storage facilities to meet completely irrigation water demand during the dry season. Wet paddy cultivation in off season is, therefore, still depending on intake of natural stream flow from rivers.

3.2.3 Paddy yield and production in Sabah

Although irrigation facilities have been provided for 65% of wet paddy cultivation area, paddy yield and production show a continued fluctuation as shown in Table 7 mainly due to a dry spell or an irregular rainfall pattern.

According to the estimate made by the Sabah Paddy Board, 138,800 tons of rice in total were consumed in Sabah during 1980, among which 65,800 tons were guaranteed by domestic paddy production as shown in Table 8. This fact means that self-sufficiency of rice in Sabah is in the level of 47.6%. Based on the population estimated in the Study, the above self-sufficiency rate was revised to be 50.0%. In any case, the present level of self-sufficiency is far below the target of the State Government.

3.2.4 Rice cultivation area in Sarawak

In Sarawak, 'wet padi' is grown in low land area where natural stream flow or impounded rain water is utilized for rice cultivation, while 'hill paddy' is grown mainly on slope lands and partly in swamp forest area under shifting cultivation system. The historical record on planted areas of wet paddy and hill paddy is as shown in Table 9. Both the cultivation areas by District in Sarawak as of 1979/80 are as shown in Tables 11 and 12.

Out of 142,500 ha of the total wet paddy areas in Sarawak, the Second Division occupies 46,100 ha or 32.3% of the total followed by the Fourth and First Divisions of which wet paddy areas amount to 50,600 ha or 35.5% in total. Districts with the planted area more than 5,000 ha are Kuching and Simunjan in the First District, Batang Lupar, Saribas and Kalaka in the Second Division, Sibu in the Third Division, Miri,

Baram and Bintulu in the Fourth Division, Lawas in the Fifth Division, and Binatang and Daro in the Sixth Division.

Hill paddy is a predominant crop broadly grown in the shifting cultivation area in Sarawak. According to the Land and Survey Department, Sarawak, 28,500 km^2 or 23% of the whole territory of the State of 124,400 km^2 were recognized as the shifting cultivation area as shown in Table 13. As these shifting cultivation areas are usually utilized for hill paddy cultivation for one year or continuously two years after cutting, clearing and burning undisturbed forests. The actual cropped area of hill paddy is, therefore, equivalent to approximately 3% of the shifting cultivation area. The hill paddy area concentrates into the Second, Fourth and Seventh Divisions amounting to 49,500 ha and corresponding to 67% of the total hill paddy area. Districts having the hill paddy area more than 3,000 ha are Batang Lupar, Lubok Antu and Saribas in the Second Division, Miri, Baram and Bintulu in the Fourth Division, and Kapit, Belaga and Song in the Seventh Division.

3.2.5 Rice cropping calender in Sarawak

Typical cropping calenders of wet and hill paddies in Sarawak are as summarized in Table 10. Land preparation work starts from August followed by transplanting work carried out in October to November. Average growing period is 150 days. Harvesting season is from March to April.

In 1979/80, only 6,000 ha or 9.3% of the total wet paddy field were provided with irrigation facilities including control drainage system. This control drainage system impounds rainfall on paddy field during paddy cropping season and does not take up any irrigation water from rivers. As seen in Table 9, double cropping area amounted to 1,600 ha corresponding to 2.5% of the total wet paddy field and 26.7% of the irrigated paddy field, respectively.

3.2.6 Paddy yield and production in Sarawak

About 70% to 75% of the total paddy production in Sarawak is of wet paddy and the remaining proportion is covered with hill paddy as shown in Table 14. Average yield and production by District in 1979/80 is as shown in Table 11 for wet paddy and Table 12 for hill paddy.

Taking statistics into account, the historical record on rice consumption was estimated as shown in Table 15. This indicates that 159,700 tons were consumed in Sarawak in 1979 including 109,300 tons of domestic production and self-sufficiency rate was 68.4%. Based on the population estimated by the Study, the rate was slightly modified to be 67.6%. In both cases, the present level of self-sufficiency rate is still under the target in the State of Sarawak.

3.3 Major Export-oriented Crops

In Sabah and Sarawak, various kinds of perennial and tree crops are grown by private estates and smallholders as well as under land development schemes. Among the tree crops, rubber, oil palm, coconut and cocoa are planted as export-oriented crops and defined as major tree crops in the Study.

Tables 16 and 17 indicate the recent record on major crop cultivation areas by District in both the States. The proportion of the major tree crop cultivation areas to the total cropped area is as shown in Tables 18 and 19. In Sabah, as seen in Table 18, the share of major tree crops grown in the Residencies of Tawau and Sandakan was 92% to the whole cropped area of these two Residencies and 43% to that of the State in 1980. Salient features in major tree crop cultivation in Sabah are the increase in planted areas of oil palm and cocoa which are involved under large-scale land development schemes of SLDB and private estates in recent years. While in Sarawak, rubber is still predominant among the four major tree crops as shown in Table 17, but, through the State Government's efforts, expansion of oil palm plantations has been accelerated in the Third and Fourth Divisions.

Producers of the major tree crops are smallholders and estates in private sectors, and the State Governments' agencies such as SLDBs and cooperatives in both the States as well as KPD and FELDA in Sabah and SALCRA in Sarawak. The existing schemes of major tree crop plantation executed by the State Government agencies are listed up in Table 20 for Sabah and in Table 21 for Sarawak, respectively.

Export earnings by the above-mentioned major crop products are reported to be M$353.0 x 10^6 in Sabah during 1980 and M$270.8 x 10^6 in Sarawak during 1979, respectively, as shown in Tables 22 and 23.

3.4 Rubber

3.4.1 Planted area

During the previous 10 years between 1970 and 1979, total planted areas of rubber have slightly decreased in Sabah, while those in Sarawak have been keeping the same level since 1971 as shown in Table 24.

In Sabah during 1979, 88,000 ha or 82% of the total of 106,900 ha were belonging to smallholders, 14,400 ha or 13% to private estates and the remaining 4,500 ha or 5% to the schemes of SLDB and the Sabah Rubber Fund Board. In Sarawak, smallholders' rubber areas amounted to 189,800 ha as of 1980 corresponding to 95% of the total planted area of 199,900 ha, and SLDB and private estates operated the remaining rubber planted areas.

High yielding material, which is defined as an area planted with rubber trees less than 20 years with the potential to yield over 1,100 kg/ha, is an indicator of productivity in the existing rubber planted areas. According to the Rubber Statistics Handbook, the rubber planted

area with high yielding material in 1978 was 75,800 ha or 72% of the total rubber planted area in Sabah and 83,500 ha or 43% of the total in Sarawak. By the Sabah Rubber Fund Board, the total rubber planted area as of 1980 is estimated to be 96,900 ha comprising high yield rubber area of 62,400 ha and old rubber area of 34,500 ha. This decrease in the area of high yielding material is due to untapping or abandoning of rubber areas for a number of reasons, as shown in Table 25.

3.4.2 Yield and production

Historical records on rubber yield and production in estates are compiled in the Rubber Statistics Handbook and summarized in Table 26. The average yield in estates during 1979 was reported to be 885 kg/ha in Sabah and 597 kg/ha in Sarawak. Taking into account available data, the present rubber yield was assumed to be 1,050 kg/ha with a tapping ratio of 0.17 to the total planted area in estates and land development schemes and 950 kg/ha with the ratio of 0.43 in smallholders' areas for Sabah, and 650 kg/ha with the ratio of 0.45 in the former and 550 kg/ha with the ratio of 0.39 in the latter for Sarawak.

Based on the above assumption, the annual production of rubber in 1980 was estimated to be 35,900 tons in Sabah and 42,300 tons in Sarawak as shown in Tables 27 and 28.

3.4.3 Processing

Generally in Sabah and Sarawak as illustrated in Fig. 1, tapped materials in major estates and land development schemes are processed to produce ribbed smoked sheet (RSS) and Standard Malaysian Rubber (SMR). While in smaller estates and smallholders, these are processed to produce unsmoked sheet.

Since 1970, the Sabah Rubber Fund Board has started to purchase latex from smallholders for production of SMR 5 in the Board's crumb factories with a daily capacity of 20 tons SMR located in Putatan near Kota Kinabalu. This SMR factory is planned to be removed to Papar for environmental reasons.

As this scheme has a limit to extension because of the scattered and often accessible location of smallholders, the Board has been executing to set up Group Processing Centers for production of unsmoked sheet with high market quality. At present, 19 Centers in total are under operation at Tuaran, Sipitang, Kota Belud, Keningau, Kudat, Papar, Molinsau, Tambunan, Tenom and Kuala Penyu.

There exist two rubber processing factories other than Putatan; the one is operated by private estates in Tawau and the other is 30-ton/day SMR factory in Tenom operated from 1980 by a joint-venture between the Sabah Rubber Fund Board and the private sectors.

In Sarawak, four rubber factories are being operated by SLDB. These are located in Lambir, Skrang, Meradong and Lubai Tengah. The Lambir RSS Factory with a capacity of 2 tons/day has been operated since 1972 meeting demand in Miri areas. The Lubai Tengah RSS Factory has covered the District of Limbang providing a capacity of 2 tons/day. Two SMR factories at Skrang and Meradong are facilitated with pre-cleaning lines to process a wider range of raw materials such as rubber sheets, lumps, crepes and treelace. Their processing capacity is 10 to 15 tons/day and service areas are the Second and Six Divisions.

3.5 Oil Palm

3.5.1 Planted area

Since the early 1960's when oil palm was introduced into Sabah, its planted area has significantly increased and obtained the second rank in commercial tree crops cultivation as shown in Table 29. In 1980, the planted area totalled 90,500 ha of which producers and their share were private estates having 49,700 ha, land development and cooperative schemes occupying 39,400 ha and smallholders covering 1,400 ha. Major zones of oil palm cultivation are the Residency of Tawau and the Districts of Sandakan and Labuk/Sugut in the Residency of Sandakan with the combined share of 76,800 ha or 85% to the total.

In Sarawak, commercial cultivation of oil palm was started from 1969. During the periods of SMP and TMP, planted area of oil palm has been expanded mainly through implementation of land development schemes by SLDB. Up to date, the total planted area attained to 22,300 ha, as shown in Table 29, comprising 16,600 ha of land development schemes, 4,800 ha of estates and 900 ha of smallholders. The main planted zone is the District of Miri in the Fourth Division.

3.5.2 Yield and production

Usually, oil palm trees fruit from the fourth year after planted seedlings in Sabah and Sarawak. Its harvesting period is 18 years and peak period of harvest is from the ninth to twelfth years. According to the Oil Palm, Coconut and Cocoa Estates Statistics 1979, 59 estates in the Residencies of Sandakan and Tawau harvested 520,200 tons of fresh fruit bunches (FFB) from 30,100 ha of matured oil palm areas. The average yield was 17.3 tons/ha of FFB. In the land development scheme areas in 1979, the average yield was 8.0 tons/ha, the matured area was 23,800 ha and the total production was 190,000 FFB tons.

In Sarawak, FFB production rose from 24,300 tons in 1975 to 156,600 tons in 1980. The matured area increased from 4,300 ha to 15,500 ha during this period. The average yield therefore was 5.7 FFB tons/ha in 1975 and 10.1 FFB tons/ha in 1980.

3.5.3 Processing

After harvesting, FFB is collected and brought into a processing mill for extract of palm oil and palm kernel. There exist 13 oil palm processing mills with the total milling capacity of 232 FFB tons/hr in Sabah and four mills with the capacity of 70.5 FFB tons/hr in total in Sarawak, respectively. In addition to these factories operated, four in Sabah and two in Sarawak are under construction or expansion. The total milling capacity newly faciliated is 63 FFB tons/hr for Sabah and 40 FFB tons/hr for Sarawak.

4. LAND RESOURCES FOR FUTURE AGRICULTURAL DEVELOPMENT

4.1 Soils in Sabah and Sarawak

Based on the results of investigations previously undertaken, soils in Sabah and Sarawak were grouped into seven units comprising alluvial soils on coastal plains, on coastal plains and/or riverine, on riverine, flood plains and/or low riverine terrace, and on intermediate and high terraces; and sedentary soils on undulating plains to rolling land, on rolling and low hilly land, and on hills and mountains. The areal distribution of these soil units by Basin in Sabah and Sarawak is as shown in Table 30.

The alluvial soils are found in the total area amounting to 13,300 km^2 in Sabah and 26,400 km^2 in Sarawak, having the proportion of 18% in Sabah and 11% in Sarawak to each State area, respectively.

4.2 Land Resources in Sabah

Under the Land Resources Study of which investigation was carried out in the early 1970s, the suitability classification of land for agriculture in Sabah was set up on the basis of soils and topography due to climate factors without limitations in normal condition. This classification has five land capability classes as follows:

Class I : Land with a high potential for mineral development and therefore best suited for mining,

Class II : Land with high potential for agriculture with a wide range of crops and therefore best suited for a diversified form of agriculture,

Class III: Land possessing a moderate potential for agriculture with a restricted range of crops, and therefore best suited for a limited variety of crops with a high level of tolerance to a range of soil conditions,

Class IV : Land with no mining or agricultural potential, but a potential for forest resources exploitation and best suited for this purpose, and

Class V : Land with no potential for mining, agricultural or forest exploitation and generally best suited for conservation or recreational purposes.

According to the above-mentioned study, lands classed as having either high or moderate agricultural potential amounted to 21,500 km^2 in the early 1970s, corresponding to nearly 30% of the State's land. Of this, 17,300 km^2 or 80% were concentrated in the Residencies of Sandakan and Tawau. As shown in Table 31, 700 km^2 or 11.1% of Class II land and 1,300 km^2 or 8.3% of Class III land were in agricultural use in

the early 1970s. Thus, the remaining land of 19,500 km^2 could be considered as the potential area for the agricultural development at that time. During TMP period, a total of 700 km^2 of new agricultural land has been developed so that the State of Sabah is still rich in land resources with high agricultural development potentiality.

4.3 Land Resources in Sarawak

The Sarawak DOA has estimated that around 28,000 km^2 or 23% of the State's land could be considered as potential agricultural land consisting of 1,000 km^2 of land suitable for agricultural use, 10,000 km^2 of land moderately suitable for agricultural use and 17,000 km^2 for marginally suitable for agricultural use. Up to date, 25,000 km^2 or 89% of the potential agricultural land have been developed for permanent settled agriculture or utilized for shifting cultivation purpose. The remaining areas of 3,000 km^2 are presently virgin land with agricultural development potential.

4.4 Large-scale Irrigation Development Potential in Sabah

In 1968, the Federal MOA sent a mission to Sabah to look into the possibilities of large-scale paddy production in Sabah. The mission identified seven potential areas as follows; (1) Klias plain with a gross area of 23,000 ha, (2) Bandau plain of 23,000 ha, (3) Lower Labuk of 27,000 ha, (4) Segama valley of 82,000 ha, (5) Tabin-Lumerau plain of 27,000 ha, (6) Semporna peninsula of 66,000 ha and (7) Kinabatangan valley of 133,000 ha. In view of topography, soils and available irrigation water resources, the mission concluded that the Kinabatangan valley offered a vast development potential of land suited for wet paddy cultivation although this valley suffered from a flooding problem.

Under the Sabah Regional Planning Study carried out in 1978 (Ref. 10), a total area of 180,000 ha was identified as potential land in the Residencies of Kudat, Sandakan and Tawau as summarized in Table 32. This identified area was further formulated into 10 sites with a gross area of 65,000 ha in consideration of suitability for introduction of large-scale mechanized rice cultivation. After assessing the land availability of these 10 sites as shown in Table 33, only the site at Trusan Sapi with an area of 8,500 ha in gross was selected as a potential site having suitable soil for wet paddy cultivation.

4.5 Large-scale Irrigation Development Potential in Sarawak

In 1974, the Technical Committee of Padi Production Unit, Sarawak identified 13 potential wet paddy areas with a total area of 94,300 ha in line with the national policy to achieve a self-sufficiency target in rice production within the State of Sarawak. These identified areas are Limbang valley and middle Limbang, Batcong/Bakas, Bangai Mumoon, Areas around Sibu, Batang Oya, Batang Igan, Sarikei/Binatang, Daro, Saratok, Roban, Batang Ai/Batang Lupar, Sadong/Krang and Samarakan as shown in

Table 34. The Technical Committee preliminarily assessed soils and land use, engineering aspect, land tenure and population in each identified area.

5. AGRICULTURAL DEVELOPMENT PLAN

5.1 Development Policy and Strategy in Sabah

The agricultural policy under FMP will emphasize the improvement of the identified poverty stricken groups particularly the paddy, coconut and rubber smallholders and the fishermen. The cultivation of new and existing cash crops will be given special emphasis for further improvement of the State's overall balance of payment and further reduction of its dependence on a limited number of foreign-exchange earning commodities. The increase in the total production of food crops and other grains will deeply be regarded to attain self-sufficiency and price stabilization at consumer level. The creation of new employment opportunities in the rural sector will also be given special emphasis.

According to the State's Task Force Report I prepared for Phase I Report of 4MP, the strategies to be employed by the State Government to attain the above-mentioned objectives will continue to be based on new-land and in-situ development by SLDB and FELDA. Intensified utilization of agricultural land will be accelerated through encouragement of double cropping of paddy with provision for irrigation facilities and subsidy for farm input. Assistance in the form of subsidies will be given to encourage rubber smallholders to replant their old moribund rubber with either high yielding or other approved crops. The private sector will also be encouraged to develop new-land for commercial tree crop plantation to boost the volume of primary produce in agriculture sector in the State of Sabah.

5.2 Development Policy and Strategy in Sarawak

In Sarawak, the growing of paddy is the major activity which is done by over 80% of its population belonging to the agricultural and rural sector, while the State's paddy production is still far below its requirement. The agricultural policy under FMP is to work towards achieving self-sufficiency in rice. Another objective is to reduce the over-independence of the smallholders on one particular crop such as paddy and at the same time to create additional sources of income by encouraging the smallholders to diversify their agricultural activities. For the betterment of the poverty-stricken smallholders, the State's prominence and emphasis are given to land development programme aiming at (1) development of suitable agricultural land for the benefits of the people, (2) diversification of agro-based industries from traditional crops such as pepper, rubber and sago for strengthening of the State's economy, and (3) formulation of alternative forms of agricultural development for the landless, shifting cultivators and smallholders.

According to the Phase I Report of 4MP prepared by the State of Sarawak, the strategies to be employed by the State Government to attain the said objectives will continue to be based on undertaking of new-land development schemes on mainly State land and Native Customary land by SLDB and SALCRA, improving of existing paddy fields and reclaiming of new