Table D-3 Soil Criteria for Optimum Crop Growth (1/3)

Crop Group	Soil Criteria								
	Slope	Drainage	Effective Soil Depth	Texture & Structure	Salinity	Depth to Acid Sulphate Layer	Peat Thickness	Stoniness	Nutrient Imbedance
1.	0°-12° (12°-35°)	Imperfect to well (somewhat excessive)	125 cm or more (75-125 cm)	Fine to medium, moderate to well structured, sandy loam or finer textures. (Weak and coarse strong structures)	2 mmhos or less in top 125 cm. (2 mmhos in top 100 cm)	125 cm or more (100-125 cm)	No pest (Up to 25 cm thick)	Up to 25% and uniformly distributed or present below 75 cm depth. (25-75%)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)
2.	0°-12° (12°-20°)	Imperfect to well (Poorly drained with free flowing water and excessive)	100 cm or more (50-100 cm)	Exclude massive clays (massive clays)	2 mmhos or less in top 50 cm. (2 mmhos in top 25 cm)	100 cm or more (75-100 cm)	No pest (Up to 25 cm thickO	Up to 25% and uniformly distributed or present below 75 cm depth. (25-75%)	Exclude excessive trace elements. (Low nutrient-retaining capacity and/or acute nutient deficiencies)
3.	0°-12° (12°-20°)	Imperfect to well (Somewhat excessive)	100 cm or more (50-100 cm)	Fine to medium, moderate to well structured, sandy loam or finer textures. (Weak and coarse strong structures)	2 mmhos or less in top 100 cm. (2 mmhos within 75-100 cm depth)	100 cm or more (75-100 cm)	25 cm or less (25-50 cm)	Up to 25% and uniformly distributed or present below 75 cm depth. (25-75%)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)
4.	0°-12° (12°-20°)	Imperfect to well (Somewhat excessive)	100 cm or more (50-100 cm)	Fine to medium, moderate to well structured, sandy loam or finer textures. (Weak and coarse strong structures)	2 mmhos or less in top 100 cm. (2 mmhos within 75-100 cm depth)	100 cm or more (75-100 cm)	No peat (Up to 25 cm thick)	Up to 25% and uniformly distributed or present below 75 cm depth. (25-75%)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)
5.	0°-12° (12°-35°)	Well to somewhat excessive. (Imperfect)	100 cm or more (50-100 cm)	Exclude structureless sands and clays.	2 mmhos or less in top 100 cm. (2 mmhos within 75-100 cm depth)	100 cm or more (75-100 cm)	No peat (Up to 25 cm thick)	Up to 25% and uniformly distributed or present below 75 cm depth. (25-75%)	Exclude excessive trace elements or low nutrient-retaining capacity. (0.25% Mg. for rubber; acute nutient deficiencies)
6.	0°-6° (6°-12°)	Poor to very poor (Imperfect)	100 cm or more (50-100 cm)	Exclude loamy sands or coarser textures. (Loamy sands or coarser textures)	2 mmhos or less in top 100 cm. (2 mmhos within 75-100 cm depth)	100 cm or more (75-100 cm)	Not limiting	Up to 25% and uniformly distributed or present below 75 cm depth. (25-75%)	Exclude excessive trace elements or low nutient retaining capacity. (acute nutrient deficiencies)
7.	0°-12° (12°-20°)	Imperfect to well (Somewhat excessive)	75 cm or more (50-75 cm)	Fine to medium, moderate to well structured, sandy loam or finer textures. (Weak and coarse strong structures)	2 mmhos or less in top 75 cm. (2 mmhos within 50-75 cm depth)	75 cm or more (50-75 cm)	No peat (Up to 25 cm thick)	Up to 25% and uniformly distributed or present below 75 cm depth. (25-75%)	Exclude excessive trace elements or low nutient retaining capacity. (acute nutrient deficiencies)
8.	0°-12° (12°-20°)	Imperfect to well (Somewhat excessive)	75 cm or more (50-75 cm)	Fine to medium, moderate to well structured, sandy loam or finer textures. (Weak and coarse strong structures)	2 mmhos or less in top 75 cm. (2 mmhos within 50-75 cm depth)	75 cm or more (50-75 cm)	No peat (Up to 25 cm thick)	Up to 10% and uniformly distributed or present below 50 cm depth. (10-50%)	Exclude excessive trace elements or low nutient retaining capacity. (acute nutrient deficiencies)

Remarks: Descriptions in parentheses indicate soil criteria of marginal limits and see Table D-2 on crop group
Source: DOA

Table D-3 Soil Criteria for Optimum Crop Growth (2/3)

Crop Group	Soil Criteria								
	Slope	Drainage	Effective Soil Depth	Texture & Structure	Salinity	Depth to Acid Sulphate Layer	Peat Thickness	Stoniness	Nutrient Imbedance
9.	0°-12° (12°-35°)	Imperfect to well (Somewhat excessive to excessive)	75 cm or more (50-75 cm)	Exclude massive clays (Massive clays)	2 mmhos or less in top 75 cm. (2 mmhos within 50-75 cm depth)	75 cm or more (50-75 cm)	No peat (Up to 25 cm thick)	Up to 25% and uniformly distributed or present below 75 cm depth. (25-75%)	Exclude excessive trace elements. (Low nutrient retaining capacity and/or acute nutrient deficiencies)
10.	0°-12° (12°-20°)	Imprfect to well (Somewhat excessive)	75 cm or more (50-75 cm)	Exclude structureless sands (-)	2 mmhos or less in top 75 cm. (2 mmhos within 50-75 cm depth)	75 cm or more (50-75 cm)	25 cm or less (25-50 cm)	Up to 25% and uniformly distributed or present below 75 cm depth. (25-75%)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)
11.	0°-12° (12°-20°)	Imprfect to well (Somewhat excessive)	75 cm or more (50-75 cm)	Exclude structureless sands and clays.	2 mmhos or less in top 150 cm. (2 mmhos within 125-150 cm depth)	100 cm or more (75-100 cm)	No peat (-)	Up to 25% and uniformly distributed or present below 75 cm depth. (25-75%)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)
12.	0°-12° (12°-20°)	Well (Somewhat excessive to imperfect)	75 cm or more (50-75 cm)	Exclude structureless sands and clays. (-)	2 mmhos or less in top 75 cm. (2 mmhos within 50-75 cm depth)	100 cm or more (75-100 cm)	No peat (-)	Up to 25% and uniformly distributed or present below 75 cm depth. (25-75%)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)
13.	0°-12° (12°-20°)	Well (Somewhat excessive)	75 cm or more (50-75 cm)	Exclude structureless sands and clays. (Structureless sands)	2 mmhos or less in top 75 cm. (2 mmhos within 50-75 cm depth)	100 cm or more (75-100 cm)	No peat (-)	Up to 25% and uniformly distributed or present below 75 cm depth. (25-75%)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)
14.	0°-12° (12°-20°)	Well (Imperfect and somewhat excessive)	50 cm or more (25-50 cm)	Exclude structureless sands and clays. (Structureless sands)	No restriction allowed. (-)	100 cm or more (-)	No peat (-)	No retriction allowed within 50 cm depth. (Stones within 25-50 cm depth)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)
15.	0°-12° (12°-20°)	Well (Imperfect and somewhat excessive)	75 cm or more (50-75 cm)	Exclude massive clays (-)	2 mmhos or less in top 100 cm. (2 mmhos within 75-100 cm depth)	100 cm or more (75-100 cm)	No peat (-)	Up to 25% and uniformly distributed or present below 75 cm depth. (25-75%)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)
16.	0°-6° (6°-12°)	Well (Somewhat excessive)	50 cm or more (25-50 cm)	Exclude structureless sands and clays. (-)	2 mmhos or less in top 50 cm. (2 mmhos within 25-50 cm depth)	50 cm or more (25-50 cm)	Not limiting (-)	No restriction allowed within 50 cm depth. (Stones within 25-50 cm depth)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)
17.	0°-6° (6°-12°)	Imperfect to well (Somewhat excessive)	50 cm or more (25-50 cm)	Exclude structureless sands and clays. (-)	2 mmhos or less in top 75 cm. (2 mmhos within 50-75 cm depth)	75 cm or more (50-75 cm)	25 cm or less (25-50 cm)	No restriction allowed within 50 cm depth. (Stones within 25-50 cm depth)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)
18.	0°-6° (6°-12°)	Imperfect to well (Somewhat excessive)	50 cm or more (25-50 cm)	Exclude structureless sands and clays. (-)	2 mmhos or less in top 50 cm. (2 mmhos within 25-50 cm depth)	50 cm or more (25-50 cm)	Not limiting (-)	No restriction allowed within 50 cm depth. (Stones within 25-50 cm depth)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)

Remarks: Descriptions in parentheses indicate soil criteria of marginal limits and see Table D-2 on crop group
Source: DOA

Table D-3 Soil Criteria for Optimum Crop Growth (3/3)

Crop Group	Soil Criteria								
	Slope	Drainage	Effective Soil Depth	Texture & Structure	Salinity	Depth to Acid Sulphate Layer	Peat Thickness	Stoniness	Nutrient Imbedance
19.	0°-6° (6°-20°)	Imperfect to well (Somewhat excessive)	50 cm or more (25-50 cm)	Exclude structureless sands (Structureless sands)	4 mmhos or less in top 50 cm. (4 mmhos within 25-50 cm depth)	50 cm or more (25-50 cm)	Not limiting (-)	Up to 10% and uniformly distributed or present below 50 cm depth. (>10-50% and/or below 25 cm depth)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)
20.	0°-6° (6°-12°)	Imperfect to well (Somewhat excessive)	50 cm or more (25-50 cm)	Exclude structureless sands and clays. (-)	2 mmhos or less in top 50 cm. (2 mmhos within 25-50 cm depth)	50 cm or more (25-50 cm)	No peat (-)	Up to 10% and uniformly distributed or present below 50 cm depth. (>10-50% and/or below 25 cm depth)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)
21.	0°-6° (6°-20°)	Imperfect to well (Somewhat excessive)	25 cm or more (-)	Not limiting (-)	2 mmhos or less in top 50 cm. (-)	50 cm or more (25-50 cm)	Not limiting (-)	No restriction allowed within 25 cm depth. (Up to 25% if uniformly distributed)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)
22.	0°-6° (6°-12°)	Imperfect to well (Somewhat excessive)	25 cm or more (-)	Exclude structureless sands and clays. (Structureless sands)	4 mmhos or less in top 50 cm. (4 mmhos within 25-50 cm depth)	50 cm or more (25-50 cm)	No peat (-)	No restriction allowed within 25 cm depth. (Up to 25% if uniformly distributed)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)
23.	0°-6° (6°-20°)	Imperfect to well (Poor and somewhat excessive to excessive)	25 cm or more (-)	Exclude structureless sands and clays. (Structureless sands and clays)	4 mmhos or less in top 50 cm. (4 mmhos within 25-50 cm depth)	50 cm or more (0-50 cm)	Not limiting (-)	No restriction allowed within 25 cm depth. (Up to 25% if uniformly distributed)	Exclude excessive trace elements. (Low nutrient retaining capacity and/or acute nutrient deficiencies)
24.	0°-2° (-)	Drainage control necessary.	25 cm or more (-)	Sandy clay or finer textures. (Sandy clay loam or coarser textures)	4 mmhos or less in top 25 cm. (-)	25 cm or more (-)	No peat (-)	No restriction allowed within 25 cm depth. (Up to 25% if uniformly distributed)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)
25.	0°-12° (12°-20°)	Poor to well (Somewhat excessive)	25 cm or more (-)	Exclude structureless sands. (Structureless sands)	4 mmhos or less in top 25 cm. (-)	25 cm or more (-)	Not limiting (-)	No restriction allowed within 25 cm depth. (Up to 25% if uniformly distributed)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)
26.	0°-12° (12°-20°)	Imperfect to well (Somewhat excessive)	25 cm or more (-)	Exclude structureless sands. (Structureless sands)	4 mmhos or less in top 25 cm. (-)	25 cm or more (-)	No peat (-)	No restriction allowed within 25 cm depth. (Up to 25% if uniformly distributed)	Exclude excessive trace elements or low nutrient retaining capacity. (acute nutrient deficiencies)

Remarks: Descriptions in parentheses indicate soil criteria of marginal limits and see Table D-2 on crop group
Source: DOA

Table D-4 Soil Suitability Classes of Non-granary Irrigation Schemes in Perlis

State : Perlis

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
PR001	Ban Seberang Ramai	1	100	2dt
PR002	Ban Bukit Tok Poh	62	100	3d(t)
PR003	Ban Wang Bintong	1/62	80/20	2dt/3d(t)
PR004	Tali Air Bt. Pahat Kanan	29	100	2d
PR005	Sg. Siran	100	100	2t
PR006	Alur Baroh	29/100	50/50	2d/2t
PR007	Pdg. Melangit	107/108	75/25	1d/3c(dt)
PR008	Alor Sena	29/100	45/55	2d/2t
PR009	Bukit Tau	100	100	2t
PR010	Kubang Badak	29/100	65/35	2d/2t
PR011	Kg. Belukar	62/119	50/50	3d(t)/2Dt
PR012	Kg. Darat/Tok Daboi	29/66	75/25	2DnT/2dt
PR013	Sg. Repoh	100	100	2t
PR014	Titi Tinggi	66	100	2dt
PR015	Pdg. Siding	29/100	65/35	2d/2t
PR016	Kok Klang	66	100	2dt
PR017	Kuala Tunggang	29/100	50/50	2d/2t
PR018	Alor Melaka	29/100	50/50	2d/2t
PR019	Sg. Santan	29/100	50/50	2d/2t
PR020	Pdg. Telela	29/100	60/40	2d/2t
PR021	Kg. Parit	28/66	50/50	2DnT/2dt
PR022	Sg.Siran/Jln.Abi/Kurong Batang	29/100	50/50	2d/2t

Remarks: Soil suitability class; Refer to Table D-1

Soil series
1; Akob
28; Holyrood
29; Hutan
62; Local alluvium
66; Lunas
100; Sembrin
107; Sitiawan
108; Sogomana
119; Telemong

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-5 Soil Suitability Classes of Non-granary Irrigation Schemes in Kedah (1/3)

State : Kedah (1/3)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
KH001	Bandar Baharu	11	100	2dt
KH002	Serdang Bt. 16	119	100	2Dt
KH003	Kilang Bt/Kg. Ulu	119	100	2Dt
KH004	Serdang Batu 18	119	100	2Dt
KH005	Sg. Tengas	119	100	2Dt
KH006	Sg. Taka	119	100	2Dt
KH007	Kg. Berjaya	11	100	2dt
KH008	Sidam Kanan	28/66	95/5	2DnT/2dt
KH009	Sg. Seluang	28/66	75/25	2DnT/2dt
KH010	Ulu Mahang	119	100	2Dt
KH011	Bendang Sena	119	100	2DT
KH012	Jemerli	1/119	65/35	2dt/2Dt
KH013	Otak Kerbau	1	100	2dt
KH014	Kulim	119	100	2DT
KH015	Terat Batu	119	100	2Dt
KH016	Selarung Panjang	1/119	50/50	2dt/2Dt
KH017	Merbau Pulas	119	100	2DT
KH018	Padang Meha/Pagar Museh	119	100	2Dt
KH019	Kg. Lobak	1	100	2dt
KH020	Titi Karangan	1/119	15/85	2dt/2Dt
KH021	Pulai	1	100	2dt
KH022	Kg. Iboi	119	100	2Dt
KH023	Kg. Tawar	119	100	2Dt
KH024	Simpang Empat	119	100	2DT
KH025	Ulu Bakai	1	100	2dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series
1; Akob
11; Briah
17; Chengai
28; Holyrood
29; Hutan
40; Kampong Pusu
62; Local alluvium
66; Lunas
100; Sembrin
119; Telemong

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-5 Soil Suitability Classes of Non-granary Irrigation Schemes in Kedah (2/3)

State : Kedah (2/3)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
KH026	Kg. Badang	62	100	3d(t)
KH027	Kg. Luar	119	100	2DT
KH028	Ulu Sedim/Si Puteh	119	100	2Dt
KH029	Landak	119	100	2Dt
KH030	Kg. Mempelam	1	100	2dt
KH031	Sg. Tiak	119	100	2Dt
KH032	Tg. Pari	119	100	2DT
KH033	Alor Sena	62	100	3d(t)
KH034	Bukit Tau	119	100	2DT
KH035	Sidam Kiri	119	100	2Dt
KH036	Kg. Belukar	40	100	2dt
KH037	Sg. Gelam	119	100	2Dt
KH038	Sg. Repoh	17	100	2d
KH039	Titi Tinggi	17	100	2d
KH040	Tandop Pekan Merbok	119	100	2Dt
KH041	Kota II	40	100	2dt
KH042	Pantai Prai/Serukam	119	100	2DT
KH043	Kemumbong	119	100	2DT
KH044	Lubok Kiab	119	100	2DT
KH045	Kg. Parit	62	100	3d(T)
KH046	Tg. Sik	62	100	3d(T)
KH047	Tg. Besar	62	100	3d(T)
KH048	Sg. Teloi	62	100	3d(T)
KH049	Padang Cicak	62	100	3d(T)
KH050	Sg. Cepir	119	100	2DT

Remarks: Soil suitability class; Refer to Table D-1

Soil series
1; Akob
11; Briah
17; Chengai
28; Holyrood
29; Hutan
40; Kampong Pusu
62; Local alluvium
66; Lunas
100; Sembrin
119; Telemong

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-5 Soil Suitability Classes of Non-granary Irrigation Schemes in Kedah (3/3)

State : Kedah (3/3)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
KH051	Gua Ginu	100	100	2t
KH052	Nawa Gajah Mati	100	100	2t
KH053	Binjal	119	100	2Dt
KH054	Lembah Bata Phase I	119	100	2Dt
KH055	Sg. Pering	100	100	2t
KH056	Che Kedo/Putat	29/100	5/95	2d/2t
KH057	Sg. Gelong	1/119	15/85	2dt/2Dt
KH058	Lembah Bata II	119	100	2Dt
KH059	Bukit Tau	119	100	2DT
KH060	Kubang Badak	62	100	3d(T)
KH061	Kurong Hitam	119	100	2DT
KH062	Kg. Darat/Tok Daboi	100	100	2t
KH063	Paya Rawa I	100	100	2t
KH064	Titi Tinggi	119	100	2Dt
KH065	Sg. Lampam/Rambai	119	100	2Dt
KH066	Kg. Ruat	40	100	2dt
KH067	Sinkir, Sg. Pial	17	100	2d
KH068	Bakar Bata	40	100	2dt
KH069	Bakong/Lubok Boi	40	100	2dt
KH070	Pdg. Gaung	119	100	2Dt
KH071	Bukit Kemboja	119	100	2Dt
KH072	Pdg. Matsirat,Limbong,Raggut	119	100	2Dt
KH073	Terusan Seimbang Sg.Tok Peteri	119	100	2Dt
KH074	Kg. Kok	119	100	2Dt
KH075	Pdg. Kerbau III	119	100	2Dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series
1; Akob
11; Briah
17; Chengai
28; Holyrood
29; Hutan
40; Kampong Pusu
62; Local alluvium
66; Lunas
100; Sembrin
119; Telemong

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-6 Soil Suitability Classes of Non-granary Irrigation Schemes in Pulau Pinang

State : Pulau Pinang

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
PP001	Pinang Tunggal	1	100	2dt
PP002	Sg. Jarak	1/62	75/25	2dt/3d(t)
PP003	Tasek Gelugor	1	100	2dt
PP004	Jarak Tengah	1	100	2dt
PP005	Kuala Tasek	1	100	2dt
PP006	Sg. Kulim	17	100	2d
PP007	Sg. Kulim	17	100	2d
PP008	Sg. Renjau	1	100	2dt
PP009	Juru	40	100	2dt
PP010	Machang Bubok	1	100	2dt
PP011	Tasek Junjung	1	100	2dt
PP012	Alma			
PP017	Fasa I & IIA/IIB, Sg. Burong			
PP018	Padang Kumunting			

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Akob
17; Chengai
40; Kampong Pusu
62; Local alluvium

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-7 Soil Suitability Classes of Non-granary Irrigation Schemes in Perak (1/3)

State : Perak (1/3)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
PK001	Batu Kurau	1	100	2dt
PK002	Air Kuning	1	100	2dt
PK003	Jelai dan Tambahan	1	100	2dt
PK004	Pantai Besar	1	100	2dt
PK005	Jemerang Setar	1	100	2dt
PK006	Bukit Gantang	1	100	2dt
PK007	Jebong	78	100	2dt
PK008	Bukit Bertam	1	100	2dt
PK009	Beruas/Tambahan	119	100	2Dt
PK010	Dendang A.	119	100	2Dt
PK011	Dendang B	119	100	2Dt
PK012	Sg. Segar	62	100	3d(t)
PK013	Sg. Chop	1	100	2dt
PK014	Sg. Simpol Kiri	1	100	2dt
PK015	Sg. Rambutan	1	100	2dt
PK016	Sg. Damak	1	100	2dt
PK017	Sg. Berdarah	1	100	2dt
PK018	Sg. Nor	1	100	2dt
PK019	Sg. Garok	1	100	2dt
PK020	Batu 3,Kg.Medan	1	100	2dt
PK021	Gua Petai	1	100	2dt
PK022	Bukit Torak/Lubuk Sengga	1	100	2dt
PK023	Tapah Hulu	1	100	2dt
PK024	Bukit Tunggal	1/119	45/55	2dt/2Dt
PK025	Belukar Hantu	1	100	2dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Akob
62; Local alluvium
78; Organic clay and muck, not suitable for farm mechanization
119; Telemong

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-7 Soil Suitability Classes of Non-granary Irrigation Schemes in Perak (2/3)

State : Perak (2/3)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
PK026	Bdg. Jeliang	1	100	2dt
PK027	Ujib	1	100	2dt
PK028	Padang Rengas	1	100	2dt
PK029	Bdg. Senggang	1	100	2dt
PK030	Seterus	1	100	2dt
PK031	Bdg. Ketiou	1	100	2dt
PK032	Beluru	1	100	2dt
PK033	Bendang Lempar	1	100	2dt
PK034	Trosor	1	100	2dt
PK035	Kg. Ngor	1	100	2dt
PK036	Berala	1	100	2dt
PK037	Kroh Hulu	1	100	2dt
PK038	Bendang Talang	1	100	2dt
PK039	Bendang Ulu Kenas	119	100	2Dt
PK040	Kota Lama Kiri	1	100	2dt
PK041	Saiong	1	100	2dt
PK042	Chepias	119	100	2DT
PK043	Jalong	1	100	2dt
PK044	Bendang Kuala Dal	1	100	2dt
PK045	Sauk	1	100	2dt
PK046	Lenggong	1	100	2dt
PK047	Sumpitan	1	100	2dt
PK048	Bendang Kg. Padang Gerik	1	100	2dt
PK049	Gelok	1	100	2dt
PK050	Bendang Kg. Kerunai	1	100	2dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Akob
62; Local alluvium
78; Organic clay and muck, not suitable for farm mechanization
119; Telemong

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-7 Soil Suitability Classes of Non-granary Irrigation Schemes in Perak (3/3)

State : Perak (3/3)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
PK051	Bendang Pdg. Setang Grik	1	100	2dt
PK052	Bendang Kg.Padang Kunyit Gerik	1	100	2dt
PK053	Bendang Kg.Ulu Kenderong Gerik	119	100	2DT
PK054	Bendang Kg. Bonggor Gerik	1	100	2dt
PK055	Seberang Perak Peringkat1&Tam.	1/119	5/95	2dt/2DT
PK056	Bota/Lambor	1/119	15/85	2dt/2DT
PK057	Senin	119	100	2Dt
PK058	Lambor kiri	1/119	10/90	2dt/2Dt
PK059	Parit Bukit Cupak & Merua	119	100	2Dt
PK060	Changkat Jong	62	100	3d(t)
PK061	Ulu Kuang	1	100	2dt
PK062	Ulu Chemor	1	100	2dt
PK063	Sg. Jernang	1	100	2dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Akob
62; Local alluvium
78; Organic clay and muck, not suitable for farm mechanization
119; Telemong

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-8 Soil Suitability Classes of Non-granary Irrigation Schemes in Selangor

State : Selangor

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
SG001	Sg. Buloh	119	100	2Dt
SG002	Sg. Air Hitam	119	100	2DT
SG003	Kg. Batu 30	119	100	2Dt
SG004	Kg. Kalong Tengah	119	100	2Dt
SG005	Kuang	119	100	2Dt
SG006	Jalan Enam Kaki	1/119	15/85	2dt/2Dt
SG007	Batu 19 3/4	119	100	2Dt
SG008	Kuala Lui	1/119	10/90	2dt/2Dt
SG009	Sesapan Bt Minangkabau	1/119	10/90	2dt/2Dt
SG010	Beranang II	119	100	2Dt
SG011	Bukit Kepong	1/119	15/85	2dt/2Dt
SG012	Paya Lebar	119	100	2Dt
SG013	Sg. Rinching Hilir	1/119	65/35	2dt/2Dt
SG014	Kuala Pajam	1/119	15/85	2dt/2Dt
SG015	Sg. Merab	119	100	2Dt
SG016	Bt. 17, Dusun Tua	119	100	2Dt
SG017	Sg. Panjang	78	100	3t(d)

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Akob
78; Organic clay and muck, not suitable for farm mechanization
119; Telemong

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-9 Soil Suitability Classes of Non-granary Irrigation Schemes in Negeri Sembilan (1/7)

State : Negeri Sembilan (1/7)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
NS001	Sri Menanti	1/119	5/95	2dt/2Dt
NS002	Terachi Batu 14	1/119	5/95	2dt/2Dt
NS003	Inas	119	100	2Dt
NS004	Ampang Jeram	119	100	2Dt
NS005	Sg. Muar I & II	1/119	5/95	2dt/2Dt
NS006	Kuala Nuri	119	100	2Dt
NS007	Gunong Pasir	1/119	15/85	2dt/2Dt
NS008	Peraku	1/119	15/85	2dt/2Dt
NS009	Sg. Pilah	1/119	25/75	2dt/2Dt
NS010	Tanjong Ipoh	1/119	5/95	2dt/2Dt
NS011	Padang Biawas	1/119	10/90	2dt/2Dt
NS012	Terachi Batu 17	1/119	55/45	2dt/2Dt
NS013	Kuala Jempol I	28/66	75/25	2DnT/2dt
NS014	Kg. Ulu Parit	1/119	70/30	2dt/2DT
NS015	Kuala Jempol II	28	100	2DnT
NS016	Kg. Cegor	1/119	15/85	2dt/2Dt
NS017	Galau	119	100	2Dt
NS018	Serting Ilir	1/119	10/90	2dt/2Dt
NS019	Ulu Pilah/Gachong	1/119	35/65	2dt/2Dt
NS020	Tanjong Juan	1/119	10/90	2dt/2Dt
NS021	Ulu Inas	119	100	2Dt
NS022	Kg. Tanggai I & II	1/119	5/95	2dt/2Dt
NS023	Kuala Juaseh	119	100	2Dt
NS024	Cherian	119	100	2Dt
NS025	Ulu Jempol I-V	1/119	5/95	2dt/2Dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Akob
66; Lunas
28; Holyrood
62; Local alluvium
40; Kampong Pusu
119; Telemong
82; Peat, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-9 Soil Suitability Classes of Non-granary Irrigation Schemes in Negeri Sembilan (2/7)

State : Negeri Sembilan (2/7)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
NS026	Selaru	1/119	40/60	2dt/2Dt
NS027	Ulu Bendol	1/119	30/70	2dt/2Dt
NS028	Pelangai I-III	1/119	5/95	2dt/2Dt
NS029	Buyau	1/119	25/75	2dt/2Dt
NS030	Kg. Nuri	119	100	2Dt
NS031	Kg. Tumang	1/119	10/90	2dt/2Dt
NS032	Kg. Gamin	119	100	2DT
NS033	Ulu Ghalib	1	100	2dt
NS034	Sg. Lui	119	100	2DT
NS035	Bayai	119	100	2Dt
NS036	Ulu Bemban	119	100	2DT
NS037	Ulu Melang	1/62/119	40/25/35	2dt/3d(t)/2Dt
NS038	Air Mawang	1/119	35/65	2dt/2Dt
NS039	Rembang Panas	119	100	2Dt
NS040	Kepis	119	100	2Dt
NS041	Sg. Talan Panjang	1	100	2dt
NS042	Juaseh Tengah	1/119	20/80	2dt/2Dt
NS043	Kg. Yu I & II	119	100	2Dt
NS044	Kg. Birah	119	100	2Dt
NS045	Anak Air Kata	1/119	10/90	2dt/2Dt
NS046	Ulu Sungkak	119	100	2Dt
NS047	Sri Jemapoh	119	100	2Dt
NS048	Serting Ulu Batu 43	119	100	2Dt
NS049	Ulu Punggul	1/119	20/80	2dt/2Dt
NS050	Majau	119	100	2Dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Akob
66; Lunas
28; Holyrood
62; Local alluvium
40; Kampong Pusu
119; Telemong
82; Peat, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-9 Soil Suitability Classes of Non-granary Irrigation Schemes in Negeri Sembilan (3/7)

State : Negeri Sembilan (3/7)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
NS051	Betong	1/62/119	20/15/65	2dt/3d(t)/2Dt
NS052	Merual Jerneh	1	100	2dt
NS053	Kuala Klawang	1/119	10/90	2dt/2DT
NS054	Sg. Klawang	1/119	5/95	2dt/2DT
NS055	Durian Gasing	119	100	2DT
NS056	Ulu Klawang	119	100	2DT
NS057	Peradong	119	100	2DT
NS058	Ulu Jelebu	1/119	5/95	2dt/2DT
NS059	Triang Hilir	119	100	2DT
NS060	Sg. Jerang	119	100	2DT
NS061	Kg. Gagu	119	100	2DT
NS062	Sg. Relai	119	100	2DT
NS063	Kg. Renal	119	100	2DT
NS064	Kg. Seperi	119	100	2DT
NS065	Kg. Geylang	119	100	2DT
NS066	Kg. Petasseh	119	100	2DT
NS067	Kg. Puom	119	100	2DT
NS068	Air Baning	119	100	2DT
NS069	Kg. Lekai	119	100	2DT
NS070	Kg. Kemin	119	100	2DT
NS071	Rantau Pening/Solok	119	100	2DT
NS072	Pantai	119	100	2Dt
NS073	Kg. Daching	119	100	2DT
NS074	Labu Bt. 10	119	100	2DT
NS075	Kg. Kombok	119	100	2DT

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Akob
66; Lunas
28; Holyrood
62; Local alluvium
40; Kampong Pusu
119; Telemong
82; Peat, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-9 Soil Suitability Classes of Non-granary Irrigation Schemes in Negeri Sembilan (4/7)

State : Negeri Sembilan (4/7)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
NS076	Kg. Mantin Dalam	119	100	2DT
NS077	Batang Benar	1/119	30/70	2dt/2DT
NS078	Labu Bt.9	119	100	2DT
NS079	Sg. Tarun	119	100	2DT
NS080	Kg. Chelogeh	119	100	2Dt
NS081	Batang Penar	119	100	2DT
NS082	Kayu Ara	119	100	2DT
NS083	Ulu Beranang	119	100	2DT
NS084	Kg. Lenggeng	1/119	10/90	2dt/2DT
NS085	Kg. Jijan	119	100	2DT
NS086	Kg. Siliau	119	100	2DT
NS087	Labu Hilir	119	100	2DT
NS088	Kg. Sogoh	1	100	2dt
NS089	Kg. Lambar	119	100	2DT
NS090	Kg. Kering I	119	100	2DT
NS091	Labu Bt. 7 1/2	119	100	2DT
NS092	Kg. Belangkan	119	100	2DT
NS093	Kg. Bemban	119	100	2DT
NS094	Kg. Gebok	119	100	2Dt
NS095	Kg. Junjun	119	100	2DT
NS096	Kg. Kering II	119	100	2Dt
NS097	Lekong Karpal	119	100	2Dt
NS098	Kg. Machang Hulu	119	100	2DT
NS099	Kg. Jelatok	119	100	2Dt
NS100	Kg. Kanchong	1/119	15/85	2dt/2DT

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Akob
66; Lunas
28; Holyrood
62; Local alluvium
40; Kampong Pusu
119; Telemong
82; Peat, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-9 Soil Suitability Classes of Non-granary Irrigation Schemes in Negeri Sembilan (5/7)

State : Negeri Sembilan (5/7)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
NS101	Solok Bangkong	1/119	50/50	2dt/2Dt
NS102	Ulu Sepri	119	100	2Dt
NS103	Tiga Nenek	1/119	60/40	2dt/2Dt
NS104	Sg. Lalah/Sg. Batu	119	100	2Dt
NS105	Gadong	119	100	2Dt
NS106	Mampong	1/119	15/85	2dt/2Dt
NS107	Penajis	1/119	30/70	2dt/2Dt
NS108	Kendong I-II	1/119	30/70	2dt/2Dt
NS109	Legong Hilir	1/119	50/50	2dt/2Dt
NS110	Ampang Serong	1/119	15/85	2dt/2Dt
NS111	Ampang Limau	119	100	2Dt
NS112	Chembong	119	100	2Dt
NS113	Ulu Gaing	1/119	15/85	2dt/2Dt
NS114	Air Panas	1/119	50/50	2dt/2Dt
NS115	Kg. Pilin	40	100	2dt
NS116	Sg. Layang	1/119	5/95	2dt/2Dt
NS117	Miku	119	100	2DT
NS118	Ulu Chembong	119	100	2Dt
NS119	Kundur	1/119	10/90	2dt/2Dt
NS120	Kg. Gating	119	100	2Dt
NS121	Chengkau Ulu	1	100	2dt
NS122	Kg. Lada	1/119	50/50	2dt/2Dt
NS123	Ulu Gadong	119	100	2Dt
NS124	Semerbok	1/119	35/65	2dt/2Dt
NS125	Anak Air Tontong	119	100	2Dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Akob
28; Holyrood
40; Kampong Pusu
66; Lunas
62; Local alluvium
119; Telemong
82; Peat, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-9 Soil Suitability Classes of Non-granary Irrigation Schemes in Negeri Sembilan (6/7)

State : Negeri Sembilan (6/7)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
NS126	Sg. Ibor	119	100	2Dt
NS127	Senama	1/119	10/90	2dt/2Dt
NS128	Ulu Semin	1/119	50/50	2dt/2Dt
NS129	Pilin Tengah	1/119	55/45	2dt/2Dt
NS130	Ulu Padang Besar	1/119	25/75	2dt/2Dt
NS131	Sawah Raja	1/119	40/60	2dt/2Dt
NS132	Kg. Chuai	119	100	2DT
NS133	Batang Nyamor	119	100	2Dt
NS134	Bongek	1/119	10/90	2dt/2Dt
NS135	Kundur	1/119	10/90	2dt/2Dt
NS136	Kundur Hilir	1/119	15/85	2dt/2Dt
NS137	Pulau Mampat	119	100	2Dt
NS138	Repah	119	100	2Dt
NS139	Tampin Tengah	119	100	2Dt
NS140	Ulu Repah	119	100	2Dt
NS141	Ulu Gemencheh	119	100	2Dt
NS142	Sg. Dua	1	100	2dt
NS143	Kg. Londah	1/119	60/40	2dt/2Dt
NS144	Kg. Jelawai	1	100	2dt
NS145	Kg. Bangkahulu	1/119	65/35	2dt/2Dt
NS146	Gemencheh Lama	119	100	2Dt
NS147	Kg. Pondoi	119	100	2Dt
NS148	Sg. Salah/Sg. Jernih	119	100	2Dt
NS149	Kg. Keru	119	100	2Dt
NS150	Batang Rokan	119	100	2Dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Akob
28; Holyrood
40; Kampong Pusu
66; Lunas
62; Local alluvium
119; Telemong
82; Peat, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-9 Soil Suitability Classes of Non-granary Irrigation Schemes in Negeri Sembilan (7/7)

State : Negeri Sembilan (7/7)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
NS151	Ulu Tebong	119	100	2Dt
NS152	Sg. Kelamah	1	100	2dt
NS153	Jimah	119	100	2Dt
NS154	Sg. Raya	82	5/95	2dn(o)/3D(n)
NS155	Linggi	1/62	90/10	2dt/3d(t)
NS156	Tampin Kanan	119	100	2DT

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Akob
28; Holyrood
40; Kampong Pusu
66; Lunas
62; Local alluvium
119; Telemong
82; Peat, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-10 Soil Suitability Classes of Non-granary Irrigation Schemes in Melaka (1/3)

State : Melaka (1/3)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
MA001	Air Paabas	119	100	2Dt
MA002	Air Hitam Lendu	119	100	2Dt
MA003	Cerana Puteh	1/119	5/95	2dt/2Dt
MA004	Durian Daun	119	100	2Dt
MA005	Kemuning	119	100	2DT
MA006	Kuala Sungga	119	100	2Dt
MA007	Kg. Lakok, Pekan Masjid Tanah	1/119	40/60	2dt/2Dt
MA008	Melaka Pindah	119	100	2Dt
MA009	Melekek	119	100	2Dt
MA010	Masjid Tanah	119	100	2Dt
MA011	Parit Melana	119	100	2Dt
MA012	Padang Sebang 1 & 11	1/119	15/85	2dt/2Dt
MA013	Rantau Panjang	119	100	2Dt
MA014	Ramuan Cina Besar	40	100	2dt
MA015	Ramuan Cina Kechil	40	100	2dt
MA016	Rembia	119	100	2Dt
MA017	Solok Melaka Pindah	119	100	2Dt
MA018	Solok Jementeng	119	100	2Dt
MA019	Simpang Empat	1/119	5/95	2dt/2Dt
MA020	Solok Kemus	119	100	2Dt
MA021	Solok Padang Keladi	119	100	2Dt
MA022	Solok Duku	97	100	2dt(a)
MA023	Sg. Baru Llir	97	100	2dt(a)
MA024	Sg. Siput	1	100	2dt
MA025	Sg. Buloh	119	100	2Dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Melaka
40; Kampong Pusu
61; Linau, not suitable for farm mechanization
62; Local alluvium
66; Lunas
78; Organic clay and muck, not suitable for farm mechanization
97; Sedu, not suitable for farm mechanization
119; Telemong, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-10 Soil Suitability Classes of Non-granary Irrigation Schemes in Melaka (2/3)

State : Melaka (2/3)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
MA026	Tanjung Bidara	66	100	2dt
MA027	Bachang	97	100	2dt(a)
MA028	Batu Berendam	1/62	85/15	2dt/3d(t)
MA029	Durian Tunggal	1/62	60/40	2dt/3d(t)
MA030	Duyong	97	100	2dt(a)
MA031	Parit China	97	100	2dt(a)
MA032	Paya Rumput Alor Gajah	97	100	2dt(a)
MA033	Paya Rumput, Sungai Udang	97	100	2dt(a)
MA034	Sungai Putat	61/97	5/95	4dt(a)/2dt(a)
MA035	Sungai Udang	97	100	2dt(a)
MA036	Tangga Batu	97	100	2dt(a)
MA037	Tanjung Minyak	97	100	2dt(a)
MA038	Air Panas	1/62/119	10/10/80	2dt/3d(t)/2Dt
MA039	Bukit Senggeh	119	100	2Dt
MA040	Chabau	1/119	50/50	2dt/2Dt
MA041	Chohong	119	100	2Dt
MA042	Jasin 1 & 2	1/119	35/65	2dt/2Dt
MA043	Kemengkang	119	100	2Dt
MA044	Lembah Nyalas	119	100	2Dt
MA045	Lubok Buaya	1/62/119	40/40/20	2dt/3d(t)/2Dt
MA046	Merlimau	97	100	2dt(a)
MA047	Nyalas Gapis	119	100	2Dt
MA048	Parit Keliling	119	100	2Dt
MA049	Selandar 1 & 2	62/119	25/75	3d(T)/2DT
MA050	Sempang Asahan	119	100	2Dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Melaka
40; Kampong Pusu
61; Linau, not suitable for farm mechanization
62; Local alluvium
66; Lunas
78; Organic clay and muck, not suitable for farm mechanization
97; Sedu, not suitable for farm mechanization
119; Telemong, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-10 Soil Suitability Classes of Non-granary Irrigation Schemes in Melaka (3/3)

State : Melaka (3/3)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
MA051	Sempang Rim	119	100	3D(T)
MA052	Tambak Merlang	119	100	2Dt
MA053	Telok Rimba	119	100	2Dt
MA054	Umbai Serkam	78	30/55/15	2dt/3t(a)/4dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Melaka
40; Kampong Pusu
61; Linau, not suitable for farm mechanization
62; Local alluvium
66; Lunas
78; Organic clay and muck, not suitable for farm mechanization
97; Sedu, not suitable for farm mechanization
119; Telemong, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-11 Soil Suitability Classes of Non-granary Irrigation Schemes in Johor

State : Johor

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
JR001	Sg. Balang	40	100	2dt
JR002	Ulu Benut	1	100	2dt
JR003	Kahang	62	100	3d(t)
JR004	Padang Endau	11/78	80/20	2dt/3t(a)
JR005	Lukut	119	100	2Dt
JR006	Sagil	78	100	3t(d)
JR007	Sawah Bahru	62	100	3d(t)
JR008	Juasseh	62	100	3d(t)
JR009	Tenang	62	100	3d(t)
JR010	Jementah	66	100	2dt
JR011	Kebun Bahru	119	100	2Dt
JR012	Kesang Gate	11	100	3d(t)
JR013	Tangkak	119	100	2Dt
JR014	Kesang Tasik	11	100	2dt
JR015	Kurnia Sakti	11	100	3d(t)
JR016	Pulau Penarik	11	100	3d(t)
JR017	Sg. Ring	28	100	2DnT
JR018	Teluk Rimba	11	100	2dt
JR019	Dengku	1	100	2dt
JR020	Liang Batu	1	100	2dt
JR021	Serom I	11	100	2dt
JR022	Sabak Sena	78	100	2dt
JR023	Telok Bakong	11	100	2dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Akob
11; Briah
28; Holyrood
40; Kampong Pusu
62; Local alluvium
66; Lunas
119; Telemong
78; Organic clay and muck, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-12 Soil Suitability Classes of Non-granary Irrigation Schemes in Pahang (1/12)

State : Pahang (1/12)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
PH001	Ampang	62	100	3d(t)
PH002	Paya Angut	62	100	3d(t)
PH003	Ara, Kerdau	62	100	3d(t)
PH004	Angut Ulu, Jenderak	62	100	3d(t)
PH005	Alur Lintah	62	100	3d(t)
PH006	Atok I and II	119	100	2Dt
PH007	Ajai	1	100	2dt
PH008	Aur Gading	119	100	2Dt
PH009	Bungor	62	100	3d(t)
PH010	Paya Beruas	95	100	4dt
PH011	Belimbing	62	100	3d(t)
PH012	Beluru	40	100	2dt
PH013	Bintang	1	100	2dt
PH014	Bintang Hulu	1	100	2dt
PH015	Besar Tualang	1	100	2dt
PH016	Busut Jin	62	100	3d(t)
PH017	Batu Bor	1	100	2dt
PH018	Bangau Parit	1	100	2dt
PH019	Berhala Kapas	62	100	3d(t)
PH020	Biut, Jenderak	62	100	3d(t)
PH021	Paya Besar, Lipat Kajang	62	100	3d(t)
PH022	Banir	1	100	2dt
PH023	Besar Mengkarak	62	100	3d(t)
PH024	Bangau	1	100	2dt
PH025	Besar Lebak	62	110	3d(t)

Remarks: Soil suitability class; Refer to Table D-1

Soil series
1; Akob
11; Briah
40; Kampong Pusu
62; Local alluvium
66; Lunas
82; Peat, not sutiable for farm mechanization
95; Rusila
119; Telemong
78; Organic clay and muck, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-12 Soil Suitability Classes of Non-granary Irrigation Schemes in Pahang (2/12)

State : Pahang (2/12)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
PH026	Paya Batu	1	100	2dt
PH027	Besar Bohor	82	100	3d(no)
PH028	Badok	1	100	2dt
PH029	Baroh	62	100	3d(t)
PH030	Kg. Belungu	1	100	2dt
PH031	Bakoh, Kerdau	62	100	3d(t)
PH032	Beringin	62	100	3d(t)
PH033	Batu Hampar	62	100	3d(t)
PH034	Betong	62	100	3d(T)
PH035	Bkt. Dinding	62	100	3d(T)
PH036	Belimbing	62	100	3d(t)
PH037	Batu Gajah	62	100	3d(t)
PH038	Bharu Lama	62	100	3d(t)
PH039	Paya Bharu Stg. 1	62	100	3d(t)
PH040	Batu Talam	1	100	2dt
PH041	Bukit Gambut	1	100	2dt
PH042	Paya Budu	119	100	2Dt
PH043	Bandar	119	100	2Dt
PH044	Bapong	119	100	2Dt
PH045	Paya Besar	119	100	2Dt
PH046	Cik Ali	62	100	3d(t)
PH047	Chempaka	62	100	3d(t)
PH048	Cendor	62	100	3d(t)
PH049	Chukang Paku	1	100	2dt
PH050	Chebong	1	100	2dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Akob
11; Briah
40; Kampong Pusu
62; Local alluvium
66; Lunas
82; Peat, not sutiable for farm mechanization
95; Rusila
119; Telemong
78; Organic clay and muck, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-12 Soil Suitability Classes of Non-granary Irrigation Schemes in Pahang (3/12)

State : Pahang (3/12)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
PH051	Caruk Murun	62	100	3d(t)
PH052	Chenua	1	100	2dt
PH053	Cherlang	119	100	2Dt
PH054	Chin	119	100	2Dt
PH055	Chemato	119	100	2Dt
PH056	Cherba	1	100	2dt
PH057	Darat Sanggang	1	100	2dt
PH058	Darat Sir Kuala/Ulu	62	100	3d(t)
PH059	Dehilir	1	100	2dt
PH060	Dedalu	1	100	2dt
PH061	Paya Dalam	1	100	2dt
PH062	Paya Dong/Durian Sebatang	1	100	2dt
PH063	Dusun	1	100	2dt
PH064	Embun	62	100	3d(t)
PH065	Gunting	1	100	2dt
PH066	Gemayah	62	100	3d(t)
PH067	Ganchong	62	100	3d(t)
PH068	Gantok	62	100	3d(t)
PH069	Guai dan Merbau	62	100	3d(t)
PH070	Gunong, Jenderak	1	100	2dt
PH071	Gertak Keladan	1	100	2dt
PH072	Gajah Mati, Jenderak	62	100	3d(t)
PH073	Geduai, Jenderak	62	100	3d(t)
PH074	Gajah Mati	62	100	3d(t)
PH075	Paya Gintong/Sokti	62	100	3d(t)

Remarks: Soil suitability class; Refer to Table D-1

Soil series
1; Akob
11; Briah
40; Kampong Pusu
62; Local alluvium
66; Lunas
82; Peat, not sutiable for farm mechanization
95; Rusila
119; Telemong
78; Organic clay and muck, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-12 Soil Suitability Classes of Non-granary Irrigation Schemes in Pahang (4/12)

State : Pahang (4/12)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
PH076	Gumai	62	100	3d(t)
PH077	Gali Tengah	1/119	35/65	2dt/2Dt
PH078	Hilir	1	100	2dt
PH079	Iman Sulong	62	100	3d(t)
PH080	Jerangan	62	100	3d(t)
PH081	Jaapan Keladi, Jenderak	62	100	3d(t)
PH082	Jerangsang	62	100	3d(t)
PH083	Joor	119	100	2DT
PH084	Jelutung	62	100	3d(t)
PH085	Janda Baik Hilir	119	100	2Dt
PH086	Kubang Karah	66	100	2dt
PH087	Kampong Melayu	62	100	3d(t)
PH088	Kinchir	1	100	2dt
PH089	Kilang	62	100	3d(t)
PH090	Kenalau	1	100	2dt
PH091	Ketam, Kerdau	62	100	3d(t)
PH092	Kerayong	1	100	2dt
PH093	Ketapi, Kerdau	1	100	2dt
PH094	Kelibang, Kerdau	1	100	2dt
PH095	Kuin	1	100	2dt
PH096	Kuala Triang	62	100	3d(t)
PH097	Kepong	1	100	2dt
PH098	Keladan	1	100	2dt
PH099	Kundang	62	100	3d(t)
PH100	Karai	62	100	3d(t)

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Akob
11; Briah
40; Kampong Pusu
62; Local alluvium
66; Lunas
82; Peat, not sutiable for farm mechanization
95; Rusila
119; Telemong
78; Organic clay and muck, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-12 Soil Suitability Classes of Non-granary Irrigation Schemes in Pahang (5/12)

State : Pahang (5/12)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
PH101	Kubu	1	100	2dt
PH102	Kenalan Kecil	62	100	3d(t)
PH103	Kangsar	1/119	30/70	2dt/2DT
PH104	Kampong Baharu	119	100	2DT
PH105	Kekura	1	100	2dt
PH106	Kuala Retang	1	100	2dt
PH107	Kool	62	100	3d(t)
PH108	Kening	62	100	3d(t)
PH109	Mertau	62	100	3d(t)
PH110	Krot	62	100	3d(t)
PH111	Kening Seberang	62	100	3d(t)
PH112	Kemap	62	100	3d(t)
PH113	Kertam	62	100	3d(t)
PH114	Kuala Merang	119	100	2Dt
PH115	Kuala Atok	1	100	2dt
PH116	Kenong	119	100	2Dt
PH117	Kuala Keloi	1	100	2dt
PH118	Kekabu	119	100	2Dt
PH119	Kasikin	119	100	2Dt
PH120	Kadok	119	100	2Dt
PH121	Kong	119	100	2Dt
PH122	Keruntung	1	100	2dt
PH123	Karak Setia	1	100	2dt
PH124	Lubok	95	100	4dt
PH125	Lebak	62	100	3d(t)

Remarks: Soil suitability class; Refer to Table D-1

Soil series
1; Akob
11; Briah
40; Kampong Pusu
62; Local alluvium
66; Lunas
82; Peat, not sutiable for farm mechanization
95; Rusila
119; Telemong
78; Organic clay and muck, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-12 Soil Suitability Classes of Non-granary Irrigation Schemes in Pahang (6/12)

State : Pahang (6/12)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
PH126	Lipat Kajang	62	100	3d(t)
PH127	Luas, Jenderak	1	100	2dt
PH128	Lompat	1	100	2dt
PH129	Lanjut, Lipat Kajang	62	100	3d(t)
PH130	Luas & Tg. Batu	1	100	2dt
PH131	Lubuk Lian	62	100	3d(t)
PH132	Lubuk Kawan	1	100	2dt
PH133	Lang	82	100	3d(no)
PH134	Lata Kasah	119	100	2DT
PH135	Lubok Payong	1	100	2dt
PH136	Lanting	62	100	2d(t)
PH137	Ladang	62	100	3d(t)
PH138	Lubuh	62	100	3d(t)
PH139	Lalloh/Salak	119	100	2Dt
PH140	Lallang	1	100	2dt
PH141	Lanar	1	100	2dt
PH142	Lengkong	119	100	2Dt
PH143	Lurau	1	100	2dt
PH144	Mambang	78	100	2dt
PH145	Mencali/Gading	95	100	4dt
PH146	Mentakab	62	100	3d(t)
PH147	Mengkuang	62	100	3d(t)
PH148	Machang Gelap	62	100	3d(t)
PH149	Mentenang	62	100	3d(t)
PH150	Meledu	1	100	2dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series
1; Akob
11; Briah
40; Kampong Pusu
62; Local alluvium
66; Lunas
82; Peat, not sutiable for farm mechanization
95; Rusila
119; Telemong
78; Organic clay and muck, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-12 Soil Suitability Classes of Non-granary Irrigation Schemes in Pahang (7/12)

State : Pahang (7/12)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
PH151	Melatengah	1	100	2dt
PH152	Mentiue	1	100	2dt
PH153	Melan	1	100	2dt
PH154	Nyonyak	95	100	4dt
PH155	Nawan, Jenderak	1	100	2dt
PH156	Nyong	1	100	2dt
PH157	Nyak Besar	82	100	3d(no)
PH158	Nyak Kecil	82	100	3d(no)
PH159	Paya Ngewin	62	100	3d(t)
PH160	Paya Nakoh	62	100	3d(t)
PH161	Pinang	62	100	3d(t)
PH162	Pakoh	62	100	3d(t)
PH163	Permatang Puah	11	100	2d(t)
PH164	Pahang Tua	1/62	55/45	2dt/3d(t)
PH165	Pulau Jawa	95	100	4dt
PH166	Padang	95	100	4dt
PH167	Pasir Panjang	78	100	4dt
PH168	Pelak	62	100	3d(t)
PH169	Pulau Rumput	1	100	2dt
PH170	Pulau Nawar	62	100	3d(t)
PH171	Puyu	1	100	2dt
PH172	Pamah Songsang	62	100	3d(t)
PH173	Padang	62	100	3d(t)
PH174	Penak	62	100	3d(t)
PH175	Perak, Lipat Kajang	62	100	3d(t)

Remarks: Soil suitability class; Refer to Table D-1

Soil series
1; Akob
11; Briah
40; Kampong Pusu
62; Local alluvium
66; Lunas
82; Peat, not sutiable for farm mechanization
95; Rusila
119; Telemong
78; Organic clay and muck, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-12 Soil Suitability Classes of Non-granary Irrigation Schemes in Pahang (8/12)

State : Pahang (8/12)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
PH176	Puchong	62	100	3d(t)
PH177	Pamun & Sebelah	119	100	2Dt
PH178	Pelong, Jenderak	62	100	3d(t)
PH179	Pulau Chengai, Jenderak	62	100	3d(t)
PH180	Paya Putat	119	100	2Dt
PH181	Puah, Jenderak	62	100	3d(t)
PH182	Pesagi	62	100	3d(t)
PH183	Pejing	62	100	3d(t)
PH184	Paku	62	100	3d(t)
PH185	Padang Tenggala	62	100	3d(t)
PH186	Pemah Bedu	119	100	2Dt
PH187	Perangkap	119	100	2Dt
PH188	Pagak Sasak	119	100	2Dt
PH189	Peling Hilir	1	100	2dt
PH190	Ponsoon	119	100	2Dt
PH191	Pelantar	1	100	2dt
PH192	Rhu	95	100	4dt
PH193	Rambutan	62	100	3d(t)
PH194	Rumput	62	100	3d(t)
PH195	Rambai, Jenderak	1	100	2dt
PH196	Rantau Panjang	1	100	2dt
PH197	Rantau Panjang	62	100	3d(t)
PH198	Renggul	1	100	2dt
PH199	Relai	119	100	2Dt
PH200	Sepat	95	100	4dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series
1; Akob
11; Briah
40; Kampong Pusu
62; Local alluvium
66; Lunas
82; Peat, not sutiable for farm mechanization
95; Rusila
119; Telemong
78; Organic clay and muck, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-12 Soil Suitability Classes of Non-granary Irrigation Schemes in Pahang (9/12)

State : Pahang (9/12)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
PH201	Soi	82	100	3d(no)
PH202	Sri Damai	66	100	2dt
PH203	Serandu	95	100	4dt
PH204	Salong	1	100	2dt
PH205	Sejabun	62	100	3d(t)
PH206	Sungai Duri	1	100	2dt
PH207	Sepayang	78	100	4dt
PH208	Sg. Rabit	62	100	3d(t)
PH209	Siah	1	100	2dt
PH210	Sebelah	62	100	3d(t)
PH211	Sok, Jenderak	1	100	2dt
PH212	Sekoh, Jenderak	62	100	3d(t)
PH213	Sg. Tuang	1	100	2dt
PH214	Selindang	62	100	3d(t)
PH215	Songsang	1	100	2dt
PH216	Sg. Buloh	1	100	2dt
PH217	Songsang	1	100	2dt
PH218	Sesap	1	100	2dt
PH219	Serdang Atas and Bawah	1	100	2dt
PH220	Sg. Chengal	62	100	3d(t)
PH221	Som	119	100	2Dt
PH222	Sultanate Land	1	100	2dt
PH223	Sungai Leng	62	100	3d(t)
PH224	Sentang	82	100	3d(n)
PH225	Suungai Pasu	62	100	3d(t)

Remarks: Soil suitability class; Refer to Table D-1

Soil series
1; Akob
11; Briah
40; Kampong Pusu
62; Local alluvium
66; Lunas
82; Peat, not sutiable for farm mechanization
95; Rusila
119; Telemong
78; Organic clay and muck, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-12 Soil Suitability Classes of Non-granary Irrigation Schemes in Pahang (10/12)

State : Pahang (10/12)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
PH226	Sungai Tikam	119	100	2Dt
PH227	Sain	1	100	2dt
PH228	Sengkela	1	100	2dt
PH229	Samak/Jani	119	100	2Dt
PH230	Sepan	119	100	2Dt
PH231	Sungai Beluan	119	100	2Dt
PH232	Sempa	62	100	3d(t)
PH233	Sum-Sum	119	100	2Dt
PH234	Simpang Pelangai	1	100	2dt
PH235	Seratus Tujuh	119	100	2Dt
PH236	Tebat	1	100	2dt
PH237	Tanjung Pulai	1	100	2dt
PH238	Temai Hilir	11	100	2dt
PH239	Telok Era	1	100	2dt
PH240	Telok Sentang	62	100	3d(t)
PH241	Tenggoh	62	100	3d(t)
PH242	Teratai	62	100	3d(t)
PH243	Taram, Kerdau	62	100	3d(t)
PH244	Tok Apas	1	100	2dt
PH245	Tok Langit	62	100	3d(t)
PH246	Terlang	62	100	3d(t)
PH247	Tedong	1	100	2dt
PH248	Terjun	62	100	3d(t)
PH249	Tenggang	62	100	3d(t)
PH250	Tetapa	62	100	3d(t)

Remarks: Soil suitability class; Refer to Table D-1

Soil series 1; Akob
11; Briah
40; Kampong Pusu
62; Local alluvium
66; Lunas
82; Peat, not sutiable for farm mechanization
95; Rusila
119; Telemong
78; Organic clay and muck, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-12 Soil Suitability Classes of Non-granary Irrigation Schemes in Pahang (11/12)

State : Pahang (11/12)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
PH251	Teringging, Jenderak	1	100	2dt
PH252	Paya Teris	62	100	3d(t)
PH253	Tanjung, Keladan	62	100	3d(t)
PH254	Tambang	1	100	2dt
PH255	Tebing Tinggi	62	100	3d(t)
PH256	Tebing Tinggi	62	100	3d(t)
PH257	Terpai	1	100	2dt
PH258	Tengah	119	100	2Dt
PH259	Tanjong Batu	62	100	3d(t)
PH260	Ting & Besar Kertau	62	100	3d(t)
PH261	Temalir	1	100	2dt
PH262	Tat/Tersan	1	100	2dt
PH263	Tersang	1	100	2dt
PH264	Temunga	119	100	2Dt
PH265	Tanjung Putus	1	100	2dt
PH266	Terpuai	119	100	2Dt
PH267	Tampin/Kuala Kemahang	119	100	2Dt
PH268	Teris	119	100	2Dt
PH269	Teka	119	100	2Dt
PH270	Triang Hilir	119	100	2Dt
PH271	Ubai	82	100	4do(n)
PH272	Ulu Cheka	119	100	2Dt
PH273	Ulu Retang	1	100	2dt
PH274	Ulu Temau	119	100	2Dt
PH275	Ulu Gali	119	100	2Dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series
1; Akob
11; Briah
40; Kampong Pusu
62; Local alluvium
66; Lunas
82; Peat, not sutiable for farm mechanization
95; Rusila
119; Telemong
78; Organic clay and muck, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-12 Soil Suitability Classes of Non-granary Irrigation Schemes in Pahang (12/12)

State : Pahang (12/12)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
PH276	Ulu Lepar	119	100	2Dt
PH277	Ulu Atok	119	100	2Dt
PH278	Ulu Sempalit	1	100	2dt
PH279	Ulu Lallang	119	100	2Dt
PH280	Ulu Semei	119	100	2Dt
PH281	Kuala Wau/Betong	62	100	3d(t)
PH282	Wah	62	100	3d(t)
PH283	Nangka	95	100	4dt
PH284	Baru Batu Sawar, Jenderak	62	100	3d(t)
PH285	Nabon	119	100	2Dt
PH286	Cagar Hutang	95	100	4dt
PH287	Kemahang	119	100	2Dt
PH85B	Ulu Cheringging	119	100	2Dt
PH85C	Chemperoh	1	100	2dt
PH85D	Cheringging	119	100	2Dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series
1; Akob
11; Briah
40; Kampong Pusu
62; Local alluvium
66; Lunas
82; Peat, not sutiable for farm mechanization
95; Rusila
119; Telemong
78; Organic clay and muck, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-13 Soil Suitability Classes of Non-granary Irrigation Schemes in Trengganu (1/2)

State : Trengganu (1/2)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
TR001	Telabak	67	100	1d
TR002	Bintang	119	100	2DT
TR003	Setiu	16	100	2d
TR004	Pelagat	16/67	10/90	2d/1d
TR005	Air Puteh	62	100	3d(T)
TR006	Paya Dadong	62	100	3d(t)
TR007	Batu Puteh	62	100	3d(t)
TR008	Paya Paman	1	100	2dt
TR009	Paya Dusun	1/119	40/60	2dt/2Dt
TR010	Cheniah	1	100	2dt
TR011	Bukit Peroh	1	100	2dt
TR012	Paya Kempian	1	100	2dt
TR013	Syukur	1	100	2dt
TR014	Keliyu	1/62	50/50	2dt/3d(t)
TR015	Pulau Musang	16/67/122	5/25/70	2d/1d/1
TR016	Nerus	16/67	20/80	2d/1d
TR017	Batu Rakit	94/95	5/95	4DnT(c)/4dT
TR018	Gelong Gabus	95	100	4dT
TR019	Bukit Tumbuh	16	100	2d
TR020	Banggol Pauh	95	100	4dT
TR021	Sg. Ibai	95	100	4dT
TR022	Chenderig	95	100	4dT
TR023	Kepong	16	100	2d
TR024	Sg. Serai	16	100	2d
TR025	Lubok Pandan	16	100	2d

Remarks: Soil suitability class; Refer to Table D-1

Soil series
1; Akob
16; Chempaka
62; Local alluvium
67; Lundang
82; Peat, not suitable for farm mechanization
94; Rudua
95; Rusila
119; Telemong

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-13 Soil Suitability Classes of Non-granary Irrigation Schemes in Trengganu (2/2)

State : Trengganu (2/2)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
TR026	Bukit Jolong	82	100	3D(n)
TR027	Rusila	95	100	4dT
TR028	Ban Batangan	82	100	3D(n)
TR029	Paya Kemat	119	100	2Dt
TR030	Paya Diman	1	100	2dt
TR031	Padang Ipoh	1	100	2dt
TR032	Kuala Telemong	16	100	2d
TR033	Kuala Akob	16	100	2d
TR034	Paya Rapat	1	100	2dt
TR035	Gaung	67	100	1d
TR036	Peroh	119	100	2Dt
TR037	Matang	119	100	2Dt
TR038	Langgar	67	100	1d
TR039	Tapah	119	100	2Dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series
1; Akob
16; Chempaka
62; Local alluvium
67; Lundang
82; Peat, not suitable for farm mechanization
94; Rudua
95; Rusila
119; Telemong

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-14 Soil Suitability Classes of Non-granary Irrigation Schemes in Kelantan (1/3)

State : Kelantan (1/3)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
KN001	Jegor	28	100	2DnT
KN002	R.T. Bendang Muring	66	100	2dt
KN003	Danan	65	100	3d(t)
KN004	Batu Balai	65	100	3d(t)
KN005	Padang Lindung	65	100	3d(t)
KN006	Telosan Rasau	65	100	3d(t)
KN007	R.T. Sg. Yong	63/65	50/50	3d(at)/3d(t)
KN008	Pertok Lama	28/66	70/30	2DnT/2dt
KN009	Hilir Sat I	28/66	50/50	2DnT/2dt
KN010	Galang	28/66	55/45	2DnT/2dt
KN011	Ulu Sat	28/66	60/40	2DnT/2dt
KN012	Putat Mak Sari	28/66	50/50	2DnT/2dt
KN013	Bagan I	28/66	50/50	2DnT/2dt
KN014	Sg. Dewan	28/66	90/10	2DnT/2dt
KN015	Bagan II	28/66	80/20	2DnT/2dt
KN016	Sg. Rusa	28/66	80/20	2DnT/2dt
KN017	Pak Yam	28	100	2DnT
KN018	Meranti	65	100	3d(t)
KN019	Repek	65	100	3d(t)
KN020	Sg. Pinang	63	100	3d(t)
KN021	Kubang Sawa	110	100	2dt
KN022	Pasir Hor	16	100	2d
KN023	Bkt. Jering	28	100	2DnT
KN024	Jerimbong	28	100	2DnT
KN025	Kuala Balah	28	100	2DnT

Remarks: Soil suitability class; Refer to Table D-1

Soil series
16; Chempaka
28; Holyrood
65; Lubok Sendong
66; Lunas
67; Lundang
110; Sungai Amin
119; Telemong
122; Tok Yong
63; Lubok Itek, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-14 Soil Suitability Classes of Non-granary Irrigation Schemes in Kelantan (2/3)

State : Kelantan (2/3)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
KN026	Lubok Bongor	28	100	2DnT
KN027	Rengas	28/66	80/20	2DnT/2dt
KN028	R.T. Sg. Kenor	28/66	80/20	2DnT/2dt
KN029	R.T. Keluat	28/66	70/30	2DnT/2dt
KN030	Hilir Sat II	65	100	3d(t)
KN031	Sg. Labok	65	100	3d(t)
KN032	Bagan III	16	100	2d
KN033	Pulai Chondong	66	100	2dt
KN034	Lubok Awah	66	100	2dt
KN035	R.T. Bedal	66	100	2dt
KN036	R.T. Enggong	66	100	2dt
KN037	R.T. Lepan Agor	66	100	2dt
KN038	Rantau Panjang I	65	100	3d(t)
KN039	Serdang	16	100	2d
KN040	Gual Ipoh	66	100	2dt
KN041	R.T. Air Cina Kelubi	28	100	2DnT
KN042	Nibong	119	100	2DT
KN043	R.T. Blok Ulu Kusial	66	100	2dt
KN044	R.T. Gelugor	66	100	2dt
KN045	Lawang Air Batu & Kelisar	119	100	2Dt
KN046	R.T. Lubok Berangan	66	100	2dt
KN047	Ternang Ulu	66	100	2dt
KN048	Panjang	66	100	2dt
KN049	Gebok	66	100	2dt
KN050	Jelakong	66	100	2dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series 16; Chempaka
28; Holyrood
65; Lubok Sendong
66; Lunas
67; Lundang
110; Sungai Amin
119; Telemong
122; Tok Yong
63; Lubok Itek, not suitable for farm mechanization

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-14 Soil Suitability Classes of Non-granary Irrigation Schemes in Kelantan (3/3)

State : Kelantan (3/3)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
KN051	Banjar Parah	66	100	2dt
KN052	Rawa Bechah Laut	66	100	2dt
KN053	Air Lanas	66	100	2dt
KN054	Bdg. Paku	66	100	2dt
KN055	Bujung Gertak Serong	66	100	2dt
KN056	Rambai	66	100	2dt
KN057	Permatang Sungkai	65	100	3d(t)
KN058	Bdg. Kamal	65	100	3d(t)
KN059	Bdg. Bukit Merbau	65	100	3d(t)
KN060	Pertok I	66	100	2dt
KN061	Pertok II	66	100	2dt
KN062	Pertok III	66	100	2dt
KN063	Mas Ulu	66	100	2dt
KN064	Tualang Kelikir	66	100	2dt
KN065	Suda	66	100	2dt
KN066	Gaung	66	100	2dt
KN067	Che Wa	66	100	2dt
KN068	Bechah Pauh	66	100	2dt
KN069	Batu Pahat	65	100	3d(t)
KN070	Bdg. Ujit	66	100	2dt
KN071	Bakat I	65	100	3d(t)
KN072	Bdg. Senor	65	100	3d(t)
KN073	Bdg. Pauh	16	100	2d
KN074	Bdg. Bukit Cina	16/67/122	10/30/60	2d/1d/1
KN075	Kok Keli	66	100	2dt
KN076	Joh	65	100	3d(t)
KN077	Panggong Dalu	66	100	2dt

Remarks: Soil suitability class; Refer to Table D-1

Soil series
16; Chempaka
28; Holyrood
65; Lubok Sendong
66; Lunas
63; Lubok Itek, not suitable for farm mechanization
67; Lundang
110; Sungai Amin
119; Telemong
122; Tok Yong

Source: MOA, Soil-crop Suitability Classification for Peninsular Malaysia, 1974, and Reconnaissance Soil Map for Peninsular Malaysia, 1968

Table D-15 Soil Suitability Classes of Non-granary Irrigation Schemes in Sabah (1/3)

State : Sabah (1/3)

Code No.	Scheme	Soil Association	Area Coverage Rate (%)	Soil Suitability Classes
SA001	Tempasuk North	205	100	4fw
SA002	Tempasuk South	205	100	4fw
SA003	Kawang-Kawang/Pandasan	205	100	4fw
SA004	Tamu Darat	209	100	4ws
SA005	Tambulian Laut	204	100	3wi
SA006	Jawi Jawi	205	100	4fw
SA007	Lubok Moyoh	205	100	4fw
SA008	Gaur	209	100	4ws
SA009	Tambulian Ulu	204	100	3wi
SA010	Tambilaung	205	100	4fw
SA011	Pekan Kota Belud	204	100	3wi
SA012	Bingkor	211	100	3w
SA013	Tambunan	211	100	3w
SA014	Lagut Sebrang	204	100	3wi
SA015	Apin-Apin	211	100	3w
SA016	Transpegalan Phase I	211	100	3w
SA017	Kuala Tomani	210	100	3wi
SA018	Tulid	210	100	3wi
SA019	Biah	212	100	4fm
SA020	Nambayan	211	100	3w
SA021	Marais	210	100	3wi
SA022	Tandek	210	100	3wi
SA023	Kota Marudu	204	100	3wi
SA024	Timbang Batu	204	100	3wi
SA025	Membakut	204	100	3wi

Remarks: Soil suitability class; Refer to Table D-1

Soil association
204; Tuaran
205; Kinabatongan
206; Sapi
209; Karamuak
210; Labau
211; Binkor
212; Brantian
201; Weston, not suitable for farm mechanization

Source: Sabah DOA, The Land Capability Classification, 1974, and British Overseas Development Administration, The Soils of Sabah, 1974

Table D-15 Soil Suitability Classes of Non-granary Irrigation Schemes in Sabah (2/3)

State : Sabah (2/3)

Code No.	Scheme	Soil Association	Area Coverage Rate (%)	Soil Suitability Classes
SA026	Sindumin	205	100	4fw
SA027	Tunggul Tinggi	205	100	4fw
SA028	Bundu	201	100	5sa
SA029	Limbawang	204	100	3wi
SA030	Pulaimanang	205	100	4fw
SA031	Lingkungan	205	100	4fw
SA032	Papar/Benoni	205	100	4fw
SA033	Bongawan	205	100	4fw
SA034	Tuaran I	204	100	3wi
SA035	Tuaran II	204	100	3wi
SA036	Bantayan	204	100	3wi
SA037	Penampang	205	100	4fw
SA038	Ramaya	205	100	4fw
SA039	Merungin	210	100	3wi
SA040	Kimolohing	210	100	3wi
SA041	Sinarul	210	100	3wi
SA042	Nalapak	210	100	3wi
SA043	Trusan Sapi	206	100	3w
SA044	Bukit Garam	205	100	4fw
SA045	Ulu Tungku	204	100	3wi
SA046	Pitas Hilir	204	100	3wi
SA047	Bawing	201	100	5sa
SA048	Sikuati	205	100	4fw
SA049	Liu	201	100	5sa
SA050	Torongkongan	201	100	5sa

Remarks: Soil suitability class; Refer to Table D-1

Soil association
204; Tuaran
205; Kinabatongan
206; Sapi
209; Karamuak
210; Labau
211; Binkor
212; Brantian
201; Weston, not suitable for farm mechanization

Source: Sabah DOA, The Land Capability Classification, 1974, and British Overseas Development Administration, The Soils of Sabah, 1974

Table D-15 Soil Suitability Classes of Non-granary Irrigation Schemes in Sabah (3/3)

State : Sabah (3/3)

Code No.	Scheme	Soil Association	Area Coverage Rate (%)	Soil Suitability Classes
SA051	Dampirit	201	100	5sa
SA052	Rokom	204	100	3wi
SA053	Buanog	204	100	3wi
SA054	Suangpai	205	100	4fw
SA055	Kawang Kawang/Bugaron	205	100	4fw
SA056	Sekoli	205	100	4fw

Remarks: Soil suitability class; Refer to Table D-1

Soil association
204; Tuaran
205; Kinabatongan
206; Sapi
209; Karamuak
210; Labau
211; Binkor
212; Brantian
201; Weston, not suitable for farm mechanization

Source: Sabah DOA, The Land Capability Classification, 1974, and British Overseas Development Administration, The Soils of Sabah, 1974

Table D-16 Soil Suitability Classes of Non-granary Irrigation Schemes in Sarawak (1/2)

State : Sarawak (1/2)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
SK001	Bako	332	100	4ws
SK002	Kali Kaba	511	100	05go
SK003	Lubok Nibong	315	100	5sa
SK004	Sebubok Engkala	511	100	05go
SK005	Skrang	511	100	05go
SK006	Tg. Bijat	511	100	05go
SK007	Tg. Saduru	511	100	05go
SK008	Tg. Sebukut	511	100	05go
SK009	Lebaan Bawang Assan	511	100	05go
SK010	Bungai Mummon	315	100	5sa
SK011	Pujut Lopeng	322	100	4fw
SK012	Daro Padi	506	100	04gf
SK013	Paloh Bangau	506	100	04gf
SK014	Loba Balu	322	100	4fw
SK015	Daro Pilot	511	100	05go
SK016	Sadong/Krang	511	100	05go
SK017	Mid-Sadong, Stage I	506/511	50/50	04gf/05go
SK018	Mid-Sadong, Stage II	511	100	05go
SK019	Mid-Sadong, Stage III	506/511	50/50	04gf/05go
SK020	Banting	511	100	05go
SK021	Benawa	511	100	05go
SK022	Nanga Merit	328	100	3wi
SK023	Pandaruan	511	100	05go
SK024	Paya Selanyau I	506	100	04gf
SK025	Paya Selanyau II	511	100	05go

Remarks: Soil suitability class; Refer to Table D-1

Soil series 315; Rajang
322; Plan
328; Bijat
506; Mukah, not suitable for farm mechanization
511; Anderson, not suitable for farm mechanization

Source: Sarawak DOA, Sarawak Land Capability Classification and Evaluation for Agricultural Crops, 1986, and Sarawak DOA, Soil Map of Sarawak, 1968

Table D-16 Soil Suitability Classes of Non-granary Irrigation Schemes in Sarawak (2/2)

State : Sarawak (2/2)

Code No.	Scheme	Identified Soil Series	Area Coverage Rate (%)	Soil Suitability Classes
SK026	Paya Payang	328	100	3wi
SK027	Sg. Renan	328/511	50/50	3wi/05go
SK028	Tg. Purun	328	100	3wi
SK029	Entebu Kupang	506	100	04gf
SK030	Lubuk Buntin	511	100	05go
SK031	Merapok	508	100	04ga
SK032	Sg. Entulang	511	100	05go
SK033	Sg. Gran	328/506	50/50	3wi/04gf
SK034	Sg. Semalau	322	100	4fw
SK035	Sg. Sunga	328/511	50/50	3wi/05go
SK036	Lower Samarahan	328	100	3wi
SK037	Sebandi	328	100	3wi
SK038	Sekuduk/Chupak	328	100	3wi

Remarks: Soil suitability class; Refer to Table D-1

Soil series 315; Rajang
322; Plan
328; Bijat
506; Mukah, not suitable for farm mechanization
511; Anderson, not suitable for farm mechanization

Source: Sarawak DOA, Sarawak Land Capability Classification and Evaluation for Agricultural Crops, 1986, and Sarawak DOA, Soil Map of Sarawak, 1968

Table D-17 Soil Suitability by Crop Group

Soil	Fruit Group								Food Crop Group				Fodder Group		Vegetable Group			Industrial Crop Group									
Class	1	7	8	9	13	15	21	28	18	19	24	27	25	26	16	22	23	2	3	4	5	6	10	11	12	14	17	20
1	10	10	10	10	10	10	10	–	10	10	10	–	10	10	10	10	10	10	10	10	10	–	10	10	10	10	10	10
1d	10	10	10	10	5	10	10	–	10	10	10	–	10	10	5	10	10	10	10	10	10	1	10	10	10	10	10	10
2DnT	1	1	1	1	1	1	1	–	1	1	–	–	1	1	1	1	1	10	1	1	1	–	1	1	1	1	1	1
2DT	1	1	1	1	1	1	1	–	1	1	–	–	1	1	1	1	1	10	1	1	10	–	1	1	1	1	1	1
2Dt	1	1	1	1	1	1	1	–	1	1	–	–	1	1	1	1	1	10	1	1	10	–	1	1	1	1	1	1
2d	10	10	10	10	–	5	10	–	10	10	10	–	10	10	–	10	10	10	10	10	5	5	10	10	5	5	10	10
2dt	1	1	1	10	5	5	10	–	10	10	10	–	10	10	5	10	10	10	1	1	5	1	10	10	5	5	10	10
2dt(a)	–	1	1	10	–	1	10	–	10	10	10	–	10	10	–	10	10	1	1	1	1	1	10	1	1		10	10
2t	1	1	1	10	10	10	10	–	10	10	10	–	10	10	10	10	10	10	1	1	10	–	10	10	10	10	10	10
3c(dt)	–	–	–	–	–	–	10	–	1	1	10	–	10	10	–	10	10	–	–	–	–	–	–	–	–	1	1	1
3D(n)	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–
3D(T)	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–
3d(at)	–	–	–	–	–	–	–	–	–	–	10	–	10	–	–	–	5	–	–	–	–	–	–	–	–	–	–	–
3d(no)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5	–	–	–	–	5	–	–	–	–	–	–
3d(T)	–	–	–	–	–	–	–	–	–	–	10	–	10	–	–	–	5	5	–	–	–	10	–	–	–	–	–	–
3d(t)	–	–	–	–	–	–	–	–	–	–	10	–	10	–	–	–	5	5	–	–	–	10	–	–	–	–	–	–
3t(d)	–	–	–	1	–	–	10	–	–	10	10	–	10	10	–	–	1	1	–	–	–	1	10	–	–	–	–	–
3w	–	–	–	–	–	–	–	–	–	–	10	10	–	–	–	–	–	–	–	–	–	10	–	–	–	–	–	–
3wi	–	–	–	–	–	–	–	–	–	–	10	10	–	–	–	–	–	–	–	–	–	10	–	–	–	–	–	–
4DnT(c)	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–
4dT	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	1	1	–	–	–	1	–	–	–	–	–	–
4dt	–	–	–	–	–	–	–	–	–	–	10	–	10	–	–	–	–	1	–	–	–	10	–	–	–	–	–	–
4dt(a)	–	–	–	–	–	–	–	–	–	–	10	–	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
4do(n)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5	–	–	–	–	–	–	–	–	–	–	–
4fm	–	–	–	10	–	–	1	–	–	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–	–	–	–
4fw	–	–	–	5	–	–	–	–	–	–	–	–	–	–	–	–	–	5	–	–	–	–	–	–	–	–	–	–
4ws	–	–	–	–	–	–	–	–	–	–	1	1	–	5	–	–	–	5	–	–	–	10	–	–	–	–	–	–
04gf	–	–	–	–	–	–	5	–	5	5	1	1	5	5	–	–	5	–	–	–	–	10	–	–	–	–	–	–
5sa	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
05go	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–

Remarks: 10; Suitable 5 & 1; Marginal suitable

Source: DOA

Table D-18 Climatic Factors Influencing Performance of Perennial Lowland Crops

Crop	Dry Season (months)	Surplus Rainfall	Wind Gusts	Sunshine (optimum)	Other Factors	Maximum Elevation (m)
Rubber	– over 2	0	– –	+	– – a.m. rf.	300
Oil Palm	– over 1; – – over 2	–	0	++ (5 hr/day)	– irregular rf. + small diurn temp. range	300
Cocoa	+ up to 1; – – over 2	–	–	– – (shading)	– – hihg R.H.	300
Coconut	– over 2	0	–	+ (4 hr/day)	– lightning + small diurn. temp. range	900
Cassava	0 (–)	– –	–	0		1,200+
Coffee	+ up to 2	0	–	0		600 (Leberica) 1,400 (Robusta)
Sugar Cane	++	–	–	++	+ large diurn. temp. range	1,450
Cashew	+ up to 4	0	–	0		1,200
Pineapple	– over 2 months	– –	0	+		1,600
Grasses	–	0	0	0	– high temp. and R.H.	
Mango	+ up to 2-1/2	–	–	++		1,500
Banana	– –	– –	– –	+		1,500
Citrus	+ up to 2	–	–	+		1,800
Papaya	–	– –	–	+		900
Durian	+	0	–	+	+ large diurn. temp. range	500
Pepper	– –	0	0	0		300

Remarks: +; advantage, –; disadvantage
0; no clear effect, + or –; minor effect, ++ or —; major effect
a.m.rf; morning rainfall, temp.; temperature, R.H.; relative humidity

Souce: *MARDI*

Table D-19 Main Monthly Climatic Features of Agro-ecological Regions

Region	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Others
1.	D	D	D	d	m	dm	m	m	m	f		D	w
2.	D	D	D	d			(d)			Fr		D	
3.	D	D	D		m	m	m	m	Fm	F		D	w
4.	D	D	d	f						fr	F		
5.	D	D			m	dm	dm	dm	m	Fr			(w)
6.	D	D	D				d			f		D	
7.	f		F	F	m	dm	dm	m	fm	F	F	f	w
8.						d	d	d		f	f		w
9.		d			m	D	D	dm	m				w
10.	d	d	f	f			d				f		
11.					m	m	m	m	m				WW
12.	D	D	d		m	m	m	m	m				WW
13.		(d)			m	m	m	m	m		f		WW
14.	m	dm	m	m	m	m	m	m	m	m	mr	fmr	w
15.		d	d				d					fr	w
16.	m	D	D	d							Fr	Fmr	WW
17.		D	D				d					r	
18.	d	d	d			d	D	d					
19.							D				f	r	WW
20.	r	d	d			d					f	r	
21.		D	D	d			(d)				Fr	Fr	
22.	m(d)	D	D	D	d	d	d			(f)	fr	Fmr	w
23.	dr	D	D	d						fr	fr	r	
24.	D	D	D	D	d	d	d	d		fr	(f)r	r	
25.		D	D	D	d	d				f	f	F	
26.	D	D	D	D	D					f	Fm	fm	w

Remarks: D; dry month (Agriculture Rainfall Index below 40 during 20% of years on record)
d; frequent moisture stress days (probability over 40%)
m; morning rainfall maximum
F; flash foods likely (R90 over 200 mm)
f; flash floods possible (R80 over 200 mm)
r; sunshine less than 40% of possible hours
WW; serious danger of strong winds
w; strong wind gusts possible
( ); only in some parts of the region

Source: MARDI

Table D-20 Regional Suitability for Perennial Lowland Crops (1/2)

Region	Rubber	Oil Palm	Cocoa	Coconut	Cassava	Coffee	Sugarcane	Pasture
1.	dmw	DD	DD	dw			+D+	D
2.	d	DD	DD	d			+D+ +t	D
3.	dmw	D	DD	w +t	s		+D+	D
4.		D	D			+d+	+t	d
5.	mw	+	w	w +t	s	+d+		
6.	d	DD	DD			+d+	+D+ +t	D
7.	mw	s +t	ws	w +t	ss		sa	
8.	w		w	w			+t	
9.	dmw	d +t	s	w +t		+d+		d
10.					s		+t	
11.	m ww	+t	w	w +t	w	w	A	
12.	m ww	d +t	w	w +t	w	+d+w	w	d
13.	m ww	+t	w	w +t	w	w	A	
14.	M w	r +t	w	wr +t			A	
15.	w		w	w			A	
16.	m ww	s r	w s	wr +t	sw	+d+w	srw	
17.							+t	
18.	d	d				+d+	+t	d
19.	ww		w	w	w	w	aw +t	
20.		r		r			ar	
21.		r		r		+d+	r +t	
22.	dmw	Dsr	Dsw	wr +t	ss		+D+ sr	d
23.	d	Dr	d	r		+d+	R	
24.	d	DD	d	r		+d+	R	
25.	d	DD	DD	d			+D+ +t	D
26.	dmw	DD	DD	d	ss		+D+ s	D

Remarks: Limitations;

DD — dry season prohibitive
D — dry season too long for good yields
d — irregular rainfall may depress yields
m, M — morning rainfall maximum (rubber only)
a — absence of dry season may effect yield
A — absence of dry season prohibitive
s, ss — surplus rainfall and flash floods
w, ww — moderate, serious, wind damage possible
r, R — lack of sufficient solar radiation.

Advantages;

+D+, +d+ — favourable dry season
+t — diurnal temperature range
+2 — double dry season possible
( ) — favourable effects marginal or part of the region

Source: *MARDI*

Table D-20 Regional Suitability for Perennial Lowland Crops (2/2)

Region	Cashew	Pineapple	Banana	Mango	Citrus	Papaya	Durian	Pepper
1.	+D+		DD	+d+		DD	+D+	DD
2.	+D+		DD	+d+		DD	+D+	DD
3.	+D+	s	DD	+D+ s	s	DD	+D+	DD
4.			D	+D+	+d+	d	+d+ +t	D
5.	(+2)	s	dws	+2	+d+ s	dsw	+2	
6.	+D+		DD		+d+	DD	+d+	DD
7.		ss	dw ss	s	s	ss w		
8.			dw s	s	s	sw	+t	
9.			dw	+d+	+d+	dw	+d+	D
10.		s	ss	s	s	ss	+t	
11.	wa		ww	wa	a	ww	wa	
12.	w		ww d	+d+ w	+d+	wwd	+d+ w	d
13.	A		ww	A	a	w	a w	
14.	A		w	A	a	w	a	
15.	A		w	A	a	w	a +t	
16.	w	s	ww sd	wsr	+d+ s	ww sd	+d+ w	
17.							+t	
18.	+2		d	+2	+d+	d	+2 +t	d
19.	wa		ww	wa	a	ww	wa +t	
20.	a		s	asr	as	s	+d+ +t	
21.			sd	+d+ sr	s	sd	+D+	
22.	+D+	ss	D ssw	+d+ sr	+d+ s	D ss w	+d+	D
23.		r	D s	+D+ sr	+d+ s	D s	+d+	D
24.		r	DD	+d+ sr	+d+ s	D s	+d+	DD
25.	+D+		DD	+D+ s	s	D ss	+D+	DD
26.	+D+	ss	DD	+d+ s	s	D ss w	+D+	DD

Remarks: Limitations;

DD — dry season prohibitive
D — dry season too long for good yields
d — irregular rainfall may depress yields
m, M — morning rainfall maximum (rubber only)
a — absence of dry season may effect yield
A — absence of dry season prohibitive
s, ss — surplus rainfall and flash floods
w, ww — moderate, serious, wind damage possible
r, R — lack of sufficient solar radiation.

Advantages;

+D+, +d+ — favourable dry season
+t — diurnal temperature range
+2 — double dry season possible
( ) — favourable effects marginal or part of the region

Source: *MARDI*

Table D-21 Correlation between Administrative Districts and Agro-ecological Regions (1/2)

Region	State	Administrative District
1.	Perlis	Perlis
	Kedah	Kubang Pasu, Kota Setar, Yan, Kuala Muda
2.	Perlis	Perlis
	Kedah	Kubang Pasu, Padang Terap, Kota Setar Sik, Baling, Kuala Mudah
3.	P. Pinang	Whole State
4.	Kedah	Baling, Kulim, Bandar Baharu
5.	Perak	Selama, Kerian, Larut
6.	Perak	Perak Ulu, Kuala Kangsar, Kinta
7.	Perak	Larut, Matang, Dinding
8.	Perak	Kuala Kangsar, Kinta, Batang Padang
9.	Perak	Dinding, Perak Hilir, Batang Padang
	Selangor	Sabak Bernam, Kuala Selangor
10.	Selangor	Ulu Selangor, Gombak, Ulu Langat
11.	Selangor	Kelang, Petaling, Kuala Langat, Sepang
12.	N. Sembilan	Pantai, Rembau
	Melaka	Alor Gajah, Melaka Tengah, Jasin
13.	Johor	Muar, Batu Pahat, Pontian

Source: MARDI

Table D-21 Correlation between Administrative Districts and Agro-ecological Regions (2/2)

Region	State	Administrative District
14.	Johor	Johor Bahru, Kota Tinggi
15.	Johor	Kota Tinggi, Keluang, Mersing
16.	Johor Pahang	Kota Tinggi, Mersing Rompin, Pekan
17.	Johor	Keluang, Kota Tinggi, Mersing
18.	N. Sembilan Johor Pahang	Seremban, Jelebu, Kuala Pilah, Jempor, Tampin Segamat Temerloh
19.	Pahang	Bentung
20.	Pahang	Raub, Mentekab, Temerloh, Maran, Jerantut
21.	Pahang Trengganu	Kuantan, Meran Kemaman, Dungun
22.	Pahang Trengganu	Kuantan Kemaman, Dungun, Hulu Trengganu
23.	Pahang	Jerantut, Lipis
24.	Kelantan	Ulu Kelantan
25.	Kelantan	Tamah Merah, Pasin Mas, Machang
26.	Trengganu Kelantan	Marang, Kuala Trengganu, Setiu, Besut Pasin Puteh, Bachok, Kota Bharu, Tumpat

Source: MARDI

Table D-22 Potential Crops in Agro-ecological Regions

Region	Suitable Crops	Marginal Crops*
1.	Rice, Mango	Maize, Sugar-cane
2.	Sugar-cane, Cassava, Durian, Mango, Tobacco, Maize	Rubber, Coffee (Rob.), Groundnuts
3.	Rice, Durian, Mango, Coconut, Maize	Oil Palm, Sweet Potatoes, Tobacco
4.	Tobacco, Maize, Coffee (Rob.), Mango, Durian	Rubber, Groundnuts, Oil Palm, Papaya
5.	Oil Palm, Coconut, Coffee (Rob.), Mango, Rice	Durian, Citrus
6.	Coffee (Rob.), Citrus, Durian	Rubber
7.	Oil Palm, Coconut	Rubber, Banana, Rice
8.	Cassava, Maize, Groundnuts, Durian	Rubber, Cocoa, Oil Palm
9.	Cocoa, Coconut, Cassava, Coffee (Lib.), Maize, Rice, Oil Palm	Mango, Durian
10.	Rubber, Oil Palm	Cassava, Banana, Durian, Cocoa
11.	Oil Palm, Cocoa, Coconut, Coffee (Lib.)	Durian, Rice, Sweet Potatoes
12.	Rice, Cocoa, Coconut, Mango, Citrus, Rubber, Durian	Maize, Coffee (Lib.), Groundnuts
13.	Oil Palm, Cocoa, Coconut, Coffee (Lib.), Banana	Sago, Sweet Potatoes, Rice
14.	Oil Palm, Cocoa, Banana	Rubber, Cassava, Pepper, Sweet Potatoes
15.	Oil Palm, Cocoa, Banana, Pepper, Rubber	Cassava, Sweet Potatoes, Durian, Papaya
16.	Rice, Coconut, Cocoa	Rubber, Maize, Groundnuts, Oil Palm
17.	Rubber, Oil Palm, Cocoa, Papaya, Durian, Cassava	Maize, Coffee (Rob.)
18.	Coffee (Rob.), Oil Palm, Durian, Citrus, Rubber, Cocoa	Mango, Cassava
19.	Cocoa, Durian, Citrus	Rubber, Oil Palm
20.	Rubber, Durian, Cocoa, [Maize, Grondnuts]	Banana, Sweet Potatoes
21.	Oil Palm, Coffee (Rob.), Durian, Rubber, [Maize, Groundnuts]	Cocoa, Citrus, Sweet Potatoes
22.	Durian, Citrus, Mango	[Rice]
23.	Coffee (Rob.), Citrus, Durian, Rubber	Cocoa, Mango, Oil Palm
24.	Coffee (Rob.), Citrus, Durian, Rubber, [Maize, Groundnuts]	Banana, Sweet Potatoes
25.	Rice, Mango, Durian, Coffee (Rob.), [Maize, Groundnuts] Sugar-cane	Tobacco, Cassava, Sweet Potatoes
26.	Rice, Durian, Tobacco, Sugar-cane, [Maize, Groundnuts]	Mango, Sweet Potatoes
Areas of problem soils:		
Peat	Pineapple, Coffee (Lib.), Cassava, Sweet Potatoes	Oil Palm, Bananas, Papaya, Maize
Bris	Cashew, Coconut, Tobacco	Groundnuts, Sweet Potatoes
Acid Sulphase Soils		Oil Palm, Coconut, Rice

Remarks:

*; Crops cultivated under less than optimum conditions but grown successfully in the region and promising high returns.

[ ]; Crops suitably only in small parts of a region mainly along rivers.

Source: *MARDI*

Appendix E

Crop Profitability

Feasibility Study on Rationalization and Crop Diversification in Non-granary Irrigated Areas in Malaysia

Volume 2

Appendix E

Crop Profitability

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Appendix E

CROP PROFITABILITY

E.1 Crop Production Cost Survey

In Peninsular Malaysia, crop budgets have been periodically investigated by various agencies concerned such as the Ministry of Agriculture (MOA), the Malaysian Agricultural Research and Development Institute (MARDI), the Federal Agricultural Marketing Authority (FAMA), the Department of Agriculture (DOA) of each State, and other Government's responsible organizations for export-oriented commodities. These investigation results are compiled in a standard crop budget form with a breakdown of benefit comprising unit yield per hectare, farmgate price and gross income as well as that of cost including land preparation, inputs, labor, land rental, contingencies, interest on loan and total cost of production. From these investigation results, labor requirement data can be also obtained for the respective crops. Among various data collected through the Study, "Buku Panduan Asas Dayamaju Komoditi Makanan Terpilih" (Guideline on Economic Viability of Selected Crops) prepared by MOA in 1989 is used as the basic reference.

E.2 Crop Productivity

The terms of crop profitability are defined as net income which is obtained by deducting the total cost of production from the gross income. From the above references, crop budget data on cultivation of the following 45 crops, and one freshwater fish culture are selected as shown in Tables E-1 to E-24.

- Fruits	:	Durian, mango, mangosteen, rambutan, guava, banana, papaya, mandarin, orange, pineapple and watermelon.
- Industrial crops:		Coconut, sago palm, oil palm, cocoa, rubber, cashewnut, coffee, tea, clove, pepper, sugarcane and tobacco
- Vegetables	:	Ginger, groundnut, Chinese kale, spinach, cabbage, cauliflower, broccoli, longbean, French bean, egg plant, cucumber, bittergourd, okra, onion, chili, asparagus and maize (fresh)
- Food crops	:	Paddy, sweetpotato, cassava, yam, sorghum and maize (grain)

- Freshwater fish : Mixed culture of lampam Jawa, common carp, grass carp and big head carp

E.3 Comparison of Crop Productivity

To make comparison of profitability among the crops and fishes selected in the above, crop budget data on perennial crops are annualized by calculating annual average amounts based economic life of each crop. The results are shown in Table E-25 and Fig. E-1. In general, higher net incomes can be expected from growing vegetables followed by fruits. The maximum net income is born from cultivation of broccoli, chili, cauliflower and okra with the average income of around M$15,000/ha for one crop season. With respect to major industrial crops, the average annual net incomes are M$585/ha for oil palm, M$697/ha to M$784/ha for rubber, M$1,588/ha for cocoa, and M$1,935/ha for tobacco. In case of paddy cultivation, the average net income per one season is M$2,100/ha under direct seeding condition and M$1,910/ha under transplanting condition.

Labor productivity is estimated through dividing cumulative net incomes by cumulative crops as shown in Table E-26 and Fig. E-1. The estimated labor productivity of paddy is M$38.2/manday for direct seeding and M$27.3/manday for transplanting. Among 10 fruits examined, mandarin orange, mango, mangosteen, durian, guava and rambutan have higher values of labor productivity ranging between M$201.7/manday and M$40.5/manday in comparison with that of paddy. As for vegetables, higher labor productivity can be expected from growing chili, okra, cabbage, cauliflower and broccoli. As most farming practices of oil palm, rubber and cocoa are usually conducted on the contract basis, family labor requirements are not so much. The estimated labor productivity is M$586/manday for oil palm, M$281/manday to M$316/manday for rubber and M$146/manday for cocoa.

E.4 Investment Performance

All the annual and perennial crops have specific requirements for those optimum growth when these crops are grown in paddy fields. Upgrading or improvement of the prevailing paddy field conditions especially for drainage problems can make target crop yield sure if agro-climate and soils are suitable for growing a particular crop.

Based on the result of feasibility study presented in Volume 3, the required costs for upgrading on-farm drainage condition are assumed according to soil suitability classes in terms of drainage condition as below.

- M$8,600/ha for poorly and imperfect drained conditions; and
- M$4,300/ha for moderately well drained condition.

Investment performance is estimated using net present values of both these unit investment costs for drainage improvement and the crop budget data. The estimated results are expressed in a form of benefit-cost ratio as shown in Table E-27.

Appendix E

Tables

Table E-1 Cost of Production and Estimated Returns per Hectare for Durian (1/2)

Crop group 1: Durian (86 plant/ha)

	Year	1	2	3	4	5
A.	Income					
	Yield (kg/ha)	0	0	0	0	0
	Gross Income @ M$1.66/kg	0	0	0	0	0
	Cumulative Total Gross Income	0	0	0	0	0
B.	Cost (M$)					
	a. Development cost					
	1. Land preparation *1	350				
	2. Lining and holing	0				
	Sub-total	350				
	b. Cost of input					
	1. Planting material	294				
	2. NPK Yellow					
	3. Organic fertilizer					
	4. Weedicide	36	36	72	72	72
	5. Pesticide	86	86	139	164	164
	6. Agrocide					
	7. Wrappers					
	8. Rafia					
	9. Fertilizer	169	72	131	262	328
	10. Other inputs					
	Sub-total	585	194	342	498	564
	c. Cost of Labour					
	1. Planting and watering	50				
	2. Fertilizer application	50	50	70	70	70
	3. Pest control	150	150	200	200	200
	4. Weeding	50	50	70	100	100
	5. Slashing	0	0	0	20	50
	6. Replacement	10	0			
	7. Wrapping					
	8. Harvesting					
	9. Holing	50				
	Sub-total	360	250	340	390	420
	d. Land rental	247	247	247	247	247
	e. Contingencies	154	69	93	114	123
	f. Interest on loan *2	54	54	54	54	54
C.	Total Cost of Production (M$) (a+b+c+d+e+f)	1,750	814	1,076	1,303	1408
	Cumulative Total Cost (M$)	1,750	2,564	3,640	4,943	6351
D.	Net Income (M$) (A - C)	-1,750	-814	-1,076	-1,303	-1,408
	Cumulative Net Income	-1,750	-2,564	-3,640	-4,943	-6,351
E.	Annual labour requirement (mandays)	36	25	34	39	42
	Cumulative annual labour requirement (mandays)	36	61	95	134	245

NPV = M$37,121 IRR = 27%

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-1 Cost of Production and Estimated Returns per Hectare for Durian (2/2)

Crop group 1: Durian (86 plant/ha)

	Year	6	7	8–11	12–25
A.	Income				
	Yield (kg/ha)	1,400	2,300	3,200	4,025
	Gross Income @ M$1.66/kg	2,324	3,818	21,248	93,541
	Cumulative Total Gross Income	2,324	6,142	27,390	120,931
B.	Cost (M$)				
	a. Development cost				
	1. Land preparation *1				
	2. Lining and holing				
	Sub-total				
	b. Cost of input				
	1. Planting material				
	2. NPK Yellow				
	3. Organic fertilizer				
	4. Weedicide	14	14	14	14
	5. Pesticide	164	164	164	164
	6. Agrocide				
	7. Wrappers				
	8. Rafia				
	9. Fertilizer	370	469	569	569
	10. Other inputs				
	Sub-total	548	647	747	747
	c. Cost of Labour				
	1. Planting and watering				
	2. Fertilizer application	70	70	70	70
	3. Pest control	200	200	200	200
	4. Weeding	120	120	120	120
	5. Slashing	50	70	70	70
	6. Replacement				
	7. Wrapping				
	8. Harvesting	250	250	250	250
	9. Holing				
	Sub-total	690	710	710	710
	d. Land rental	247	247	247	247
	e. Contingencies	149	160	170	170
	f. Interest on loan *2	54			
C.	Total Cost of Production (M$) (a+b+c+d+e+f)	1,688	1,764	7,496	26,236
	Cumulative Total Cost (M$)	8,039	9,803	17,299	43,535
D.	Net Income (M$) (A - C)	636	2,054	13,752	67,305
	Cumulative Net Income	-5,715	-3,661	10,091	77,396
E.	Annual labour requirement (mandays)	69	71	284	923
	Cumulative annual labour requirement (mandays)	245	316	600	1,523

NPV = M$37,121 IRR = 27%

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-2 Cost of Production and Estimated Returns per Hectare for Mango (1/2)

Crop group 1: Mango (121 tree/ha)

	Year	1	2	3	4
A.	Income				
	Yield (kg/ha)	0	0	0	2,250
	Gross Income @ M$1.75/kg	0	0	0	3,937
	Cumulative Total Gross Income	0	0	0	3,937
B.	Cost (M$)				
	a. Development cost				
	1. Land preparation *1	395			
	2. Lining and holing	60			
	Sub-total	455			
	b. Cost of input				
	1. Planting material	390			
	2. NPK Yellow				
	3. Organic fertilizer				
	4. Weedicide	30	36	50	78
	5. Pesticide	100	100	200	200
	6. Agrocide				
	7. Wrappers				
	8. Rafia				
	9. Fertilizer	162	103	174	304
	10. Other inputs				
	Sub-total	682	239	424	582
	c. Cost of Labour				
	1. Planting and watering	70			
	2. Fertilizer application	50	50	50	50
	3. Pest control	150	150	200	200
	4. Weeding	100	100	120	150
	5. Slashing			30	50
	6. Replacement	10			
	7. Wrapping				
	8. Harvesting	0	0	0	70
	9. Holing				
	Sub-total	380	300	400	520
	d. Land rental	247	247	247	247
	e. Contingencies	176	79	107	135
	f. Interest on loan *2	62	62	62	
C.	Total Cost of Production (M$) (a+b+c+d+e+f)	2,002	927	1,240	1,484
	Cumulative Total Cost (M$)	2,002	2,929	4,169	5,653
D.	Net Income (M$) (A - C)	–2,002	–927	–1,240	2,453
	Cumulative Net Income	–2,002	–2,929	–4,169	–1,716
E.	Annual labour requirement (mandays)	38	30	40	52
	Cumulative annual labour requirement (mandays)	38	68	108	160

NPV = M$83,341 IRR = 69%

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: *Guideline on Economic Viability of Selected Crops, MOA, 1989*

Table E-2 Cost of Production and Estimated Returns per Hectare for Mango (2/2)

Crop group 1: Mango (121 tree/ha)

	Year	5–6	7–8	9–10	11–15
A.	Income				
	Yield (kg/ha)	4,650	7,800	8,500	8,500
	Gross Income @ M$1.75/kg	16,275	27,300	29,750	74,375
	Cumulative Total Gross Income	20,212	47,512	77,262	151,637
B.	Cost (M$)				
	a. Development cost				
	1. Land preparation *1				
	2. Lining and holing				
	Sub-total				
	b. Cost of input				
	1. Planting material				
	2. NPK Yellow				
	3. Organic fertilizer				
	4. Weedicide	107	107	107	99
	5. Pesticide	300	300		
	6. Agrocide				
	7. Wrappers				
	8. Rafia				
	9. Fertilizer	380	503	503	503
	10. Other inputs				
	Sub-total	787	910	610	602
	c. Cost of Labour				
	1. Planting and watering				
	2. Fertilizer application	50	50	50	50
	3. Pest control	250	250		
	4. Weeding	100	100	100	100
	5. Slashing	50	70	70	70
	6. Replacement				
	7. Wrapping				
	8. Harvesting	250	370	370	450
	9. Holing				
	Sub-total	700	840	590	670
	d. Land rental	247	247	247	247
	e. Contingencies	173	200	145	152
	f. Interest on loan *2				
C.	Total Cost of Production (M$) (a+b+c+d+e+f)	3,814	4,394	3,184	8,355
	Cumulative Total Cost (M$)	9,467	13,861	17,045	25,400
D.	Net Income (M$) (A - C)	12,461	22,906	26,566	66,020
	Cumulative Net Income	10,746	33,652	61,218	126,238
E.	Annual labour requirement (mandays)	140	168	118	335
	Cumulative annual labour requirement (mandays)	300	468	586	921

NPV = M$83,341 IRR = 69%

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-3 Cost of Production and Estimated Returns per Hectare for Mangosteen (1/5)

Crop group 4: Mangosteen (196 plant/ha)

	Year	1	2	3	4	5
A.	Income					
	Hasil (biji/ha)	–	–	–	–	–
	Gross Income @ M$0.08/biji	–	–	–	–	–
	Cumulative Total Gross Income	–	–	–	–	–
B.	Cost (M$)					
	a. Development cost					
	1. Land preparation *1	450				
	2. Lining and holing	60				
	3. Planting material	650				
	4. Fertilizer (Basal)	36				
	5. Fencing & drainage	750				
	6. Planting	39				
	7. Farm tools	250				
	Sub-total	2,235				
	b. Cost of input					
	1. Planting material					
	2. NPK Yellow					
	3. Organic fertilizer					
	4. Weedicide	56	56	56	56	56
	5. Insecticide & Pesticide	60	60	50	50	50
	6. Agrocide					
	7. Wrappers					
	8. Rafia					
	9. Fertilizer	30	60	60	120	120
	10. Other inputs					
	Sub-total	146	176	166	226	226
	c. Cost of Labour					
	1. Planting and watering					
	2. Fertilizer application	24	24	24	24	24
	3. Pest & disease control	60	60	50	50	50
	4. Weeding	146	96	96	96	96
	5. Slashing					
	6. Replacement					
	7. Wrapping					
	8. Harvesting	–	–	–	–	–
	9. Holing					
	10. Pruning	–	–	–	10	10
	Sub-total	230	180	170	180	180
	d. Land rental	25	25	25	25	25
	e. Contingencies	261	38	34	36	36
	f. Interest on loan *2					
	Sub-total	286	63	59	61	61
C.	Total Cost of Production (M$) (a+b+c+d+e+f)	2,897	419	395	467	467
	Cumulative Total Cost (M$)	2,897	3,316	3,711	4,178	4,645
D.	Net Income (M$) (A - C)	–2,897	–419	–395	–467	–467
	Cumulative Net Income	–2,897	–3,316	–3,711	–4,178	–4,645
E.	Annual labour requirement (mandays)	23	18	17	18	18
	Cumulative annual labour requirement (mandays)	23	41	58	76	94

NPV 10% = M$31,637 IRR = 28.03%

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-3 Cost of Production and Estimated Returns per Hectare for Mangosteen (2/5)

Crop group 4: Mangosteen (196 plant/ha)

	Year	6	7	8	9	10
A.	Income					
	Hasil (biji/ha)	–	–	36,000	60,000	72,000
	Gross Income @ M$0.08/biji	–	–	2,880	4,800	5,760
	Cumulative Total Gross Income	–	–	2,880	7,680	13,440
B.	Cost (M$)					
	a. Development cost					
	1. Land preparation *1					
	2. Lining and holing					
	3. Planting material					
	4. Fertilizer (Basal)					
	5. Fencing & drainage					
	6. Planting					
	7. Farm tools					
	Sub-total					
	b. Cost of input					
	1. Planting material					
	2. NPK Yellow					
	3. Organic fertilizer					
	4. Weedicide	56	56	56	140	140
	5. Insecticide & Pesticide	50	50	50	40	40
	6. Agrocide					
	7. Wrappers					
	8. Rafia					
	9. Fertilizer	240	240	480	480	720
	10. Other inputs					
	Sub-total	346	346	586	660	900
	c. *Cost of Labour*					
	1. Planting and watering					
	2. Fertilizer application	36	36	36	36	36
	3. Pest & disease control	48	48	48	36	36
	4. Weeding	96	96	96	48	48
	5. Slashing					
	6. Replacement					
	7. Wrapping					
	8. Harvesting	–	–	360	600	720
	9. Holing					
	10. Pruning	10	10	6	12	12
	Sub-total	190	190	550	730	850
	d. Land rental	25	25	25	25	25
	e. Contingencies	52	52	112	144	180
	f. Interest on loan *2					
	Sub-total	77	77	137	169	205
C.	Total Cost of Production (M$) (a+b+c+d+e+f)	613	613	1,273	1,559	1,955
	Cumulative Total Cost (M$)	5,258	5,871	7,144	8,703	10,658
D.	Net Income (M$) (A - C)	–613	–613	1,607	3,241	3,805
	Cumulative Net Income	–5,258	–5,871	–4,264	–1,023	2,782
E.	Annual labour requirement (mandays)	19	19	55	73	85
	Cumulative annual labour requirement (mandays)	113	132	187	260	345

NPV 10% = M$31,637 IRR = 28.03%

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-3 Cost of Production and Estimated Returns per Hectare for Mangosteen (3/5)

Crop group 4: Mangosteen (196 plant/ha)

	Year	11	12	13	14	15
A.	Income					
	Hasil (biji/ha)	84,000	96,000	120,000	120,000	144,000
	Gross Income @ M$0.08/biji	6,720	7,680	9,600	9,600	11,520
	Cumulative Total Gross Income	20,160	27,840	37,440	47,040	58,560
B.	Cost (M$)					
	a. Development cost					
	1. Land preparation *1					
	2. Lining and holing					
	3. Planting material					
	4. Fertilizer (Basal)					
	5. Fencing & drainage					
	6. Planting					
	7. Farm tools					
	Sub-total					
	b. Cost of input					
	1. Planting material					
	2. NPK Yellow					
	3. Organic fertilizer					
	4. Weedicide	140	140	140	140	140
	5. Insecticide & Pesticide	40	40	40	40	40
	6. Agrocide					
	7. Wrappers					
	8. Rafia					
	9. Fertilizer	720	720	720	720	720
	10. Other inputs					
	Sub-total	900	900	900	900	900
	c. Cost of Labour					
	1. Planting and watering					
	2. Fertilizer application	48	48	48	48	48
	3. Pest & disease control	36	36	36	36	36
	4. Weeding	48	48	48	48	48
	5. Slashing					
	6. Replacement					
	7. Wrapping					
	8. Harvesting	836	956	1,196	1,436	1,796
	9. Holing					
	10. Pruning	12	12	12	12	12
	Sub-total	980	1,100	1,340	1,580	1,940
	d. Land rental	25	25	25	25	25
	e. Contingencies	194	207	231	254	291
	f. Interest on loan *2					
	Sub-total	219	232	256	279	316
C.	Total Cost of Production (M$) (a+b+c+d+e+f)	2,099	2,232	2,496	2,759	3,156
	Cumulative Total Cost (M$)	12,757	14,989	17,485	20,244	23,400
D.	Net Income (M$) (A - C)	4,621	5,448	7,104	6,841	8,364
	Cumulative Net Income	7,403	12,851	19,955	26,796	35,160
E.	Annual labour requirement (mandays)	98	110	134	158	194
	Cumulative annual labour requirement (mandays)	443	553	687	845	1,039

NPV 10% = M$31,637 IRR = 28.03%

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-3 Cost of Production and Estimated Returns per Hectare for Mangosteen (4/5)

Crop group 4: Mangosteen (196 plant/ha)

	Year	16	17	18	19	20
A.	Income					
	Hasil (biji/ha)	180,000	216,000	216,000	216,000	216,000
	Gross Income @ M$0.08/biji	14,400	17,280	17,280	17,280	17,280
	Cumulative Total Gross Income	72,960	90,240	107,520	124,800	142,080
B.	Cost (M$)					
	a. Development cost					
	1. Land preparation *1					
	2. Lining and holing					
	3. Planting material					
	4. Fertilizer (Basal)					
	5. Fencing & drainage					
	6. Planting					
	7. Farm tools					
	Sub-total					
	b. Cost of input					
	1. Planting material					
	2. NPK Yellow					
	3. Organic fertilizer					
	4. Weedicide	140	140	140	140	140
	5. Insecticide & Pesticide	40	40	40	40	40
	6. Agrocide					
	7. Wrappers					
	8. Rafia					
	9. Fertilizer	720	720	720	720	720
	10. Other inputs					
	Sub-total	900	900	900	900	900
	c. Cost of Labour					
	1. Planting and watering					
	2. Fertilizer application	48	48	48	48	48
	3. Pest & disease control	36	36	36	36	36
	4. Weeding	48	48	48	48	48
	5. Slashing					
	6. Replacement					
	7. Wrapping					
	8. Harvesting	2,156	2,156	2,156	2,156	2,156
	9. Holing					
	10. Pruning	12	12	12	12	12
	Sub-total	2,300	2,300	2,300	2,300	2,300
	d. Land rental	25	25	25	25	25
	e. Contingencies	327	327	327	327	327
	f. Interest on loan *2					
	Sub-total	352	352	352	352	352
C.	Total Cost of Production (M$) (a+b+c+d+e+f)	3,552	3,552	3,552	3,552	3,552
	Cumulative Total Cost (M$)	26,952	30,504	34,056 #	37,608	41,160
D.	Net Income (M$) (A - C)	10,848	13,728	13,728	13,728	13,728
	Cumulative Net Income	46,008	59,736	73,464	87,192	100,920
E.	Annual labour requirement (mandays)	230	230	230	230	230
	Cumulative annual labour requirement (mandays)	1,269	1,499	1,729	1,959	2,189

NPV 10% = M$31,637 IRR = 28.03%

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-3 Cost of Production and Estimated Returns per Hectare for Mangosteen (5/5)

Crop group 4: Mangosteen (196 plant/ha)

	Year	21	22	23	24	25
A.	Income					
	Hasil (biji/ha)	240,000	240,000	240,000	240,000	240,000
	Gross Income @ M$0.08/biji	19,200	19,200	19,200	19,200	19,200
	Cumulative Total Gross Income	161,280	180,480	199,680	218,880	238,080
B.	Cost (M$)					
	a. Development cost					
	1. Land preparation *1					
	2. Lining and holing					
	3. Planting material					
	4. Fertilizer (Basal)					
	5. Fencing & drainage					
	6. Planting					
	7. Farm tools					
	Sub-total					
	b. Cost of input					
	1. Planting material					
	2. NPK Yellow					
	3. Organic fertilizer					
	4. Weedicide	140	140	140	140	140
	5. Insecticide & Pesticide	40	40	40	40	40
	6. Agrocide					
	7. Wrappers					
	8. Rafia					
	9. Fertilizer	720	720	720	720	720
	10. Other inputs					
	Sub-total	900	900	900	900	900
	c. Cost of Labour					
	1. Planting and watering					
	2. Fertilizer application	48	48	48	48	48
	3. Pest & disease control	36	36	36	36	36
	4. Weeding	48	48	48	48	48
	5. Slashing					
	6. Replacement					
	7. Wrapping					
	8. Harvesting	2,396	2,396	2,396	2,396	2,396
	9. Holing					
	10. Pruning	12	12	12	12	12
	Sub-total	2,540	2,540	2,540	2,540	2,540
	d. Land rental	25	25	25	25	25
	e. Contingencies	351	351	351	351	351
	f. Interest on loan *2					
	Sub-total	376	376	376	376	376
C.	Total Cost of Production (M$) (a+b+c+d+e+f)	3,816	3,816	3,816	3,816	3,816
	Cumulative Total Cost (M$)	44,976	48,792	52,608	56,424	60,240
D.	Net Income (M$) (A - C)	15,384	15,384	15,384	15,384	15,384
	Cumulative Net Income	116,304	131,688	147,072	162,456	177,840
E.	Annual labour requirement (mandays)	254	254	254	254	254
	Cumulative annual labour requirement (mandays)	2,443	2,697	2,951	3,205	3,459

NPV 10% = M$31,637 IRR = 28.03%

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-4 Cost of Production and Estimated Returns per Hectare for Rambutan (1/2)

Crop group 4: Rambutan (276 tree/ha)

	Year	1	2	3	4
A.	Income				
	Yield (kg/ha)	0	0	0	1,200
	Gross Income @ M$0.77/kg	0	0	0	924
	Cumulative Total Gross Income	0	0	0	924
B.	Cost (M$)				
	a. Development cost				
	1. Land preparation *1	395			
	2. Lining and holing	71			
	Sub-total	466			
	b. Cost of input				
	1. Planting material	390			
	2. NPK Yellow				
	3. Organic fertilizer				
	4. Weedicide	36	36	71	71
	5. Pesticide	40	40	80	80
	6. Agrocide				
	7. Wrappers				
	8. Rafia				
	9. Fertilizer	182	109	164	237
	10. Other inputs				
	Sub-total	648	185	315	388
	c. Cost of Labor				
	1. Planting and watering	50			
	2. Fertilizer application	70	70	70	70
	3. Pest control	100	100	200	200
	4. Weeding	50	50	100	120
	5. Slashing	50	50	100	100
	6. Replacement	10			
	7. Wrapping				
	8. Harvesting	0	0	0	100
	9. Holing				
	Sub-total	330	270	470	590
	d. Land rental	247	247	247	247
	e. Contingencies	169	70	103	123
	f. Interest on loan *2	60	60	60	60
C.	Total Cost of Production (M$) (a+b+c+d+e+f)	1,920	832	1,195	1,408
	Cumulative Total Cost (M$)	1,920	2,752	3,947	5,355
D.	Net Income (M$) (A - C)	-1,920	-832	-1,195	-484
	Cumulative Net Income	-1,920	-2,752	-3,947	-4,431
E.	Annual labor requirement (mandays)	33	27	47	59
	Cumulative annual labor requirement (mandays)	33	60	107	166

NPV = M$28,949 IRR = 48%

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-4 Cost of Production and Estimated Returns per Hectare for Rambutan (2/2)

Crop group 4: Rambutan (276 tree/ha)

	Year	5–7	8–11	12–15
A.	Income			
	Yield (kg/ha)	2,700	9,900	9,900
	Gross Income @ M$0.77/kg	6,237	30,492	30,492
	Cumulative Total Gross Income	7,161	37,653	68,145
B.	Cost (M$)			
	a. Development cost			
	1. Land preparation *1			
	2. Lining and holing			
	Sub-total			
	b. Cost of input			
	1. Planting material			
	2. NPK Yellow			
	3. Organic fertilizer			
	4. Weedicide	86	18	18
	5. Pesticide	80		
	6. Agrocide			
	7. Wrappers			
	8. Rafia			
	9. Fertilizer	236	315	315
	10. Other inputs			
	Sub-total	402	333	333
	c. Cost of Labor			
	1. Planting and watering			
	2. Fertilizer application	70	70	70
	3. Pest control	200		
	4. Weeding	150	170	200
	5. Slashing	100	50	50
	6. Replacement			
	7. Wrapping			
	8. Harvesting	250	370	370
	9. Holing			
	Sub-total	770	660	690
	d. Land rental	247	247	247
	e. Contingencies	142	124	127
	f. Interest on loan *2	60		
C.	Total Cost of Production (M$) (a+b+c+d+e+f)	4,863	5,456	5,588
	Cumulative Total Cost (M$)	10,218	15,674	21,262
D.	Net Income (M$) (A - C)	1,374	25,036	24,904
	Cumulative Net Income	-3,057	21,979	46,883
E.	Annual labor requirement (mandays)	231	264	276
	Cumulative annual labor requirement (mandays)	397	925	1,201

NPV = M$28,949 IRR = 48%

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-5 Cost of Production and Estimated Returns per Hectare for Guava (1/2)

Crop group 7: Guava (1,000 plant/ha)

	Year	1	2	3-4	5
A.	Income				
	Yield (kg/ha)	0	0	10,000	25,000
	Gross Income @ M$0.25/kg	0	0	5,000	6,250
	Cumulative Total Gross Income	0	0	5,000	11,250
B.	Cost (M$)				
	a. Development cost				
	1. Land preparation *1	400			
	2. Lining and holing	165			
	Sub-total	565			
	b. Cost of input				
	1. Planting material	882			
	2. NPK Yellow				
	3. Organic fertilizer				
	4. Weedicide	73	73	99	99
	5. Pesticide	63	63	116	166
	6. Agrocide				
	7. Wrappers				
	8. Rafia				
	9. Fertilizer	317	157	172	515
	10. *Other inputs*				
	Sub-total	1,335	293	387	780
	c. Cost of Labour				
	1. Planting and watering	100			
	2. Fertilizer application	70	70	70	70
	3. Pest control	250	250	300	300
	4. Weeding	150	150	150	150
	5. Slashing				
	6. Replacement	20			
	7. Wrapping				
	8. Harvesting	0	0	120	250
	9. Holing				
	Sub-total	590	470	660	790
	d. Land rental	247	247	247	247
	e. Contingencies	274	101	129	182
	f. Interest on loan *2	96	96	96	96
C.	Total Cost of Production (M$) (a+b+c+d+e+f)	3,107	1,207	3,038	2,095
	Cumulative Total Cost (M$)	3,107	4,314	7,352	9,447
D.	Net Income (M$) (A - C)	-3,107	-1,207	1,962	4,155
	Cumulative Net Income	-3,107	-4,314	-2,352	1,803
E.	Annual labour requirement (mandays)	59	47	132	79
	Cumulative annual labour requirement (mandays)	59	106	238	317

NPV = M$20,583 IRR = 46%

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-5 Cost of Production and Estimated Returns per Hectare for Guava (2/2)

Crop group 7: Guava (1,000 plant/ha)

	Year	6	7–8	9–10	11
A.	Income				
	Yield (kg/ha)	25,000	30,000	30,000	30,000
	Gross Income @ M$0.25/kg	6,250	15,000	15,000	7,500
	Cumulative Total Gross Income	17,500	32,500	47,500	55,000
B.	Cost (M$)				
	a. Development cost				
	1. Land preparation *1				
	2. Lining and holing				
	Sub-total				
	b. Cost of input				
	1. Planting material				
	2. NPK Yellow				
	3. Organic fertilizer				
	4. Weedicide	99	99	99	99
	5. Pesticide	166			
	6. Agrocide				
	7. Wrappers				
	8. Rafia				
	9. Fertilizer	515	687	852	852
	10. Other inputs				
	Sub-total	780	786	951	951
	c. Cost of Labour				
	1. Planting and watering				
	2. Fertilizer application	70	70	70	70
	3. Pest control	300			
	4. Weeding	150	150	150	150
	5. Slashing				
	6. Replacement	20	50	70	70
	7. Wrapping				
	8. Harvesting	250	370	440	490
	9. Holing				
	Sub-total	790	640	730	780
	d. Land rental	247	247	247	247
	e. Contingencies	182	167	193	198
	f. Interest on loan *2				
C.	Total Cost of Production (M$) (a+b+c+d+e+f)	1,999	1,680	4,242	2,176
	Cumulative Total Cost (M$)	11,446	15,126	19,368	21,544
D.	Net Income (M$) (A - C)	4,251	11,320	10,758	5,324
	Cumulative Net Income	6,054	17,374	28,132	33,456
E.	Annual labour requirement (mandays)	79	128	146	78
	Cumulative annual labour requirement (mandays)	396	524	670	748

NPV = M$20,583 IRR = 46%

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-6 Cost of Production and Estimated Returns per Hectare for Banana

Crop group 8: Banana (2,200 plant/ha)

	Year	1	2	3
A.	Income			
	Yield (kg/ha)	7,750	11,120	10,450
	Gross Income @ M$0.39/kg	3,022	4,337	4,075
	Cumulative Total Gross Income	3,022	7,359	11,434
B.	Cost (M$)			
	a. Development cost			
	1. Land preparation *1	400		
	2. Lining and holing	667		
	Sub-total	1,067		
	b. Cost of input			
	1. Planting material	350		
	2. NPK Yellow			
	3. Organic fertilizer			
	4. Weedicide	72	72	72
	5. Pesticide	241	241	241
	6. Agrocide			
	7. Wrappers			
	8. Rafia			
	9. Fertilizer	549	764	764
	10. Other inputs			
	Sub-total	1,212	1,077	1,077
	c. Cost of Labour			
	1. Planting and watering	150		
	2. Fertilizer application	100	100	100
	3. Pest control	100	100	100
	4. Weeding	120	120	120
	5. Slashing			
	6. Replacement	20		
	7. Wrapping			
	8. Harvesting	250	490	370
	9. Holing			
	Sub-total	740	810	690
	d. Land rental	247	247	247
	e. Contingencies	327	213	201
	f. Interest on loan *2	115	57	
C.	Total Cost of Production (M$) (a+b+c+d+e+f)	3,708	2,404	2,215
	Cumulative Total Cost (M$)	3,708	6,112	8,327
D.	Net Income (M$) (A - C)	-685	1,933	1,860
	Cumulative Net Income	-685	1,248	3,108
E.	Annual labour requirement (mandays)	74	81	69
	Cumulative annual labour requirement (mandays)	74	155	224

NPV = M$2,782 IRR = %

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: *Guideline on Economic Viability of Selected Crops, MOA, 1989*

Table E-7 Cost of Production and Estimated Returns per Hectare for Papaya

Crop group 13: Papaya (1,990 plant/ha)

	Year	1	2	3
A.	Income			
	Yield (kg/ha)	16,600	25,000	25,000
	Gross Income @ M$0.30/kg	4,980	7,500	7,500
	Cumulative Total Gross Income	4,980	12,480	19,980
B.	Cost (M$)			
	a. Development cost			
	1. Land preparation *1	296		
	2. Lining and holing	415		
	Sub-total	711		
	b. Cost of input			
	1. Planting material	24		
	2. NPK Yellow			
	3. Organic fertilizer			
	4. Weedicide	298	298	298
	5. Pesticide	369	444	444
	6. Agrocide			
	7. Wrappers			
	8. Rafia			
	9. Fertilizer	1,200	2,248	2,248
	10. Other inputs			
	Sub-total	1,891	2,990	2,990
	c. Cost of Labour			
	1. Planting and watering	170		
	2. Fertilizer application	120	120	120
	3. Pest control	250	250	250
	4. Weeding	200	200	250
	5. Slashing			
	6. Replacement	30		
	7. Wrapping			
	8. Harvesting	150	620	620
	9. Holing			
	10. Nursery preparation	150		
	Sub-total	920	1,190	1,240
	d. Land rental	247	247	247
	e. Contingencies	392	551	448
	f. Interest on loan *2	138		
C.	Total Cost of Production (M$) (a+b+c+d+e+f)	4,299	4,978	4,925
	Cumulative Total Cost (M$)	4,299	9,277	14,202
D.	Net Income (M$) (A - C)	681	2,522	2,575
	Cumulative Net Income	681	3,203	5,778
E.	Annual labour requirement (mandays)	92	119	124
	Cumulative annual labour requirement (mandays)	92	211	335

NPV = M$3,358 IRR = %

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-8 Cost of Production and Estimated Returns per Hectare for Mandarin Orange (1/3)

Crop group 15: Mandarin Orange (359 tree/ha)

	Year	1	2	3	4	5
A.	Income					
	Yield (MT/ha)	0	0	0.9	1.8	6.3
	Gross Income @ M$1400/MT	0	0	1,260	2,520	8,820
	Cumulative Total Gross Income	0	0	1,260	3,780	12,600
B.	Cost (M$)					
	a. Development cost					
	1. Land preparation *1	370				
	2. Lining and holing	134				
	3. Planting	53				
	Sub-total	557				
	b. Cost of input					
	1. Planting material	668				
	2. NPK Yellow					
	3. Organic fertilizer	193				
	4. Weedicide					
	5. Pesticide					
	6. Agrocide					
	7. Wrappers					
	8. Rafia					
	9. Basal fertilizer CIRP	7				
	10. Sprayer	100				
	11. Supports			51	51	51
	12. Baskets			25		25
	13. Other inputs	33				
	Sub-total	1,001	0	76	51	76
	c. Cost of Labour					
	1. Planting and watering					
	2. Fertilizer application	69	115	229	350	420
	3. Pest control	71	95	71	110	141
	4. Weeding	0	0	0	0	79
	5. Slashing					
	6. Replacement					
	7. Wrapping					
	8. Harvesting					
	9. Holing					
	Sub-total	140	210	300	460	640
	d. Land rental	247	247	247	247	247
	e. Contingencies	189	41	58	77	91
	f. Interest on loan *2	68	84	57	57	57
C.	Total Cost of Production (M$) (a+b+c+d+e+f)	2,203	582	738	892	1,111
	Cumulative Total Cost (M$)	2,203	2,785	3,523	4,415	5,526
D.	Net Income (M$) (A - C)	–2,203	–582	522	1,628	7,709
	Cumulative Net Income	–2,203	–2,785	–2,263	–635	7,074
E.	Annual labour requirement (mandays)	14	21	30	46	64
	Cumulative annual labour requirement (mandays)	14	35	65	111	175

NPV = M$114,093.60 IRR = 88%

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-8 Cost of Production and Estimated Returns per Hectare for Mandarin Orange (2/3)

Crop group 15: Mandarin Orange (359 tree/ha)

Year	6	7	8	9
A. Income				
Yield (MT/ha)	9	13.6	18.1	18.1
Gross Income @ M$1400/MT	12,600	19,040	25,340	25,340
Cumulative Total Gross Income	25,200	44,240	69,580	94,920
B. Cost (M$)				
a. Development cost				
1. Land preparation *1				
2. Lining and holing				
3. Planting				
Sub-total				
b. Cost of input				
1. Planting material				
2. NPK Yellow				
3. Organic fertilizer				
4. Weedicide				
5. Pesticide				
6. Agrocide				
7. Wrappers				
8. Rafia				
9. Basal fertilizer CIRP				
10. Sprayer				
11. Supports	51	51	51	51
12. Baskets		37		37
13. Other inputs				
Sub-total	51	88	51	88
c. Cost of Labour				
1. Planting and watering				
2. Fertilizer application	537	584	584	584
3. Pest control	183	136	183	136
4. Weeding	79	79	79	79
5. Slashing				
6. Replacement				
7. Wrapping				
8. Harvesting				
9. Holing				
Sub-total	799	799	846	799
d. Land rental	247	247	247	247
e. Contingencies	109	113	114	113
f. Interest on loan *2				
C. Total Cost of Production (M$) (a+b+c+d+e+f)	1,206	1,247	1,258	1,247
Cumulative Total Cost (M$)	6,732	7,979	9,237	10,484
D. Net Income (M$) (A - C)	11,394	17,793	24,082	24,093
Cumulative Net Income	18,468	36,261	60,343	84,436
E. Annual labour requirement (mandays)				
Cumulative annual labour requirement (mandays)				

NPV = M$114,093.60 IRR = 88%

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-8 Cost of Production and Estimated Returns per Hectare for Mandarin Orange (3/3)

Crop group 15: Mandarin Orange (359 tree/ha)

	Year	10	11	12	13
A.	Income				
	Yield (MT/ha)	18.1	18.1	13.6	13.6
	Gross Income @ M$1400/MT	25,340	25,340	19,040	19,040
	Cumulative Total Gross Income	120,260	145,600	164,640	183,680
B.	Cost (M$)				
	a. Development cost				
	1. Land preparation *1				
	2. Lining and holing				
	3. Planting				
	Sub-total				
	b. Cost of input				
	1. Planting material				
	2. NPK Yellow				
	3. Organic fertilizer				
	4. Weedicide				
	5. Pesticide				
	6. Agrocide				
	7. Wrappers				
	8. Rafia				
	9. Basal fertilizer CIRP				
	10. Sprayer				
	11. Supports	51	51	51	51
	12. Baskets		37		37
	13. Other inputs				
	Sub-total	51	88	51	88
	c. Cost of Labour				
	1. Planting and watering				
	2. Fertilizer application	584	584	584	584
	3. Pest control	187	137	187	137
	4. Weeding	79	79	79	79
	5. Slashing				
	6. Replacement				
	7. Wrapping				
	8. Harvesting				
	9. Holing				
	Sub-total	850	800	850	800
	d. Land rental	247	247	247	247
	e. Contingencies	110	112	110	112
	f. Interest on loan *2				
C.	Total Cost of Production (M$) (a+b+c+d+e+f)	1,258	1,247	1,258	1,247
	Cumulative Total Cost (M$)	11,742	12,989	14,247	15,494
D.	Net Income (M$) (A - C)	24,082	24,093	17,782	17,793
	Cumulative Net Income	108,518	132,611	150,393	168,186
E.	Annual labour requirement (mandays)	85	80	89	80
	Cumulative annual labour requirement (mandays)	585	665	754	834

NPV = M$114,093.60 IRR = 88%

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-9 Cost of Production and Estimated Returns per Hectare for Pineapple and Watermelon

Crop group 8: Pineapple (35,815 plant/ha)
Crop group 27: Watermelon (55 to 70 days)

	Year	Pineapple 1	Pineapple 2	Pineapple 3	Water-melon
A.	Income				
	Yield (kg/ha)		44,000	30,000	22
	Gross Income @ M$113/kg		4,972	3,390	5,607
	Cumulative Total Gross Income		4,972	8,362	
B.	Cost (M$)				
	a. Development cost				
	1. Land preparation *1		112		400
	2. Lining and holing		198		
	Sub-total		310		400
	b. Cost of input				
	1. Planting material		430		138
	2. NPK Yellow				
	3. Organic fertilizer				99
	4. Weedicide		105	40	
	5. Pesticide				
	6. Agrocide				
	7. Wrappers				
	8. Rafia				
	9. Fertilizer		663	343	608
	10. Insecticide & weedicide		40		
	11. Hormone		11	11	
	12. Nursery bag				9
	13. Plastic				6
	14. Other inputs				123
	Sub-total		1,249	394	
	c. Cost of Labour				
	1. Planting and watering		243		20
	2. Fertilizer application		63	63	90
	3. Pest and disease control		45	9	200
	4. Weeding		360	153	
	5. Slashing				
	6. Replacement				
	7. Wrapping				
	8. Harvesting		270	108	200
	9. Holing				
	10. Harmone application		135	90	
	11. Thinning & replanting		–	315	
	12. Debudding		135	63	
	13. Transportation & others		329	149	125
	14. Nursery preparation				70
	15. Farm preparation				170
	16. Transplanting				25
	Sub-total		1,580	950	900
	d. Land rental				62
	e. Contingencies				247
	f. Interest on loan *2				89
C.	Total Cost of Production (M$) (a+b+c+d+e+f)		3,139	1,344	2,861
	Cumulative Total Cost (M$)		3,139	4,483	
D.	Net Income (M$) (A - C)		1,833	2,046	2,746
	Cumulative Net Income		1,833	3,879	
E.	Annual labour requirement (mandays)		158	95	90
	Cumulative annual labour requirement (mandays)		158	253	90

NPV = M$ IRR = %

Note: *1 Land preparation assumes operations on cleared land.
*2 Loan for 80% of total cost of production for year 1 and 2 (M$4,886) at 4% interest rate.

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-10 Cost of Production and Estimated Returns per Hectare for Coconut and Sago Palm

Crop groups 2 and 6: Coconut and sago palm

Coconut	1–3	4	5	6
A. Income				
Yield (biji/ha)		22,080	33,120	44,160
Farm gate price (M$/kg)		0.1	0.1	0.1
Value (M$)		2,208	3,312	4,416
B. Cost				
a. Labor input				
1. Man-days	140	52	52	33
2. Cost (M$)	1,400	520	520	330
b. Non-labor inputs				
1. Land clearing	-	-	-	-
2. Land preparation	-	-	-	-
3. Planting material	414	-	-	-
4. Fertilizers	621	295	472	726
5. Chemicals	177	59	59	59
6. Machinery & equipment	29	-	-	-
7. Land tax	-	-	-	-
8. Others	592	20	20	20
Sub-total	1,833	374	551	805
C. Total Cost of Production (M$)	3,233	894	1,071	1,135
D. Net Income (M$) (A - C)	-3,233	1,314	2,241	3,281

Sago palm	Average
A. Income	
Yield (kg/ha)	12,000
Farm gate price (M$/kg)	0.11
Value (M$)	1,344
B. Cost	
a. Labor input	
1. Man-days	67
2. cost (M$)	670
b. Non-labor inputs	
1. Land clearing	-
2. Land preparation	-
3. Planting material	-
4. Fertilizers	-
5. Chemicals	-
6. Machinery & equipment	-
7. Land tax	247
8. Others	214
Sub-total	461
C. Total Cost of Production (M$)	1,131
D. Net Income (M$) (A - C)	213

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-11 Cost of Production and Estimated Returns per Hectare for Oil Palm (1/2)

Crop group 11: Oil Palm, FELCRA Schemes (148 plants/ha)

Item	1	2	3	4	5
A. Income					
Yield (kg/ha)	-	-	-	1,200	9,000
Farm gate price (M$/kg)	0.09	0.09	0.09	0.09	0.09
Value (M$)	-	-	-	108	810
B. Cost					
a. Labor input					
1. Man-days	-	1	1	1	1
2. Cost (M$)	-	10	10	10	10
b. Non-labor inputs					
1. Land clearing	600	-	-	-	-
2. Land preparation	739	-	-	-	-
3. Planting material	370	38	-	-	-
4. Fertilizers	-	103	209	268	281
5. Chemicals	-	11	11	11	7
6. Machinery & equipment	-	-	-	-	-
7. Land tax	-	-	-	-	-
8. Others	1,041	482	782	829	714
Sub-total	2,750	634	1,002	1,108	1,002
C. Total Cost of Production (M$)	2,750	644	1,012	1,118	1,012
D. Net Income (M$) (A - C)	-2,750	-644	-1,012	-1,010	202

Item	6	7	8	9	10
A. Income					
Yield (kg/ha)	15,800	21,300	23,100	24,100	24,600
Farm gate price (M$/kg)	0.1	0.1	0.1	0.1	0.1
Value (M$)	1,580	2,130	2,310	2,410	2,460
B. Cost					
a. Labor input					
1. Man-days	1	1	1	1	1
2. cost (M$)	10	10	10	10	10
b. Non-labor inputs					
1. Land clearing	-	-	-	-	-
2. Land preparation	-	-	-	-	-
3. Planting material	-	-	-	-	-
4. Fertilizers	347	347	347	347	347
5. Chemicals	7	7	7	7	7
6. Machinery & equipment	-	-	-	-	-
7. Land tax	-	-	-	-	-
8. Others	829	854	854	854	844
Sub-total	1,183	1,208	1,208	1,208	1,198
C. Total Cost of Production (M$)	1,193	1,218	1,218	1,218	1,208
D. Net Income (M$) (A - C)	387	912	1,092	1,192	1,252

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-11 Cost of Production and Estimated Returns per Hectare for Oil Palm (2/2)

Crop group 11: Oil Palm, FELCRA Schemes (148 plants/ha)

Item	11	12	13–14	15	16–18
A. Income					
Yield (kg/ha)	24,300	23,800	22,800	22,100	22,100
Farm gate price (M$/kg)	0.1	0.1	0.1	0.1	0.1
Value (M$)	2,430	2,380	2,280	2,210	2,210
B. Cost					
a. Labor input					
1. Man-days	1	1	1	1	1
2. Cost (M$)	10	10	10	10	10
b. Non-labor inputs					
1. Land clearing	-	-	-	-	-
2. Land preparation	-	-	-	-	-
3. Planting material	-	-	-	-	-
4. Fertilizers	347	347	347	347	347
5. Chemicals	7	7	7	7	7
6. Machinery & equipment	-	-	-	-	-
7. Land tax	-	-	-	-	-
8. Others	844	844	844	844	748
Sub-total	1,198	1,198	1,198	1,198	1,102
C. Total Cost of Production (M$)	1,208	1,208	1,208	1,208	1,112
D. Net Income (M$) (A - C)	1,222	1,172	1,072	1,002	1,098

Item	19–20	21–22	23–25
A. Income			
Yield (kg/ha)	20,600	20,100	19,600
Farm gate price (M$/kg)	0.1	0.1	0.1
Value (M$)	2,060	2,010	1,960
B. Cost			
a. Labor input			
1. Man-days	1	1	1
2. cost (M$)	10	10	10
b. Non-labor inputs			
1. Land clearing	-	-	-
2. Land preparation	-	-	-
3. Planting material	-	-	-
4. Fertilizers	347	347	347
5. Chemicals	7	7	7
6. Machinery & equipment	-	-	-
7. Land tax	-	-	-
8. Others	748	678	678
Sub-total	1,102	1,032	1,032
C. Total Cost of Production (M$)	1,112	1,042	1,042
D. Net Income (M$) (A - C)	948	968	918

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-12 Cost of Production and Estimated Returns per Hectare for Cocoa

Crop group 12: Cocoa, FELCRA Schemes (1,041 plants/ha)

Item	1	2	3	4	5
A. Income					
Yield (kg/ha)	-	-	-	420	1,230
Farm gate price (M$/kg)	1	1	1	1	1
Value (M$)	-	-	-	420	1,230
B. Cost					
a. Labor input					
1. Man-days	-	2	6	26	13
2. Cost (M$)	-	20	60	260	130
b. Non-labor inputs					
1. Land clearing	600	-	-	-	-
2. Land preparation	190	-	-	-	-
3. Planting material	208	520	78	-	-
4. Fertilizers	-	242	346	470	467
5. Chemicals	-	12	40	60	50
6. Machinery & equipment	-	-	-	-	-
7. Land tax	-	-	-	-	-
8. Others	754	1,132	586	657	677
Sub-total	1,752	1,906	1,050	1,187	1,194
C. Total Cost of Production (M$)	1,752	1,926	1,110	1,447	1,324
D. Net Income (M$) (A - C)	-1,752	-1,926	-1,110	-1,027	-94

Item	6	7	8–9	10–11	12–25
A. Income					
Yield (kg/ha)	2,490	3,660	4,148	4,300	4,100
Farm gate price (M$/kg)	1	1	1	1	1
Value (M$)	2,490	3,660	4,148	4,300	4,100
B. Cost					
a. Labor input					
1. Man-days	9	9	9	9	9
2. cost (M$)	90	90	90	90	90
b. Non-labor inputs					
1. Land clearing	-	-	-	-	-
2. Land preparation	-	-	-	-	-
3. Planting material	-	-	-	-	-
4. Fertilizers	391	391	391	391	391
5. Chemicals	50	50	50	50	50
6. Machinery & equipment	-	-	-	-	-
7. Land tax	-	-	-	-	-
8. Others	844	1,054	1,184	1,254	1,274
Sub-total	1,285	1,495	1,625	1,695	1,364
C. Total Cost of Production (M$)	1,375	1,585	1,715	1,785	1,770
D. Net Income (M$) (A - C)	1,115	2,075	2,433	2,515	2,736

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-13 Cost of Production and Estimated Returns per Hectare for Rubber (1/6)

Crop group 13: Rubber, RISDA (491 plants/ha) (1/3)

Item	1	2	3	4	5
A. Income					
Yield (kg/ha)	-	-	-	-	-
Farm gate price (M$/kg)	1.7	1.7	1.7	1.7	1.7
Value (M$)	-	-	-	-	-
B. Cost					
a. Labor input*					
1. Man-days	-	-	-	-	-
2. Cost (M$)	-	-	-	-	-
b. Non-labor inputs					
1. Land clearing	679	-	-	-	-
2. Land preparation	471	-	-	-	-
3. Planting material	216	21	-	-	-
4. Fertilizers	-	182	139	113	321
5. Chemicals	-	-	2	5	6
6. Machinery & equipment	-	-	-	-	-
7. Land tax	-	-	-	-	-
8. Others	1,148	578	512	359	251
Sub-total	2,514	781	654	477	578
C. Total Cost of Production (M$)	2,514	781	654	477	578
D. Net Income (M$) (A - C)	-2,514	-781	-654	-477	-578

Item	6	7	8	9	10
A. Income					
Yield (kg/ha)	-	449	674	1,006	1,321
Farm gate price (M$/kg)	1.7	1.7	1.7	1.7	1.7
Value (M$)	-	763	1,146	1,710	2,246
B. Cost					
a. Labor input*					
1. Man-days	-	-	-	-	-
2. cost (M$)	-	-	-	-	-
b. Non-labor inputs					
1. Land clearing	-	-	-	-	-
2. Land preparation	-	-	-	-	-
3. Planting material	-	-	-	-	-
4. Fertilizers	321	244	244	244	244
5. Chemicals	6	6	6	6	6
6. Machinery & equipment	-	-	-	-	-
7. Land tax	-	-	-	-	-
8. Others	792	436	535	696	881
Sub-total	1,119	686	785	946	1,131
C. Total Cost of Production (M$)	1,119	686	785	946	1,131
D. Net Income (M$) (A - C)	-1,119	77	361	764	1,115

Remarks: *; Labor inputs are not shown as most of the works are on contract basis.
Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-13 Cost of Production and Estimated Returns per Hectare for Rubber (2/6)

Crop group 13: Rubber, RISDA (491 plants/ha) (2/3)

Item	11	12	13	14	15
A. Income					
Yield (kg/ha)	1,402	1,321	1,527	1,680	1,761
Farm gate price (M$/kg)	1.7	1.7	1.7	1.7	1.7
Value (M$)	2,383	2,246	2,596	2,856	2,994
B. Cost					
a. Labor input*					
1. Man-days	-	-	-	-	-
2. Cost (M$)	-	-	-	-	-
b. Non-labor inputs					
1. Land clearing	-	-	-	-	-
2. Land preparation	-	-	-	-	-
3. Planting material	-	-	-	-	-
4. Fertilizers	244	244	244	244	244
5. Chemicals	6	8	8	8	16
6. Machinery & equipment	-	-	-	-	-
7. Land tax	-	-	-	-	-
8. Others	929	881	1,003	1,093	1,149
Sub-total	1,179	1,133	1,255	1,345	1,409
C. Total Cost of Production (M$)	1,179	1,133	1,255	1,345	1,409
D. Net Income (M$) (A - C)	1,204	1,113	1,341	1,511	1,585

Item	16	17	18	19	20
A. Income					
Yield (kg/ha)	1,680	2,003	2,201	2,249	1,887
Farm gate price (M$/kg)	1.7	1.7	1.7	1.7	1.7
Value (M$)	2,856	3,405	3,742	3,823	3,208
B. Cost					
a. Labor input*					
1. Man-days	-	-	-	-	-
2. cost (M$)	-	-	-	-	-
b. Non-labor inputs					
1. Land clearing	-	-	-	-	-
2. Land preparation	-	-	-	-	-
3. Planting material	-	-	-	-	-
4. Fertilizers	244	244	244	244	244
5. Chemicals	16	16	16	16	16
6. Machinery & equipment	-	-	-	-	-
7. Land tax	-	-	-	-	-
8. Others	1,101	1,292	1,409	1,437	868
Sub-total	1,361	1,522	1,669	1,697	1,128
C. Total Cost of Production (M$)	1,361	1,522	1,669	1,697	1,128
D. Net Income (M$) (A - C)	1,495	1,853	2,073	2,126	2,080

Remarks: *; Labor inputs are not shown as most of the works are on contract basis.
Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-13 Cost of Production and Estimated Returns per Hectare for Rubber (3/6)

Crop group 13: Rubber, RISDA (491 plants/ha) (3/3)

Item	21	22	23	24	25
A. Income					
Yield (kg/ha)	1,285	1,923	2,003	1,527	1,240
Farm gate price (M$/kg)	1.7	1.7	1.7	1.7	1.7
Value (M$)	2,185	3,269	3,405	2,596	2,108
B. Cost					
a. Labor input*					
1. Man-days	-	-	-	-	-
2. Cost (M$)	-	-	-	-	-
b. Non-labor inputs					
1. Land clearing	-	-	-	-	-
2. Land preparation	-	-	-	-	-
3. Planting material	-	-	-	-	-
4. Fertilizers	244	244	244	244	244
5. Chemicals	16	16	16	16	16
6. Machinery & equipment	-	-	-	-	-
7. Land tax	-	-	-	-	-
8. Others	868	1,245	1,292	1,011	842
Sub-total	1,128	1,505	1,552	1,271	1,102
C. Total Cost of Production (M$)	1,128	1,505	1,552	1,271	1,102
D. Net Income (M$) (A - C)	1,057	1,764	1,853	1,325	1,006

Remarks: *; Labor inputs are not shown as most of the works are on contract basis.
Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-13 Cost of Production and Estimated Returns per Hectare for Rubber (4/6)

Crop group 13: Rubber, FELCRA (510 plants/ha) (1/3)

Item	1	2	3	4	5
A. Income					
Yield (kg/ha)	-	-	-	-	-
Farm gate price (M$/kg)	1.7	1.7	1.7	1.7	1.7
Value (M$)	-	-	-	-	-
B. Cost					
a. Labor input*					
1. Man-days	-	18	2	2	2
2. Cost (M$)	-	180	20	20	20
b. Non-labor inputs					
1. Land clearing	600	-	-	-	-
2. Land preparation	734	-	-	-	-
3. Planting material	612	91	61	-	-
4. Fertilizers	-	197	184	211	214
5. Chemicals	-	182	3	3	5
6. Machinery & equipment	-	-	-	-	-
7. Land tax	-	-	-	-	-
8. Others	1,163	315	498	451	437
Sub-total	3,109	785	746	665	656
C. Total Cost of Production (M$)	3,109	965	766	685	676
D. Net Income (M$) (A - C)	-3,109	-965	-766	-685	-676

Item	6	7	8	9	10
A. Income					
Yield (kg/ha)	-	340	340	900	1,120
Farm gate price (M$/kg)	1.7	1.7	1.7	1.7	1.7
Value (M$)	-	578	1,139	1,530	1,904
B. Cost					
a. Labor input*					
1. Man-days	2	2	2	2	2
2. cost (M$)	20	20	20	20	20
b. Non-labor inputs					
1. Land clearing	-	-	-	-	-
2. Land preparation	-	-	-	-	-
3. Planting material	-	-	-	-	-
4. Fertilizers	172	172	172	172	172
5. Chemicals	5	5	5	5	5
6. Machinery & equipment	-	-	-	-	-
7. Land tax	-	-	-	-	-
8. Others	1,140	678	721	721	757
Sub-total	1,317	855	898	898	934
C. Total Cost of Production (M$)	1,337	875	918	918	954
D. Net Income (M$) (A - C)	-1,337	-297	221	612	950

Remarks: *; Labor inputs are not shown as most of the works are on contract basis.
Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-13 Cost of Production and Estimated Returns per Hectare for Rubber (5/6)

Crop group 13: Rubber, FELCRA (510 plants/ha) (2/3)

Item	11	12	13	14	15
A. Income					
Yield (kg/ha)	1,290	1,350	1,400	1,450	1,516
Farm gate price (M$/kg)	1.7	1.7	1.7	1.7	1.7
Value (M$)	2,193	2,295	2,380	2,482	2,577
B. Cost					
a. Labor input*					
1. Man-days	2	2	2	2	2
2. Cost (M$)	20	20	20	20	20
b. Non-labor inputs					
1. Land clearing	-	-	-	-	-
2. Land preparation	-	-	-	-	-
3. Planting material	-	-	-	-	-
4. Fertilizers	172	172	172	172	172
5. Chemicals	5	5	5	5	5
6. Machinery & equipment	-	-	-	-	-
7. Land tax	-	-	-	-	-
8. Others	781	897	941	941	1,011
Sub-total	958	1,074	1,118	1,118	1,188
C. Total Cost of Production (M$)	978	1,094	1,138	1,138	1,208
D. Net Income (M$) (A - C)	1,215	1,001	1,242	1,344	1,369

Item	16	17	18-20	21-22	23
A. Income					
Yield (kg/ha)	1,572	1,628	1,684	1,628	1,572
Farm gate price (M$/kg)	1.7	1.7	1.7	1.7	1.7
Value (M$)	2,672	2,768	2,863	2,768	2,672
B. Cost					
a. Labor input*					
1. Man-days	2	2	2	2	2
2. cost (M$)	20	20	20	20	20
b. Non-labor inputs					
1. Land clearing	-	-	-	-	-
2. Land preparation	-	-	-	-	-
3. Planting material	-	-	-	-	-
4. Fertilizers	172	172	172	172	172
5. Chemicals	5	5	5	3	3
6. Machinery & equipment	-	-	-	-	-
7. Land tax	-	-	-	-	-
8. Others	1,011	1,011	931	771	681
Sub-total	1,188	1,188	1,108	946	856
C. Total Cost of Production (M$)	1,208	1,208	1,128	966	876
D. Net Income (M$) (A - C)	1,464	1,573	1,735	1,802	1,796

Remarks: *; Labor inputs are not shown as most of the works are on contract basis.
Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-13 Cost of Production and Estimated Returns per Hectare for Rubber (6/6)

Crop group 13: Rubber, FELCRA (510 plants/ha) (3/3)

Item	24	25
A. Income		
Yield (kg/ha)	1,516	1,460
Farm gate price (M$/kg)	1.7	1.7
Value (M$)	2,577	2,482
B. Cost		
a. Labor input*		
1. Man-days	2	2
2. Cost (M$)	20	20
b. Non-labor inputs		
1. Land clearing	-	-
2. Land preparation	-	-
3. Planting material	-	-
4. Fertilizers	172	172
5. Chemicals	3	3
6. Machinery & equipment	-	-
7. Land tax	-	-
8. Others	681	681
Sub-total	856	856
C. Total Cost of Production (M$)	876	876
D. Net Income (M$) (A - C)	1,701	1,606

Remarks: *; Labor inputs are not shown as most of the works are on contract basis.
Source: Guideline on Econmic Viability of Selected Crops, MOA, 1989

Table E-14 Cost of Production and Estimated Returns per Hectare for Cashewnut

Crop group 15: Cashewnut

Item	1	2	3	4	5–7
A. Income					
Yield (kg/ha)	-	-	200	400	600
Farm gate price (M$/kg)	2.5	2.5	2.5	2.5	2.5
Value (M$)	-	-	500	1,000	1,500
B. Cost					
a. Labor input					
1. Man-days	53	35	50	47	49
2. Cost (M$)	530	350	500	470	490
b. Non-labor inputs					
1. Land clearing	-	-	-	-	-
2. Land preparation	200	-	-	-	-
3. Planting material	50	-	-	-	-
4. Fertilizers	158	316	48	48	48
5. Chemicals	33	65	75	85	85
6. Machinery & equipment	44	62	140	90	110
7. Land tax	10	10	10	10	10
8. Others	-	30	-	40	20
Sub-total	495	483	273	273	273
C. Total Cost of Production (M$)	1,025	833	773	743	763
D. Net Income (M$) (A - C)	-1,025	-833	-273	257	787

Item	8–30
A. Income	
Yield (kg/ha)	1,000
Farm gate price (M$/kg)	2.5
Value (M$)	2,500
B. Cost	
a. Labor input	
1. Man-days	50
2. cost (M$)	500
b. Non-labor inputs	
1. Land clearing	-
2. Land preparation	-
3. Planting material	-
4. Fertilizers	48
5. Chemicals	85
6. Machinery & equipment	150
7. Land tax	10
8. Others	-
Sub-total	273
C. Total Cost of Production (M$)	773
D. Net Income (M$) (A - C)	1,727

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-15 Cost of Production and Estimated Returns per Hectare for Coffee (1/2)

Crop group 16: Coffee, Robusta (1,089 plants/ha)

Item	1	2	3	4	5
A. Income					
Yield (kg/ha)	-	-	300	500	600
Farm gate price (M$/kg)	4	4	4	4	4
Value (M$)	-	-	1,200	2,000	2,400
B. Cost					
a. Labor input					
1. Man-days	212	94	94	94	96
2. Cost (M$)	2,120	940	940	940	960
b. Non-labor inputs					
1. Land clearing	600	-	-	-	-
2. Land preparation	-	-	-	-	-
3. Planting material	545	-	-	-	-
4. Fertilizers	105	208	312	312	312
5. Chemicals	120	150	-	-	-
6. Machinery & equipment	50	50	80	80	80
7. Land tax	10	10	10	10	10
8. Others	1,618	130	100	60	60
Sub-total	3,048	548	502	462	462
C. Total Cost of Production (M$)	5,168	1,488	1,442	1,402	1,422
D. Net Income (M$) (A - C)	-5,168	-1,488	-242	598	978

Item	6	7–25
A. Income		
Yield (kg/ha)	800	1,000
Farm gate price (M$/kg)	4	4
Value (M$)	3,200	4,000
B. Cost		
a. Labor input		
1. Man-days	96	96
2. cost (M$)	960	960
b. Non-labor inputs		
1. Land clearing	-	-
2. Land preparation	-	-
3. Planting material	-	-
4. Fertilizers	312	312
5. Chemicals	-	-
6. Machinery & equipment	80	62
7. Land tax	10	10
8. Others	60	60
Sub-total	462	444
C. Total Cost of Production (M$)	1,422	1,404
D. Net Income (M$) (A - C)	1,778	2,596

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-15 Cost of Production and Estimated Returns per Hectare for Coffee (2/2)

Crop group 16: Coffee, Arabica (1,600 plants/ha)

Item	1	2	3	4	5
A. Income					
Yield (kg/ha)	-	-	400	600	800
Farm gate price (M$/kg)	4.5	4.5	4.5	4.5	4.5
Value (M$)	-	-	1,800	2,700	3,600
B. Cost					
a. Labor input					
1. Man-days	305	148	158	158	160
2. Cost (M$)	3,050	1,480	1,580	1,580	1,600
b. Non-labor inputs					
1. Land clearing	600	-	-	-	-
2. Land preparation	-	-	-	-	-
3. Planting material	1,600	-	-	-	-
4. Fertilizers	150	298	448	448	448
5. Chemicals	240	360	360	480	480
6. Machinery & equipment	50	50	200	200	200
7. Land tax	-	-	-	-	-
8. Others	1,618	304	-	-	-
Sub-total	4,258	1,048	1,008	1,128	1,128
C. Total Cost of Production (M$)	7,308	2,528	2,588	2,708	2,728
D. Net Income (M$) (A - C)	-7,308	-2,528	-788	-8	872

Item	6	7–25
A. Income		
Yield (kg/ha)	1,200	1,600
Farm gate price (M$/kg)	4.5	4.5
Value (M$)	5,400	7,200
B. Cost		
a. Labor input		
1. Man-days	163	171
2. cost (M$)	1,630	1,710
b. Non-labor inputs		
1. Land clearing	-	-
2. Land preparation	-	-
3. Planting material	-	-
4. Fertilizers	448	448
5. Chemicals	480	480
6. Machinery & equipment	200	200
7. Land tax	-	-
8. Others	-	-
Sub-total	1,128	1,128
C. Total Cost of Production (M$)	2,758	2,838
D. Net Income (M$) (A - C)	2,642	4,362

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-16 Cost of Production and Estimated Returns per Hectare for Tea

Crop group 17: Tea (12,355 plants/ha)

Item	1	2	3	4	5
A. Income					
Yield (kg/ha)	-	-	-	2,250	3,930
Farm gate price (M$/kg)	0.88	0.88	0.88	0.88	0.88
Value (M$)	-	-	-	1,980	3,458
B. Cost					
a. Labor input					
1. Man-days	345	82	82	176	250
2. Cost (M$)	3,450	820	820	1,760	2,500
b. Non-labor inputs					
1. Land clearing	-	-	-	-	-
2. Land preparation	-	-	-	-	-
3. Planting material	3,706	-	-	-	-
4. Fertilizers	235	296	445	618	741
5. Chemicals	62	62	62	62	62
6. Machinery & equipment	247	81	81	81	81
7. Land tax	-	-	-	-	-
8. Others	-	370	370	-	-
Sub-total	4,250	809	958	761	884
C. Total Cost of Production (M$)	7,700	1,629	1,778	2,521	3,384
D. Net Income (M$) (A - C)	-7,700	-1,629	-1,778	-541	74

Item	6–30
A. Income	
Yield (kg/ha)	5,625
Farm gate price (M$/kg)	0.88
Value (M$)	4,950
B. Cost	
a. Labor input	
1. Man-days	336
2. cost (M$)	3,360
b. Non-labor inputs	
1. Land clearing	-
2. Land preparation	-
3. Planting material	-
4. Fertilizers	865
5. Chemicals	62
6. Machinery & equipment	82
7. Land tax	-
8. Others	-
Sub-total	1,008
C. Total Cost of Production (M$)	4,368
D. Net Income (M$) (A - C)	582

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-17 Cost of Production and Estimated Returns per Hectare for Clove

Crop group 18: Clove (177 plants/ha)

Item	1	2	3	4	5
A. Income					
Yield (kg/ha)	-	-	-	50	100
Farm gate price (M$/kg)	8	8	8	8	8
Value (M$)	-	-	-	400	800
B. Cost					
a. Labor input					
1. Man-days	146	86	62	90	120
2. Cost (M$)	1,460	860	620	900	1,200
b. Non-labor inputs					
1. Land clearing	600	-	-	-	-
2. Land preparation	-	-	-	-	-
3. Planting material	885	-	-	-	-
4. Fertilizers	36	43	64	85	128
5. Chemicals	222	250	250	350	350
6. Machinery & equipment	56	38	38	56	56
7. Land tax	10	10	10	10	10
8. Others	1,618	89	-	-	-
Sub-total	3,427	430	362	501	544
C. Total Cost of Production (M$)	4,887	1,290	982	1,401	1,744
D. Net Income (M$) (A - C)	-4,887	-1,290	-982	-1,001	-944

Item	6	7–10	11–15	16–40
A. Income				
Yield (kg/ha)	250	300	400	500
Farm gate price (M$/kg)	8	8	8	8
Value (M$)	2,000	2,400	3,200	4,000
B. Cost				
a. Labor input				
1. Man-days	114	130	130	130
2. cost (M$)	1,140	1,300	1,300	1,300
b. Non-labor inputs				
1. Land clearing	-	-	-	-
2. Land preparation	-	-	-	-
3. Planting material	-	-	-	-
4. Fertilizers	172	213	213	213
5. Chemicals	350	350	350	350
6. Machinery & equipment	56	63	63	63
7. Land tax	10	10	10	10
8. Others	-	-	-	-
Sub-total	588	636	636	636
C. Total Cost of Production (M$)	1,728	1,936	1,936	1,936
D. Net Income (M$) (A - C)	272	464	1,264	2,064

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-18 Cost of Production and Estimated Returns per Hectare for Pepper

Crop group 24: Pepper (1,600 plants/ha)

Item	1	2	3	4	5
A. Income					
Yield (kg/ha)	-	200	400	600	900
Farm gate price (M$/kg)	4	4	4	4	4
Value (M$)	-	800	1,600	2,400	3,600
B. Cost					
a. Labor input					
1. Man-days	340	224	206	223	215
2. Cost (M$)	3,400	2,240	2,060	2,230	2,150
b. Non-labor inputs					
1. Land clearing	600	-	-	-	-
2. Land preparation	-	-	-	-	-
3. Planting material	1,600	-	-	-	-
4. Fertilizers	200	400	640	640	640
5. Chemicals	200	300	300	300	300
6. Machinery & equipment	53	100	120	120	100
7. Land tax	10	10	10	10	10
8. Others	1,918	410	-	-	-
Sub-total	4,581	1,220	1,070	1,070	1,050
C. Total Cost of Production (M$)	7,981	3,460	3,130	3,300	3,200
D. Net Income (M$) (A - C)	-7,981	-2,660	-1,530	-900	400

Item	6	7--25
A. Income		
Yield (kg/ha)	1,200	1,600
Farm gate price (M$/kg)	4	4
Value (M$)	4,800	6,400
B. Cost		
a. Labor input		
1. Man-days	215	215
2. cost (M$)	2,150	2,150
b. Non-labor inputs		
1. Land clearing	-	-
2. Land preparation	-	-
3. Planting material	-	-
4. Fertilizers	640	640
5. Chemicals	300	300
6. Machinery & equipment	100	100
7. Land tax	10	10
8. Others	-	-
Sub-total	1,050	1,050
C. Total Cost of Production (M$)	3,200	3,200
D. Net Income (M$) (A - C)	1,600	3,200

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-19 Cost of Production and Estimated Returns per Hectare for Sugarcane

Crop group 17: Sugarcane

Item	1	2	3	Total
A. Income				
Yield (kg/ha)	65,000	60,000	50,000	175,000
Farm gate price (M$/kg)	50	50	50	50
Value (M$)	3,250	3,000	2,500	8,750
B. Cost				
a. Labor input*				
1. Man-days	88	81	81	250
2. Cost (M$)	880	810	810	2,500
b. Non-labor inputs				
1. Land clearing	650	-	-	650
2. Land preparation	225	-	-	225
3. Planting material	1,955	-	-	1,955
4. Fertilizers	246	413	501	1,160
5. Chemicals	153	153	153	459
6. Machinery & equipment	18	18	18	54
7. Land tax	7	7	7	21
8. Others	-	-	-	-
Sub-total	3,254	591	679	4,524
C. Total Cost of Production (M$)	4,134	1,401	1,489	7,024
D. Net Income (M$) (A - C)	-884	1,599	1,011	1,726

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-20 Cost of Production and Estimated Returns per Hectare for Tobacco, Ginger and Groundnut

Crop groups 14, 16 and 20: Tobacco, Ginger and Groundnut

	Item	Tobacco	Ginger	Groundnut
A.	Income			
	Yield (kg/ha)	9,500	14,950	2,610
	Price (M$/kg)	0.67	0.83	1.1
	Gross income (M$)	6,365	12,408	2,871
B.	Cost (M$)			
	a. Land preparation cost	280	400	400
	b. Cost of inputs			
	1. Seed	2	3,000	200
	2. Soil conditioner	-	500	-
	3. Fertilizer	400	960	293
	4. Chemicals	160	144	174
	5. Others	41	-	-
	Sub-total	603	4,604	667
	c. Cost of Labor			
	1. Land preparation	1,350	-	-
	2. Seeding/Planting	340	250	170
	3. Fertilizer application	150	150	100
	4. Chemical application	250	620	200
	5. Weeding	70	1,200	70
	6. Harvesting	250	400	470
	7. Others	710	-	-
	Sub-total	3,120	2,620	1,010
	d. Land tax	25	165	123
	e. Miscellaneous	402	781	220
C.	Total Cost of Production (M$) (a+b+c+d+e)	4,430	8,570	2,420
D.	Net Income (M$) (A - C)	1,935	3,838	451
E.	Annual Labor Requirement (man-days)	311	262	101

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-21 Cost of Production and Estimated Returns per Hectare for Maize and Sorghum

Crop groups 18 and 19: Maize and Sorghum

Item	Maize(Fresh)	Maize(Grain)	Sorghum
A. Income			
Yield (kg/ha)	53,000 cobs	2,690	3,750
Price (M$/kg)	0.05 /cob	0.4	0.4
Gross income (M$)	2,650	1,076	1,080
B. Cost (M$)			
a. Land preparation cost	400	400	438
b. Cost of inputs			
1. Seed	200	200	6
2. Soil conditioner	83	83	-
3. Fertilizer	227	227	230
4. Chemicals	118	118	177
5. Others	-	-	-
Sub-total	628	628	413
c. Cost of Labor			
1. Land preparation	50	50	-
2. Seeding	80	80	60
3. Fertilizer application	80	80	100
4. Chemical application	100	100	100
5. Weeding	100	100	0
6. Harvesting	100	100	230
7. Others	-	-	50
Sub-total	510	510	540
d. Land tax	82	82	82
e. Miscellaneous	80	80	17
C. Total Cost of Production (M$) (a+b+c+d+e)	1,700	1,700	1,490
D. Net Income (M$) (A - C)	950	-624	-410
E. Annual Labor Requirement (man-days)	51	51	54

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-22 Cost of Production and Estimated Returns per Hectare for Paddy

Crop groups 24: Wet paddy

	Item	Type 1	Type 2	Type 3
A.	Income			
	Yield (kg/ha)	3,200	3,200	3,500
	Price (M$/kg)	1.0	1.0	1.0
	Gross income (M$)	3,200	3,200	3,500
B.	Cost (M$)			
	a. Land preparation cost	228	225	330
	b. Cost of inputs			
	1. Seed	23	30	40
	2. Soil conditioner	-	-	-
	3. Fertilizer	193	193	185
	4. Chemicals	52	51	197
	5. Others	5	5	5
	Sub-total	273	279	427
	c. Cost of Labor			
	1. Land preparation	-	-	20
	2. Seeding/Planting	270	270	30
	3. Fertilizer application	30	30	20
	4. Chemical application	70	70	110
	5. Weeding	-	-	-
	6. Harvesting	400	-	-
	7. Mechanized harvesting	-	330	370
	Sub-total	770	700	550
	d. Land tax/irrigation fee	32	32	32
	e. Miscellaneous	48	54	61
C.	Total Cost of Production (M$) (a+b+c+d+e)	1,350	1,290	1,400
D.	Net Income (M$) (A - C)	1,850	1,910	2,100
E.	Annual Labor Requirement (man-days)	77	37	18

Remarks: Type 1; Mechanized land preparation with transplanting
Type 2; Mechanized land preparation and harvesting with transplanting
Type 3; Mechanized land preparation and harvesting with direct seeding

Source: *Kelantan SPU Farm Budgets, 1988*

Table E-23 Cost of Production and Estimated Returns per Hectare for Vegetables (1/5)

Crop group 23: Vegetables

Item	Chinese kale	Spinach	Cabbage	Cauliflower
A. Income				
Yield (kg/ha)	11,000	15,800	19,000	7,400
Price (M$/kg)	0.9	0.43	1.0	2.8
Gross income (M$)	9,900	6,794	19,000	20,720
B. Cost (M$)				
a. Land preparation cost	-	400	-	-
b. Cost of inputs				
1. Seed	40	40	120	280
2. Soil conditioner	-	-	-	-
3. Fertilizer	1,125	737	2,182	2,625
4. Chemicals	300	240	935	433
5. Others	-	280	-	-
Sub-total	1,465	1,297	3,237	3,338
c. Cost of Labor				
1. Land preparation	520	-	520	520
2. Seeding/Planting	-	-	200	100
3. Fertilizer application	100	100	-	-
4. Chemical application	-	-	-	-
5. Weeding	-	-	-	200
6. Harvesting	600	600	70	100
7. Post-harvesting	2,230	1,130	1,050	950
Sub-total	3,450	1,830	1,840	1,870
d. Land tax	21	21	81	54
e. Miscellaneous	494	466	512	558
C. Total Cost of Production (M$) (a+b+c+d+e)	5,430	4,014	5,670	5,820
D. Net Income (M$) (A - C)	4,470	2,780	13,330	14,900
E. Annual Labor Requirement (man-days)	345	183	184	187

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-23 Cost of Production and Estimated Returns per Hectare for Vegetables (2/5)

Crop group 23: Vegetables

	Item	Broccoli	Longbean	French bean	Eggplant
A.	Income				
	Yield (kg/ha)	7,500	15,000	10,500	29,900
	Price (M$/kg)	2.8	0.64	0.8	0.56
	Gross income (M$)	21,000	9,600	8,400	16,744
B.	Cost (M$)				
	a. Land preparation cost	-	400	865	400
	b. Cost of inputs				
	1. Seed	200	216	360	18
	2. Soil conditioner	-	-	-	-
	3. Fertilizer	2,625	818	1,887	1,600
	4. Chemicals	433	343	296	790
	5. Others	-	1,475	1,157	-
	Sub-total	3,258	2,852	3,700	2,408
	c. Cost of Labor				
	1. Land preparation	520	120	370	120
	2. Seeding	-	-	100	300
	3. Fertilizer application	200	100	150	360
	4. Chemical application	-	150	300	500
	5. Weeding	-	100	340	580
	6. Harvesting	100	1,500	960	1,250
	7. Post-harvesting	950	390	130	-
	Sub-total	1,770	2,360	2,350	3,110
	d. Land tax	42	61	61	144
	e. Miscellaneous	510	577	694	612
C.	Total Cost of Production (M$) (a+b+c+d+e)	5,580	6,250	7,670	6,674
D.	Net Income (M$) (A - C)	15,420	3,350	730	10,070
E.	Annual Labor Requirement (man-days)	177	236	235	311

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-23 Cost of Production and Estimated Returns per Hectare for Vegetables (3/5)

Crop group 23: Vegetables

	Item	Cucumber	Bittergourd	Okra	Onion
A.	Income				
	Yield (kg/ha)	22,000	13,450	26,900	8,000
	Price (M$/kg)	0.4	0.74	0.76	1.0
	Gross income (M$)	8,800	9,953	20,444	8,000
B.	Cost (M$)				
	a. Land preparation cost	520	400	400	-
	b. Cost of inputs				
	1. Seed	432	240	99	3,750
	2. Soil conditioner	-	-	-	-
	3. Fertilizer	1,820	424	2,100	950
	4. Chemicals	292	360	263	301
	5. Others	1,335	1,385	250	-
	Sub-total	3,879	2,409	2,712	5,001
	c. Cost of Labor				
	1. Land preparation	-	960	-	520
	2. Seeding/Planting	120	120	150	-
	3. Fertilizer application	100	100	150	150
	4. Chemical application	100	-	150	330
	5. Weeding	-	100	320	150
	6. Harvesting	800	500	1,200	150
	7. Post-harvesting	770	100	120	250
	Sub-total	1,890	1,880	2,090	1,550
	d. Land tax	81	82	165	61
	e. Miscellaneous	630	482	537	658
C.	Total Cost of Production (M$) (a+b+c+d+e)	7,000	5,253	5,904	7,270
D.	Net Income (M$) (A - C)	1,800	4,700	14,540	730
E.	Annual Labor Requirement (man-days)	241	168	209	155

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-23 Cost of Production and Estimated Returns per Hectare for Vegetables (4/5)

Crop group 23: Vegetables

	Item	Chili	Sweetpotato	Cassava	Yam
A.	Income				
	Yield (kg/ha)	15,000	11,000	30,000	12,000
	Price (M$/kg)	1.5	0.29	0.08	0.75
	Gross income (M$)	22,500	3,190	2,400	9,000
B.	Cost (M$)				
	a. Land preparation cost	400	150	250	345
	b. Cost of inputs				
	1. Seed	9	144	40	270
	2. Soil conditioner	-	-	-	-
	3. Fertilizer	2,500	192	320	210
	4. Chemicals	496	68	120	-
	5. Others	-	-	-	50
	Sub-total	3,005	404	480	530
	c. Cost of Labor				
	1. Land preparation	-	500	-	200
	2. Seeding/Planting	120	160	100	1,200
	3. Fertilizer application	120	50	50	90
	4. Chemical application	500	100	130	-
	5. Weeding	300	90	-	-
	6. Harvesting	2,100	360	510	450
	7. Others	120	-	-	-
	Sub-total	3,260	1,260	790	1,940
	d. Land tax	125	82	247	247
	e. Miscellaneous	680	194	173	308
C.	Total Cost of Production (M$) (a+b+c+d+e)	7,470	2,090	1,940	3,370
D.	Net Income (M$) (A - C)	15,030	1,100	460	5,630
E.	Annual Labor Requirement (man-days)	326	90	28	194

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-23 Cost of Production and Estimated Returns per Hectare for Vegetables (5/5)

Crop group 23: Vegetables (Asparagus)

Item/Year	1	2	3	4–10
A. Income				
Yield (kg/ha)	1,000	4,000	4,000	5,000
Price (M$/kg)	5	5	5	5
Gross income (M$)	5,000	20,000	20,000	25,000
B. Cost (M$)				
a. Land preparation cost	2,400	-	-	-
b. Cost of inputs				
1. Seed	3,499	-	-	-
2. Soil conditioner	1,500	-	-	-
3. Fertilizer	1,510	1,510	1,510	1,510
4. Chemicals	125	125	125	125
5. Others	5,700	-	-	-
Sub-total	12,334	1,635	1,635	1,635
c. Cost of Labor				
1. Land preparation	2,100	2,100	2,100	2,100
2. Seeding	-	-	-	-
3. Fertilizer application	1,000	1,000	1,000	1,000
4. Chemical application	-	-	-	-
5. Weeding	-	-	-	-
6. Harvesting	2,000	2,000	2,000	2,000
7. Others	650	650	650	650
Sub-total	5,750	5,750	5,750	5,750
d. Land tax	247	247	247	247
e. Miscellaneous	2,069	768	768	768
C. Total Cost of Production (M$) (a+b+c+d+e)	22,800	8,400	8,400	8,400
D. Net Income (M$) (A - C)	-17,800	11,600	11,600	16,600
E. Annual Labor Requirement (man-days)	575	575	575	575

Source: Guideline on Economic Viability of Selected Crops, MOA, 1989

Table E-24 Cost of Production and Estimated Returns per Hectare for Freshwater Fishes

Year		1	2–5	6	7–10
A.	Income				
	Yield (kg/ha)	3,100	3,100	3,100	3,100
	Gross income @M$2.15/kg	6,665	6,665	6,665	6,665
	Cumulative Total Gross Income	6,665	33,325	39,990	66,650
B.	Cost (M$)				
	a. Cost of input				
	1. Fish fry	2,160	2,160	2,160	2,160
	2. Fertilizers (TSP)	225	225	225	225
	3. Fertilizers (Organic)	180	180	180	180
	4. Lime	205	205	205	205
	5. Equipment	470	-	250	-
	6. Maintenance	-	-	500	-
	7. Others	60	60	60	60
	Sub-total	3,300	2,830	3,580	2,830
	b. Cost of Labor	1,850	1,850	1,850	1,850
	c. Contingencies	515	465	545	545
C.	Total Cost of Production (M$) (a+b+c)	5,665	5,145	5,975	5,145
	Cumulative Total Cost (M$)	5,665	26,245	32,220	52,800
D.	Net Income (M$) (A - C)	1,000	1,520	690	1,520
	Cumulative Net Income	1,000	7,080	7,770	13,850
E.	Annual Labor Requirement (man-days)	185	185	185	185
	Cumulative labor requirement (man-days)	185	925	1,110	1,850

Remarks: Stocking rate per hectare; Lampam Jawa 2,500; Common carp 1,250; Grass carp 250; Big head carp 375
Survival rate; 80%
Subsidy cost; pond construction M$15,000/ha
material subsidy M$1,500/ha

Source: Fisheries Program for Melaka IADP, MOA

Table E-25 Annual Average Crop Profitability (1/2)

Unit: M$/ha

Crop	Economic Life (Year)	Cumulative Amount			Average Annual Income	
		Gross Income	Production Cost	Net Income	Gross	Net
1. Fruits						
- Durian	25	120,931	43,535	77,396	4,837	3,096
- Mango	15	151,637	25,400	126,238	10,109	8,416
- Mangosteen	25	238,080	60,240	177,840	9,523	7,114
- Rambutan	15	68145	21262	46,883	4,543	3,126
- Guava	11	55,000	21,544	33,456	5,000	3,041
- Banana	3	11,434	8,327	3,108	3,811	1,036
- Papaya	3	19,980	14,202	5,778	6,660	1,926
- Mandarin orange	13	183,680	15,494	168,186	14,129	12,937
- Pineapple	3	8,362	4,483	3,879	2,787	1,293
- Watermelon	1	5,607	2,861	2,746	5,607	2,746
2. Industrial crops						
- Coconut	6	9,936	6,333	3,603	1,656	601
- Sago palm		1,344	1,131	213	1,344	213
- Oil palm	25	44,038	29,401	14,637	1,762	585
- Cocoa	25	81,996	42,299	39,697	3,280	1,588
- Ruber						
RISDA	25	49,537	29,927	19,610	1,981	784
FELCRA	25	44,374	26,957	17,417	1,775	697
- Cashewnut	30	63,500	21,916	41,584	2,117	1,386
- Coffee						
Robusta	25	84,800	39,020	45,780	3,392	1,831
Arabica	25	150,300	74,540	75,760	6,012	3,030
- Tea	30	129,188	126,212	2,976	4,306	99
- Clove	40	128,800	77,856	50,944	3,220	1,274
- Pepper	25	134,800	85,071	49,729	5,392	1,989
- Sugarcane	3	8,750	7,024	1,726	2,917	575
- Tobacco	1	6,365	4,430	1,935	6,365	1,935

Remarks: Type 1; Mechanized land preparation with transplanting
Type 2; Mechanized land preparation and harvesting with transplanting
Type 3; Mechanized land preparation and harvesting with direct seeding

Table E-25 Annual Average Crop Profitability (2/2)

Unit: M$/ha

Crop	Economic Life (Year)	Cumulative Amount			Average Annual Income	
		Gross Income	Production Cost	Net Income	Gross	Net
3. Vegetables						
- Ginger	1	12,408	8,570	3,838	12,408	3,838
- Groundnut	1	2,871	2,420	451	2,871	451
- Chinese kale	1	9,900	5,430	4,470	9,900	4,470
- Spinach	1	6,794	4,014	2,780	6,794	2,780
- Cabbage	1	19,000	5,670	13,330	19,000	13,330
- Cauliflower	1	20,720	5,820	14,900	20,720	14,900
- Broccoli	1	21,000	5,580	15,420	21,000	15,420
- Longbean	1	9,600	6,250	3,350	9,600	3,350
- French bean	1	8,400	7,670	730	8,400	730
- Egg plant	1	16,744	6,674	10,070	16,744	10,070
- Cucumber	1	8,800	7,000	1,800	8,800	1,800
- Bittergourd	1	9,953	5,253	4,700	9,953	4,700
- Okra	1	20,444	5,904	14,540	20,444	14,540
- Onion	1	8,000	7,270	730	8,000	730
- Chili	1	22,500	7,470	15,030	22,500	15,030
- Asparagus	10	220,000	98,400	121,600	22,000	12,160
- Maize (fresh)	1	2,650	1,700	950	2,650	950
4. Food Crops						
- Paddy						
Type 1	1	3,200	1,350	1,850	3,200	1,850
Type 2	1	3,200	1,290	1,910	3,200	1,910
Type 3	1	3,500	1,400	2,100	3,500	2,100
- Sweetpotato	1	3,190	2,090	1,100	3,190	1,100
- Cassava	1	2,400	1,940	460	2,400	460
- Yam	1	9,000	3,370	5,630	9,000	5,630
- Sorghum	1	1,080	1,490	-410	1,080	-410
- Maize (grain)	1	1,076	1,700	-624	1,076	-624
5. Freshwater fishes						
- Mixed	10	66,650	52,800	13,850	6,665	1,385

Remarks: Type 1; Mechanized land preparation with transplanting
Type 2; Mechanized land preparation and harvesting with transplanting
Type 3; Mechanized land preparation and harvesting with direct seeding

Table E-26 Labor Productivity by Crop (1/2)

Crop	Cumulative Net Income (M$/ha)	Cumulative Labor Requirement (manday/ha)	Labor Productivity (M$/manday)
1. Fruits			
- Durian	77,396	1,523	50.8
- Mango	126,238	921	137.1
- Mangosteen	177,840	3,459	51.4
- Rambutan	48,883	1,201	40.7
- Guava	33,456	748	44.7
- Banana	3,108	224	13.9
- Papaya	5,778	335	17.2
- Mandarin orange	168,186	834	201.7
- Pineapple	3,879	253	15.3
- Watermelon	2,746	90	30.5
2. Industrial crops			
- Coconut	3,603	277	13.0
- Sago palm	213	67	3.2
- Oil palm	14,637	25	585.5
- Cocoa	39,697	272	145.9
- Rubber			
RISDA	19,610	62	316.3
FELCRA	17,417	62	280.9
- Cashewnut	41,584	1,482	28.1
- Coffee			
Robusta	45,780	2,510	18.2
Arabica	75,760	4,341	17.5
- Tea	2,976	9,335	0.3
- Clove	50,944	5,038	10.1
- Pepper	49,729	5,508	9.0
- Sugarcane	1,726	250	6.9
- Tobacco	1,935	312	6.2

Table E-26 Labor Productivity by Crop (2/2)

Crop	Cumulative Net Income (M$/ha)	Cumulative Labor Requirement (manday/ha)	Labor Productivity (M$/manday)
3. Vegetables			
- Ginger	3,838	262	14.6
- Groundnut	451	101	4.5
- Chinese kale	4,470	345	13.0
- Spinach	2,780	183	15.2
- Cabbage	13,330	184	72.4
- Cauliflower	14,900	187	79.7
- Broccoli	15,420	177	87.1
- Longbean	3,350	236	14.2
- French bean	730	235	3.1
- Egg plant	10,070	311	32.4
- Cucumber	1,800	189	9.5
- Bittergourd	4,700	188	25.0
- Okra	14,540	209	69.6
- Onion	730	155	4.7
- Chili	15,030	326	46.1
- Asparagus	121,600	5,750	21.1
- Maize (fresh)	950	51	18.6
4. Food Crops			
- Paddy			
Type 1	1,850	77	24.0
Type 2	1,910	70	27.3
Type 3	2,100	55	38.2
- Sweetpotato	1,100	126	8.7
- Cassava	460	79	5.8
- Yam	5,630	194	29.0
- Sorghum	-410	54	-7.6
- Maize (grain)	-624	51	-12.2
5. Freshwater fishes	13,850	1,850	7.5

Table E-27 Crop-by-Crop Investment Performance

Crop Group	Crop	Class 1d	Class 2d	Class 3d
Fruit				
1.	Durian/Mango	43.6/B	22.0/A	11.0/a
7.	Guava	12.2/B	6.1/A	3.1/a
8.	Banana	2.7/B	1.4/A	0.7/a
9.	Cashewnut	8.4/A	4.2/a	-
13.	Papaya	1.2/A	0.6/a	-
15.	Citrus	5.7/A	2.9/a	-
21.	Pineapple	9.5/B	1.0/A	0.5/a
28.	Watermelon	2.3/A	1.2/a	-
Food crop				
18.	Maize	-	-	-
19.	Sorghum	-	-	-
24.	Paddy	1.0/A	-	-
27.	Upland paddy	-	-	-
Fodder crop				
18.	Fodder	-	-	-
19.	Pasture	-	-	-
Vegetable				
16.	Ginger	5.0/A	2.5/a	-
22.	Groundnut	0.9/A	0.4/a	-
23.	Vegetable	13.8/A	6.9/a	-
Industrial crop				
2.	Coconut	-	-	-
3.	Oil palm	3.6/B	1.8/A	0.9/a
4.	Cocoa	2.2/B	1.1/A	0.6/a
5.	Rubber	1.1/A	0.6/a	-
6.	Sago	-	-	-
10.	Coffee	0.7/B	0.4/A	-
11.	Tea	11.4/A	5.2/a	-
12.	Clove	2.3/A	1.1/a	-
14.	Tobacco	1.4/A	0.7/a	-
17.	Sugarcane	3.3/A	1.7/a	-
20.	Pepper	16.4/A	8.2/a	-

Remarks: Investment cost for on-farm development

A: M$8,600/ha Drainage class of soil 3d
a: M$8,600/ha Drainage class of coil 2d
B: M$4,300/ha Drainage class of soil 2d

Investment performance is expressed by benefit-cost ratio.

Appendix E

Figures

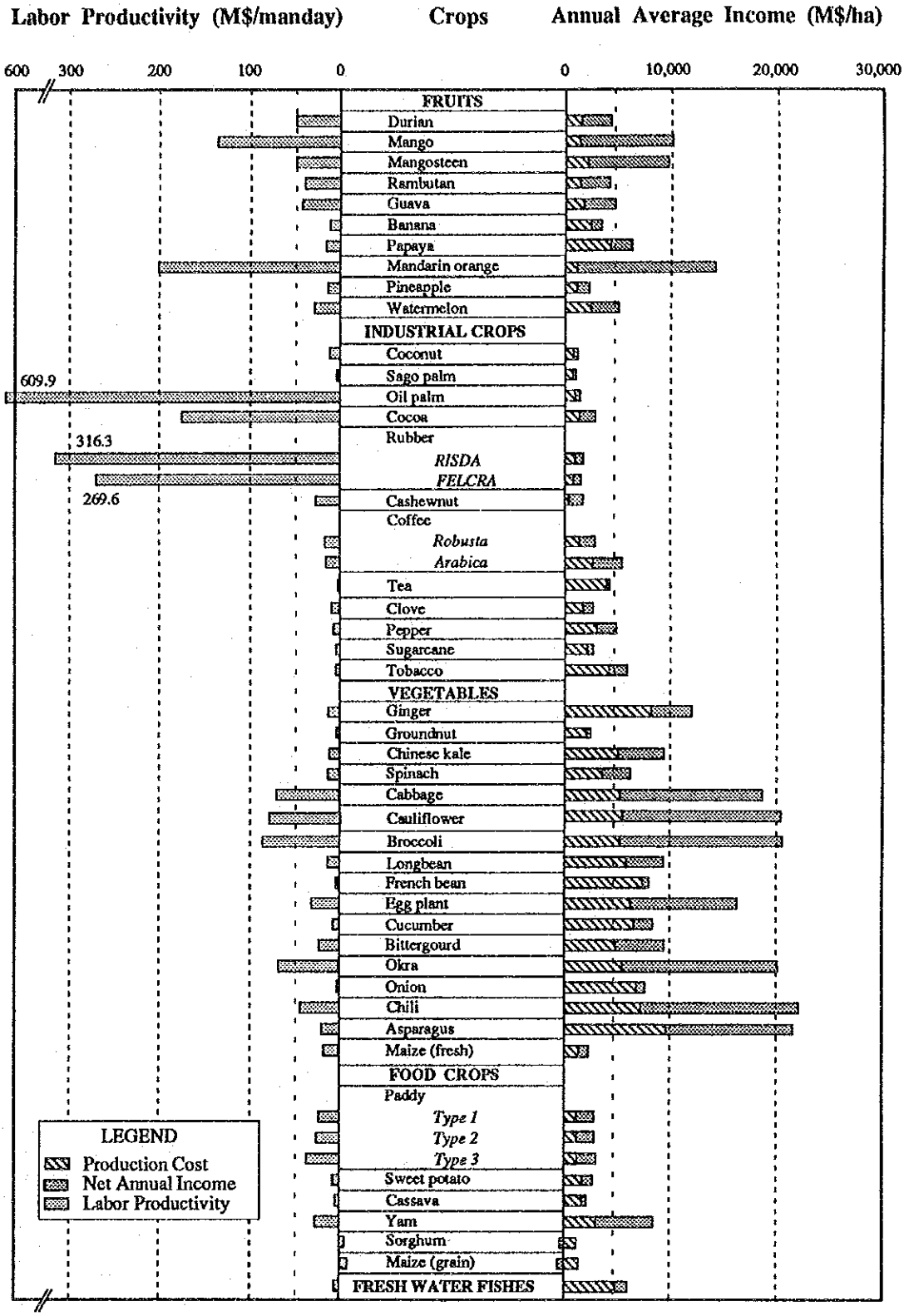

Fig. E-1
Crop Profitability and Labor Productivity

FEASIBILITY STUDY ON RATIONALIZATION AND CROP DIVERSIFICATION IN NON-GRANARY IRRIGATED AREAS IN MALAYSIA

Japan International Cooperation Agency