

ANNEX F. SOIL, LAND-USE AND AGRONOMY

F.1 Basic Development Plan

List of Tables

Table F.1-1	Slope of Topography
Table F.1-2	Cropping Pattern and Scale of Planted Areas Per Household
Table F.1-3	Soil Characteristics by Model Area
Table F.1-4	Present Land Use by Model Area
Table F.1-5	Planted Area by Model Area Per Farm Household
Table F.1-6	Cropping Intensity by Model Area
Table F.1-7	Unit Yield of Major Crops
Table F.1-8	Present Crop Production
Table F.1-9	Crops Preferred to Grow in Very Near Future
Table F.1-10	Frequency Distribution of Hazard/Calamity by Model Area
Table F.1-11	Crop Area by Model Area(Preliminary Proposed)

List of Figures

Figure F.1-1	Soil Map, Sappaac ARC, Bangued, Abra
Figure F.1-2	Soil Map, Talugtog ARC, San Juan, La Union
Figure F.1-3	Soil Map, Cofcaville ARC, Maddela, Quirino
Figure F.1-4	Soil Map, MONTilla ARC, Tuyoy, Balanga, Bataan
Figure F.1-5	Soil Map, Maulawin ARC, Calauag, Quezon
Figure F.1-6	Soil Map, Pag-asa, Tinambac, Camarines Sur
Figure F.1-7	Soil Map, Abiera Estate, Altavas, Aklan
Figure F.1-8	Soil Map, San Vicente ARC, Trinidad, Bohol
Figure F.1-9	Sail Map, Marangog-Leyte ARC, Hilongos, Lyete
Figure F.1-10	Sail Map, Silae ARC, Malaybalay, Bukidnon
Figure F.1-11	Soil Map, Mat-i ARC, Surigao City, Surigao Del Norte
Figure F.1-12	Soil Map, Kipalili ARC, Asuncion, Davao Del Norte

F.2 Feasibility Study

Table F.2-1	Characteristics of Soils, Sappaac
Table F.2-2	Characteristics of Soils, Cofcaville
Table F.2-3	Characteristics of Soils, Marangog
Table F.2-4	Characteristics of Soils, Silae
Table F.2-5	Planting Area in Idle/Uncultivated Land, Sappaac(Case-3)
Table F.2-6	Planting Area in Idle/Uncultivated Land, Cofcaville(Case-3)
Table F.2-7	Planting Area in Idle/Uncultivated Land, Marangog

Table F.2-8	Planting Area in Idle/Uncultivated Land, Silae
Table F.2-9	Proposed Cropping Area, Sappaac(Case-3)
Table F.2-10	Proposed Cropping Area, Cofcaville(Case-3)
Table F.2-11	Proposed Cropping Area, Marangog(Case-3)
Table F.2-12	Proposed Cropping Area, Silae(Case-3)
Table F.2-13	Target Crop Yield by Land Suitability Class
Table F.2-14	Crop Production with Project, Sappaac(Case-3)
Table F.2-15	Crop Production with Project, Cofcaville(Case-3)
Table F.2-16	Crop Production with Project, Marangog(Case-3)
Table F.2-17	Crop Production with Project, Silae(Case-3)
Table F.2-18	Labor Requirement, Paddy Rice, Transplanted(Irrigated)
Table F.2-19	Labor Requirement, Paddy Rice, Transplanted(Rainfed)
Table F.2-20	Labor Requirement, Corn
Table F.2-21	Labor Requirement, Mungbean
Table F.2-22	Labor Requirement, Peanut
Table F.2-23	Labor Requirement, Sweet Potato
Table F.2-24	Labor Requirement, Cassava
Table F.2-25	Labor Requirement, Squash
Table F.2-26	Labor Requirement, Garlic
Table F.2-27	Farm Input Requirement, Sappaac
Table F.2-28	Farm Input Requirement, Cofcaville
Table F.2-29	Farm Input Requirement, Marangog
Table F.2-30	Farm Input Requirement, Silae
Table F.2-31	Cost on Nursery per Site
Table F.2-32	Cost on Training and Demonstration

List of Figures

Figure F.2-1	Process on Land Use Plan
Figure F.2-2	Slope Unit, Sappaac
Figure F.2-3	Slope Unit, Cofcaville
Figure F.2-4	Slope Unit, Marangog
Figure F.2-5	Slope Unit, Silae
Figure F.2-6	Proposed Land Use Pattern(Case-1)
Figure F.2-7	Proposed Land Use Pattern(Case-2)
Figure F.2-8	Proposed Land Use Pattern(Case-3)
Figure F.2-9	Proposed Land Use Pattern(Case-4)
Figure F.2-10	Proposed Land Use Pattern(Case-5)
Figure F.2-11	Soil Map, Sappaac
Figure F.2-12	Soil Depth, Sappaac
Figure F.2-13	Content of Gravel/Rock Outcrop, Sappaac
Figure F.2-14	Soil Acidity, Sappaac

Figure F.2-15	Present Land Use, Sappaac
Figure F.2-16	Land Suitability for Paddy Rice, Sappaac
Figure F.2-17	Land Suitability for Field Crops, Sappaac
Figure F.2-18	Land Suitability for Trees Crops, Sappaac
Figure F.2-19	Soil Map, Cofcaville
Figure F.2-20	Soil Acidity, Cofcaville
Figure F.2-21	Present Land Use, Cofcaville
Figure F.2-22	Land Suitability for Paddy Rice, Cofcaville
Figure F.2-23	Land Suitability for Field Crops, Cofcaville
Figure F.2-24	Land Suitability for Tree crops, Cocaville
Figure F.2-25	Soil Map, Marangog
Figure F.2-26	Land Form, Marangog
Figure F.2-27	Soil Depth, Marangog
Figure F.2-28	Content of Gravel/Rock Outcrops, Marangog
Figure F.2-29	Present Land Use, Marangog
Figure F.2-30	Land Suitability for Paddy Rice, Marangog
Figure F.2-31	Land Suitability for Upland Crops, Marangog
Figure F.2-32	Land Suitability for Tree Crops, Marangog
Figure F.2-33	Soil Map, Silae
Figure F.2-34	Land Form, Silae
Figure F.2-35	Soil Acidity, Silae
Figure F.2-36	Present Land Use, Silae
Figure F.2-37	Land Suitability for Paddy Rice, Silae
Figure F.2-38	Land Suitability for Field Crops
Figure F.2-39	Land Suitability for Tree Crops
Figure F.2-40	Proposed Cropping Pattern(Irrigated Area)
Figure F.2-41	Planting Design of Fruit Tree-Based Contour Farming(8-18% Slope Area), Sappaac
Figure F.2-42	Planting Design of Banana Contour Farming(8-18% Slope), Sappaac
Figure F.2-43	Planting Design of Production Forest(18-30% Slope Area), Sappaac
Figure F.2-44	Planting Design of Banana Contour Farming(8-18% Slope Area), Cofcaville
Figure F.2-45	Planting Design of Production Forest(18-30% Slope Area), Cofcaville
Figure F.2-46	Planting Design of Fruit Tree-Based Contour Farming(8-18% Slope Area), Marangog
Figure F.2-47	Planting Design of Production Forest(18-30% Slope Area), Marangog
Figure F.2-48	Planting Design of Fruit Tree-Based Contour Farming(8-18% Slope Area), Silae
Figure F.2-49	Planting Design of Production Forest(18-30% Slope Area), Silae
Figure F.2-50	Farm Practice and Input Requirement, Paddy Rice, Transplanted (Irrigated)
Figure F.2-51	Farm Practice and Input Requirement, Paddy Rice, Transplanted (Rainfed)

- Figure F.2-52 Farm Practice and Input Requirement, Corn(White)
Figure F.2-53 Farm Practice and Input Requirement, Corn(Yellow)
Figure F.2-54 Farm Practice and Input Requirement, Mungbean
Figure F.2-55 Farm Practice and Input Requirement, Peanut
Figure F.2-56 Farm Practice and Input Requirement, Sweet Potato
Figure F.2-57 Farm Practice and Input Requirement, Cassava
Figure F.2-58 Farm Practice and Input Requirement, Vegetables(Squash)
Figure F.2-59 Farm Practice and Input Requirement Vegetables(Garlic)
Figure F.2-60 Layout of Nursery

Table F.1-1 Present Land Use by Model Area

(Unit: ha)

Study Area	S<8%	8%<S<8%	18%<S<30%	30%<S	Total Area	Area Ratio less than 18%
1. Sappa-ac ARC, Bangued Abra	98 (26.1)	163 (43.4)	69 (18.5)	45 (12.0)	375 (100)	69
2. Talugtog ARC, San Juan La Union	89 (53.1)	39 (23.4)	20 (12.2)	19 (11.1)	167 (100)	77
3. Cofeaville ARC, Maddela Quirino	133 (27.0)	203 (46.3)	139 (28.3)	15 (3.3)	490 (100)	69
4. Montilla ARC, Tuyo, Balanga Bataan	64 (58.9)	38 (35.7)	5 (4.9)	1 (0.0)	108 (100)	95
5. Maulawin ARC, Calauag Quezon	96 (30.0)	129 (40.0)	62 (19.4)	34 (10.5)	321 (100)	70
6. Pag-asa, Tinambac Camarines Sur	124 (40.2)	126 (41)	23 (7.5)	35 (11.2)	308 (100)	81
7. Abierra Estate, Altavaz Aklan	31 (10.7)	37 (12.8)	37 (12.9)	184 (63.6)	289 (100)	24
8. San Vicente ARC, Trinidad Bohol	166 (36.4)	222 (48.4)	59 (13.1)	9 (2.0)	456 (100)	85
9. Marangog-Leyte ARC, Hilong Leyte	37 (11.1)	116 (35.1)	71 (21.6)	106 (32.2)	330 (100)	46
10. Silae ARC, Malaybalay Bukidnon	43 (25.0)	48 (29.4)	44 (26.8)	29 (17.8)	164 (100)	55
11. Kipalili ARC, Asuncion Davao Del Norte	108 (33.2)	15 (4.6)	13 (4.1)	191 (58.1)	327 (100)	38
12. Mat-i ARC, Surigao City Surigao Del Norte	20 (10.2)	39 (19.4)	54 (26.7)	87 (43.7)	200 (100)	30
Total	910	1,012	528	710	3,160	61

Source: Surveyed by DAR (Conceived Development Plan by LGU and Others).

Table F.1-2 Cropping Pattern and Scale of Planted Areas Per Households

(Unit: ha)

Model Area	Cropping Pattern			Total
	Wet	Dry	Perennial	
1. Sappa-ac ARC, Bangued Abra	0.85	0.44	0.19	1.48
2. Talugtug ARC, San Juan La Union	0.65	0.09	0.00	0.74
3. Cofeaville ARC, Madella Quirino	1.15	0.41	0.50	2.06
4. Montilla ARC, Tuyo, Balanga Bataan	0.88	0.01	0.75	1.64
5. Mauiawin ARC, Calauag Quezon	0.83	0.65	0.52	2.00
6. Pag-Asa ARC, Tinambac Camarines Sur	0.55	0.37	4.52	5.44
7. Abierra Estate, Altavaz Aklan	0.37	0.29	0.91	1.57
8. San Vicente ARC, Trinidad Bohol	0.83	0.52	0.21	1.56
9. Marangog-Leyte ARC, Hilongos Leyte	0.24	0.79	1.44	2.47
10. Silae ARC, Malaybalay Bukidnon	1.86	1.24	0.00	3.10
11. Kipalili ARC, Asuncion Davao Del Norte	0.39	0.48	1.02	1.89
12. Mari ARC, Surigao City Surigao Del Norte	0.84	0.16	4.44	5.44
Average	0.79	0.45	1.21	2.45

Source: Rural Socio Economic Survey, 1996, JICA

Table F.1-3 Soil Characteristics by Model Area

Model Area	Order	Great Group	Subgroup	Soil Family	Soil Characteristics		Fertility
					Texture	Stoniness (%)	
1. Sempac APC, Benguet Area, CAR	Inceptisols	Eutropepts (R)	Typic Eutropepts	Fine loam Typic Eutropepts	Loam to Silty Clayey Loam	>5.5	44 Moderate
	Inceptisols	Eutropepts	Typic Eutropepts	fine loam Typic Eutropepts	Loam to Silty Clay Loam	>5.5	44 Moderate
2. Talambog APC, San Juan La Union, Region I	Inceptisols	Eutropepts (R)				>5.5	14 Moderate
	Alfisol-Entisols	Hapludalfs-Entropepts				>5.5	14 Low to Moderate
3. Cofaville APC, Maddara Quirino, Region II	Inceptisols	Eutropepts-Dystropepts				>5.5, <5.5	12 Low to Moderate
	Inceptisols	Dystropepts (R)	Typic Dystropepts		Fine Clay	<5.5	32 Low to Moderate
4. Xortille APC, Turo Balanga, Bataan, Region III	Alfisol	Kandiustalfs	Typic Kandiuustalfs		Very Fine Clay	>5.5	32 Low to Moderate
	Inceptisols	Eutropepts				>5.5	2 Moderate
5. Naulawin APC, Cabaus Quezon, Region IV	Inceptisols	Eutropepts with Orthents and Ustalfs				>5.5	56 Low to Moderate
	Ultisols	Tropudalfs	Typic Tropudalfs			<5.5	40 Low
6. San Vicente APC, Trinidad Bobol, Region VI	Alfisol	Hapludalfs (R)	Typic Hapludalfs	Fine clayey Typic Hapludalfs	Clay	>5.5	52 Moderate
	Alfisol	Hapludalfs	Typic Hapludalfs	Fine clayey Typic Hapludalfs	Clay	>5.5	52 Moderate
9. Maramba APC, Hilommas Lavea, Region VIII	Inceptisols	Eutropepts (R)				>5.5	60 Moderate
	Alfisol	Palaudalfs				>5.5	60 Moderate
10. Silao APC, Malabailay Bukidnon, Region X	Alfisol	Hapludalfs-Tropoeps				>5.5	24 Moderate
	Entisols	Troporthents-Eutropepts Associations (R)	Troporthents-Eutropepts			>5.5	44 Low to Moderate
11. Kipalili APC, Anuncion Davao Del Norte, Region XI	Inceptisols	Eutropepts	Typic Eutropepts	Fine clayey Typic Eutropepts		>5.5	44 Moderate
	Inceptisols	Eutropepts (R)	Typic Eutropepts		Clay Loam to Clay	>5.5	72 Moderate
12. Mat-i APC, Surigao City Surigao Del Norte, Region XIII	Inceptisols	Dystropepts	Typic Dystropepts		Clay Loam	<5.5	72 Low to Moderate

Note: (R)... representative soils in each model area.
 Stoniness... percentages of respondents in the Rural Socio Economic Survey, 1956, JICA.
 Sources: Soil Maps of the Philippines 1: 50,000, 1: 250,000, and 1: 1,000,000 scales, Bureau of Soils and Water Management

Table F.1-4 Present Land Use by Model Area

(Unit: ha)

Model Area	Cultivated Area				Cogonal /Shlub Land	Total
	Rice Land	Upland with Annual Crops	Upland with Perennial Crops	Subtotal		
1. Sappa-ac ARC, Bangued Abra	88	30	11	129	246	375
2. Talugog ARC, San Juan La Union	78	5	10	93	74	167
3. Cofeaville ARC, Maddela Quirino	32	163	23	218	272	490
4. Montilla ARC, Tuyo, Balanga Bataan		37	41	78	30	108
5. Maulawin ARC, Calauag Quezon	62	10	82	154	167	321
6. Pag-asa, Tinambac Camarines Sur	22		155	177	130	307
7. Abierra Estate, Altavaz Aklan	15	6	85	106	183	289
8. San Vicente ARC, Trinidad Bohol	62	54	61	177	279	456
9. Marangog-Leyte ARC, Hilongos Leyte	24	33	115	172	158	330
10. Silae ARC, Malaybalay Bukidnon	7	68		75	89	164
11. Kipailii ARC, Asuncion Davao Del Norte	17	28	20	65	262	327
12. Mat-i ARC, Surigao City Surigao Del Norte			75	75	125	200
Total	407	434	678	1,519	2,015	3,534

Source: Surveyed by DAR (Conceived Development Plan by LGU and Others).

Table F.1-5 Planted Area by Model Area per Farm Household

Model Area	Wet Season						Dry Season						Perennial																			
	Paddy		Vegetables		Root Crops		Mungbean		Subtotal		Paddy		Vegetables		Mungbean		Subtotal		Coconut		Banana		Mango		Cacao		Coffee		Abaca		Subtotal	
	Area	Yield	Area	Yield	Area	Yield	Area	Yield	Area	Yield	Area	Yield	Area	Yield	Area	Yield	Area	Yield	Area	Yield	Area	Yield	Area	Yield	Area	Yield	Area	Yield	Area	Yield		
1. Sappa-oc ARC, Bangud Abra	0.83	0.02							0.85	0.02	0.30	0.08	0.01	0.03	0.44																0.19	1.48
2. Talugog ARC, San Juan La Union	0.62	0.01	0.01				0.01	0.65		0.01			0.07	0.09																	0.00	0.74
3. Cofeaville ARC, Maddela Quirino	0.22	0.91	0.01	0.01				1.15	0.10	0.30			0.01	0.41	0.01	0.32	0.17													0.50	2.06	
4. Montilla ARC, Tuyo, Belanga Zamboanga	0.00	0.05	0.68	0.14			0.01	0.88		0.01				0.01	0.12	0.09	0.54													0.75	1.64	
5. Maulawin ARC, Calauag Quezon	0.80		0.01	0.02				0.83	0.59	0.03			0.02	0.01	0.65	0.46	0.05	0.01												0.52	2.00	
6. Pag-asn, Tinambac Camarines Sur	0.46		0.01	0.08				0.55	0.35	0.00			0.02	0.37	4.51	0.01														4.52	5.44	
7. Abierra Estate, Altavaz Aklan	0.31	0.01	0.00	0.05				0.37	0.28	0.01				0.29	0.87	0.04														0.91	1.57	
8. San Vicente ARC, Trinidad Bohol	0.42	0.36	0.01	0.04				0.83	0.28	0.22			0.02	0.52	0.16	0.05														0.21	1.56	
9. Marangog-Leyte ARC, Hilongos Leyte	0.16		0.01	0.07				0.24	0.08	0.70	0.01			0.79	1.17	0.25	0.01												0.01	1.44	2.47	
10. Silac ARC, Malaybalay Bukidnon	0.05	1.81						1.86		1.24				1.24																0.00	3.10	
11. Kipatili ARC, Asuncion Davao Del Norte	0.12	0.24	0.01	0.02				0.39	0.03	0.45				0.48	0.83	0.16	0.01	0.01	0.01											1.02	1.89	
12. Mat-i ARC, Surigao City Surigao Del Norte	0.84							0.84	0.14				0.02	0.16	3.05	0.96														4.44	5.44	
Average	0.40	0.28	0.06	0.04			0.00	0.79	0.16	0.27	0.01	0.01	0.01	0.45	0.93	0.17	0.07	0.04												1.21	2.45	

Source: Rural Socio Economic Survey, 1996, JICA.

Table F.1-6 Cropping Intensity by Model Area

Model Area	Distributed Area = 100 %			Cultivated Area = 100 %			No. of Farm Households	Farm Size	
	Distributed Area (ha)	Total of Cropped Area (ha)	Intensity (%)	Cultivated Area (ha)	Total of Cropped Area (ha)	Intensity (%)		Distributed Area (ha)	Cultivated Area (ha)
1. Sappa-ac ARC, Bangued Abra	375	151	40.3	129	151	117.1	189	1.98	0.68
2. Taingtog ARC, San Juan La Union	167	101	60.5	95	101	106.3	190	0.88	0.50
3. Cofcaville, Maddela Quirino	490	379	77.3	218	379	173.9	179	2.74	1.22
4. Montilla ARC, Tuyo Balanga Bataan	108	78	72.2	78	78	100.0	63	1.71	1.24
5. Maulawin ARC, Calauag Quezon	321	212	66.0	154	212	137.7	302	1.06	0.51
6. Pag-asa ARC, Tinambac Camarines Sur	307	203	66.1	186	203	109.1	120	2.56	1.55
7. Abierra Estare, Atavaz Aklan	289	120	41.5	106	120	113.2	114	2.54	0.93
8. San Vicente ARC, Trinidad Bohol	456	225	49.3	177	225	127.1	220	2.07	0.80
9. Marangog-Leyte ARC, Hilongos Leyte	330	214	64.8	172	214	124.4	247	1.34	0.70
10. Silae ARC, Malaybalay Bukidnon	164	150	91.5	75	150	200.0	115	1.43	0.65
11. Kipalifi ARC, Asuncion Davao del Norte	327	92	28.1	65	92	141.5	112	2.92	0.58
12. Mar-i ARC, Sungao City Surigao del Norte	200	74	37.0	74	74	100.0	150	1.33	0.49
Average	295	167	57.9	127	167	129.2	167	1.77	0.76

Source: Rural Socio Economic Survey, 1996, JICA.

Table F.1-7 Unit Yield of Major Crops by Model Area

Crop	Model Areas (N=12)	Provinces*2 (N=12)	National Average*3
1. Wet Season			
(1) Paddy Rice(Rainfed)	1.37	2.01	2.37
(2) White Corn	1.22	0.94	1.27
(3) Yellow Corn	2.48	1.38	2.20
(4) Vegetables(Squash)	5.00	n.a	n.a
(5) Rootcrops(Sweet Potato)	1.41	3.43	4.78
(6) Bean(Mungbean)	0.10	0.58	0.72
2. Dry Season			
(1) Paddy Rice(Rainfed)	1.28	2.85	1.71
(2) White Corn	0.61	0.97	0.96
(3) Yellow Corn	0.71	1.29	1.47
(4) Vegetables(Stringbean)	1.82	n.a	n.a
(5) Bean(Mungbean)	0.29	0.58	0.72
3. Perennial Crops			
(1) Coconut	0.63	2.52	3.68
(2) Banana	1.51	4.57	9.52
(3) Mango	0.14	2.50	5.52
(4) Cacao	0.14	0.54	0.49
(5) Coffee	0.66	0.82	0.80
(6) Citrus*1	2.93	4.88	4.88
(7) Abaca	0.22	0.82	0.78

Note: *1 Including Calamansi, Pomelo and Orange

*2 Average yield of 12 provinces for five years from 1991 to 1995

*3 National average for three years from 1991 to 1993

Source: Bureau of Agricultural Statistics (Average yield fo 1991 to 1995)

Table F.1-8 Present Crop Production

Model Area	Item	Unit	Paddy (Wet)	Paddy (Dry)	Com (Wet)	Com (Dry)	Beans Vegetables (Wet)	Beans Vegetables (Dry)	Beans (Dry)	Root Crop (Wet)	Subtotal	Coconut	Banana	Mango	Citrus	Cacao	Coffee	Abaca	Subtotal	Total	
1. Sapaac, Bangued, Abra, CAR	Area	ha	88		9		2	13	12	21	143		5	5					8	151	
	Yield	ton/ha	1.20		1.50		5	1.30	0.40	1.50			5.80	2.00					30	214	
	Production	ton	106		14		10	17	5	32	184		17	13					30	214	
2. Talugog, San Juan La Union, Region I	Area	ha	78		3	1	2	2	5		81								10	101	
	Yield	ton/ha	1.00		2.00	1.08	2.10	2.50	0.20			0.98								10	105
	Production	ton	78		6	1	4	5	1		80								10	105	
3. Calacaville, Madera, Quirino, Region II	Area	ha	52	13	155	124	8		16	8	358		18	3					23	379	
	Yield	ton/ha	2.50	1.80	2.50	1.90	0.20		0.60	2.00		3.10	0.50						23	379	
	Production	ton	80	19	388	236	2		10	16	751		56	3					23	810	
4. Monulla Estate, Tuyo Bataan, Region III	Area	ha			7		30				37		4	10	27				41	78	
	Yield	ton/ha			0.50		1.82					1.45	1.11	0.01					18	172	
	Production	ton			4		150				134	6	11	1					18	172	
5. Maulawan, Calauag, Quezon, Region IV	Area	ha	52	45		4	4		6	6	128		38	4	2	40			84	212	
	Yield	ton/ha	1.45	0.82		1.19	5.00		0.30	0.37		1.23	0.80	0.50	1				31	298	
	Production	ton	90	38		5	20		2	2	157		47	3	1	40			31	298	
6. Camarines Sur Rosett, Tinubog, Camarines Sur, Region V	Area	ha	20	15		4			9	9	48		155						155	203	
	Yield	ton/ha	1.67	1.33		1.71			0.70	0.70		0.73							133	180	
	Production	ton	33	20		7			7	7	87		113						133	180	
7. Abiera Estate, Altavaz, Alilan, Region VI	Area	ha	15	14					6	6	35		61	21					85	120	
	Yield	ton/ha	0.94	1.00					0.76	0.76		0.46	0.48						30	72	
	Production	ton	14	14					5	5	33		22	10					30	72	
8. San Valente, Trinidad, Bohol, Region VII	Area	ha	57	37	19	11	5		35	35	164		54	7					61	225	
	Yield	ton/ha	1.47	1.36	1.74	0.61	5.00		1.60	1.60		0.68	1.10						44	200	
	Production	ton	84	50	33	7	25		23	23	222		36	8					44	200	
9. Marangog-Leyte, Misongog, Leyte, Region VIII	Area	ha	24	14		39			9	13	89		80	12				17	115	214	
	Yield	ton/ha	0.50	0.50		0.50			0.50	2.00		0.49	2.20					0.33	5	143	
	Production	ton	12	7		20			5	26	70		42	26				5	73	143	
10. Silur, Malaybalay, Bukidnon, Region IX	Area	ha	7	3	68	68	3				150								0	150	
	Yield	ton/ha	1.30	1.20	1.60	1.30	7.50												0	253	
	Production	ton	9	9	122	90	23				253								0	253	
11. Kipalili, Asuncion, Divao Del Norte, Region	Area	ha	17	8	28	19			2	2	72		13	5		2			20	92	
	Yield	ton/ha	2.30	3.33	0.4	0.56			1.10	1.10		0.31		0.33		0.66			7	97	
	Production	ton	41	26	10	11			2	2	90		4	2		1			7	97	
12. Matai, Surigao City, Surigao Del Norte, Region XIII	Area	ha									0		45	24				5	74	74	
	Yield	ton/ha										0.20	0.04					0.22	1	11	
	Production	ton									0		9	1				1	11	11	

Source: Study Team

Table F.1-9 Crops Preferred to Grow in Very Near Future

(Unit:%, N=50=100%)

Model Area	Paddy Rice	Corn	Mungbean	Coconut	Coffee	Abaca	Fruit Trees	Pine Apple	Vegetable	Timber Trees /Bamboo
1. Sappa-ac ARC, Bangued Abra	94	84	50	66	12		92		36	68
2. Talugtug ARC, San Juan La Union	82	56	28	44			62		50	28
3. Cofcaville, Maddela Quirino	62	50	14	28	2		38		24	20
4. Montilla ARC, Tuyo, Balanga Bataan	46	26		34			42		18	6
5. Maulawin ARC, Calauag Quezon	38	28	18	14			10	2	20	8
6. Pag-asa ARC, Tinambac Camarines Sur	38	50	26	62			26		34	6
7. Abierra Estate, Altavaz Aklan	60	48	24	44	2		44	6	22	72
8. San Vicente ARC, Trinidad Bohol	64	68	16	54			62		36	56
9. Marangog-Leyte ARC, Hilongos Leyte	62	76	18	54			42		22	4
10. Silac ARC, Malaybalay Bukidnon	20	54	10	42			72		20	12
11. Kipahili ARC, Asuncion Davao del Norte	14	20	16	28			80		12	20
12. Mat-i ARC, Surigao City Surigao del Norte	52	38	32	58		2	50		34	38
Average	53	50	21	44	1	0	52	1	27	28

Source: Rural Socio-Economic Survey, 1996, JICA.

Table F.1-10 Frequency Distribution Of Hazard/Calamity by Model Area

(Unit:%)

Model Area	Land-slide	Soil Erosion	Typhoon hazard	Calamity Fire	Grassland Fire	Occurrence of Flooding Occurrence	Shallow Topsoil
1. Sappa-ac ARC, Bangued Abra	24	24	26		22	26	22
2. Talugfog ARC, San Juan La Union	22	24	21	2		2	12
3. Cofeaville, Maddela Quirino	28	46	98	2	32	6	28
4. Montilla ARC, Tuvo, Balanga Bataan	2	4	70	50	4	2	
5. Maulawin ARC, Calauag Quezon	20	12	98	2		86	
6. Pag-asa ARC, Tinambac Camarines Sur	38	26	100	8	16	5	24
7. Abierra Estate, Altavaz Aklan	28	36	30		40	58	30
8. San Vicente ARC, Trinidad Bohol	8	32	56		14	32	44
9. Marangog-Leyte ARC, Hilongos Leyte	28	44	86		4	12	58
10. Silae ARC, Malaybalay Bulidnon	68	72	4		32	54	56
11. Kipali ARC, Asuncion Davao del Norte	44	54		20	28	36	36
12. Mat-i ARC, Surigao City Surigao del Norte	70	60	92	18	44	54	44
Average	32	36	57	9	20	31	30

Source: Rural Socio-Economic Survey, 1996, JICA.

Table F.1-11 Crop Area by Model Area (1/2)

(Unit %, ha)

Model Area	Rice Land, Irrigated				Rice Land, Raifed				Upland (< 8 %)				Orchard (< 8 %)						
	Total	Paddy (Wet)	Paddy (Dry)	Diver sified crops (Dry)	Total	Paddy (Wet)	Paddy (Dry)	Diver sified crops (Dry)	Total	Corn (Wet)	Veget- able (Wet)	Corn (Dry)	Diver sified crops (Dry)	Others	Total	Coconut	Banana	Mango	Others
1. Sappaac ARC, Bangued Abra, CAR	(150) 11	(100) 7	(0)	(50) 4	(114) 103	(100) 90	(12) 2	(12) 11	(200) 20	(80) 8	(20) 2	(0)	(50) 5	(50) 5	(100) 8	(40) 3	(60) 5		
2. Talugtoy ARC, San Juan La Union, Region 1	(150) 66	(100) 44	(0)	(50) 22	(100) 34	(100) 34	(0)	(0)	(200) 10	(60) 3	(40) 2	(40) 2	(60) 3	(0)	(100) 10	(100) 10			
3. Cofcaville, Maddela Quirino, Region 2	(150) 12	(100) 6	(0)	(100) 6	(100) 24	(100) 17	(40) 7	(0)	(200) 120	(95) 78	(5) Root 2	(40) 32	(30) 32	(10) 8	(100) 23	(5) 2	(80) 17	(15) 4	
4. Montilla ARC, Tuyo Batan, Region 3									(120) 44	(100) 37			(20) 7	(40) 41	(10) 4	(25) 10	(65) 27		
5. Maulawin ARC, Calauag Quezon, Region 4	(200) 40	(100) 20	(40) 8	(60) 12	(150) 62	(100) 42	(20) 8	(30) 12	(180) 20	(0) 4	(40) 4	(40) 4	(60) 4	(40) Root 4	(100) 84	(45) 38	(5) 4	(2) 2	(48) C.L-40
6. Pag-Asa ARC, Tinambak Camarines Sur, Region V	(200) 24	(100) 12	(40) 5	(60) 7	(150) 16	(100) 10	(20) 2	(30) 4	(200) 18	(100) 9		(70) 6	(30) 3	(0)	(100) 155	(100) 155			
7. Abiera Estate, Altavaz Aklan, Region 6		(100) (40)	(40) (40)	(60) (60)	(190) 29	(100) 15	(90) 14	(0) 14	(100) 6	(100) (40)		(70) (40)	(30) (30)	(0) (0)	(100) (100)				
8. San Vicente ARC, Trinidad, Bohol, Region 7	(200) 40	(100) 20	(40) 8	(60) 12	(150) 62	(100) 42	(20) 8	(30) 12	(140) 74	(40) 19		(40) (20)	(30) (30)	(60) (5)	(100) (100)	(90) 54	(10) 7		(15) Ab. 17
9. Marangog-Leyte ARC, Hilompos, Leyte, Region 8		(100) (40)	(40) (40)	(60) (60)	(160) 11	(100) 7	(60) 4	(30) 4	(180) 36.0		(95) 20	(20) Bean 5	(60) (60)	(5) 12	(100) 115	(75) 86	(10) 12		
10. Silae ARC, Malaybalay Bukidnon, Region 10	(200) 40	(100) 6	(60) 4	(40) 2	(150) 50	(100) 30	(30) 20	(20) 20	(200) 50	(100) 30		(70) (70)	(70) (70)	(30) 20					
11. Kipwili ARC, Asuncion Davao del Norte, Region 11		(100) (60)	(60) (60)	(40) (40)	(150) 2	(100) 11	(30) 3	(20) 2	(200) 56	(90) 26		(70) (70)	(30) 20	(10) Root 2	(100) 20	(65) 13	(25) 5	(10) Cac. 2	
12. Mati ARC, Surigao City Surigao del Norte, Region 13									(200) (100)	(100) (70)		(70) (70)	(30) (30)	(0) (0)					

Source: Study Team

(Unit: %, ha)

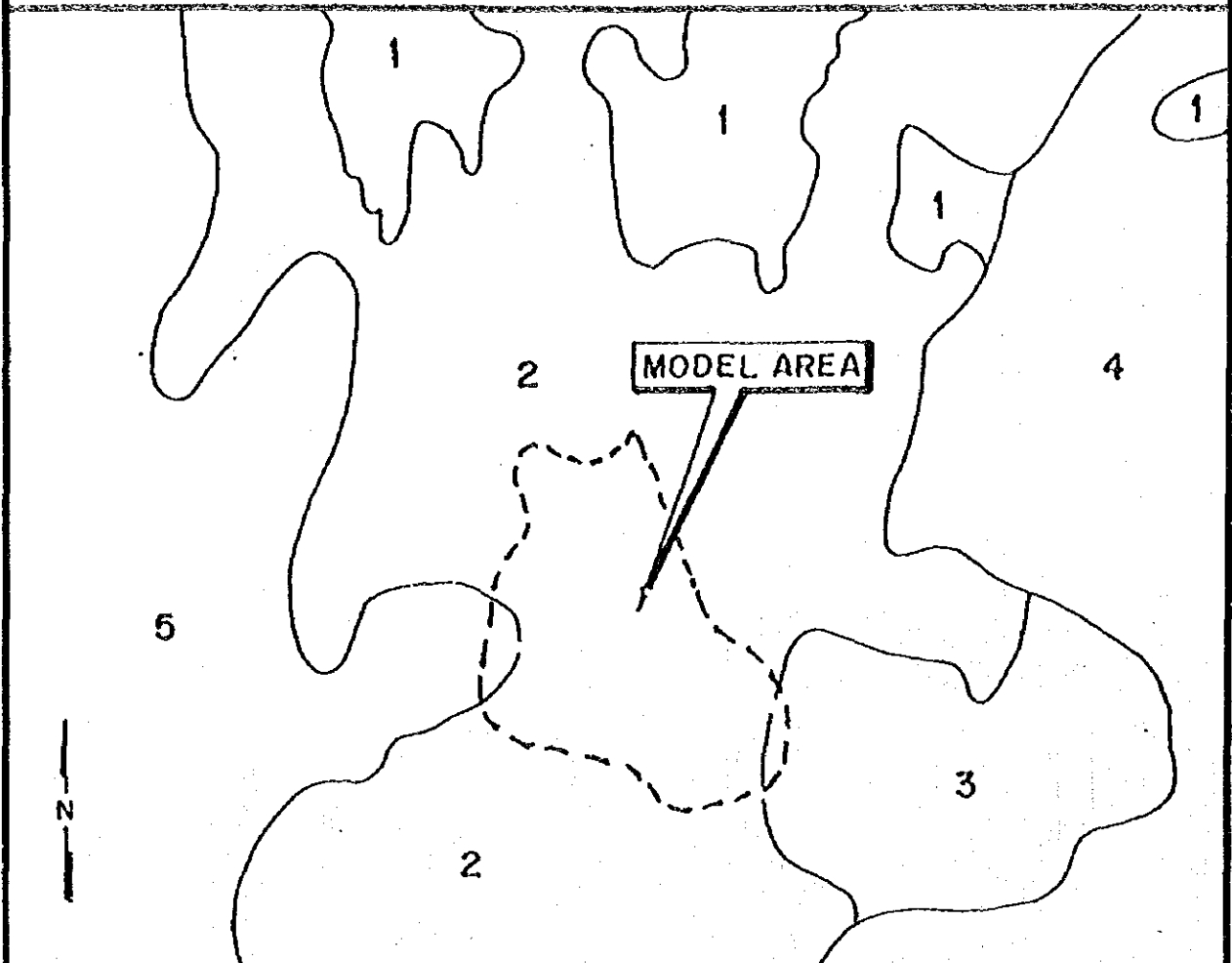
Conte Table E.1-11(22)

Model Area	Upland (8 - 18 %)										Upland (18 - 30 %)					Forest > 30%	Total
	Total	Staple Crops (Wet)	Staple Crops (Dry)	Coconut	Mango	Others	Forage/Fodder	Forest	Total	Staple Crops (Wet)	Staple Crops (Dry)	Coco-nut	Mango	Other	Forest		
1. Sappac ARC, Bangued Abra, CAR	150	(20)	(20)	(20)	(20)	(20)	(30)	(10)	(120)	(10)	(10)	(25)	(15)	(50)	(100)	407	
2. Talugog ARC, San Juan La Union, Region 1	31	(30)	(20)	(20)	(20)	(20)	(30)	(10)	(120)	(10)	(30)	(20)	(20)	(50)	(100)	187	
3. Cofcarville, Maddela Quirino, Region 2	247	(40)	(40)	(70)	(30)	(20)	(30)	(10)	(120)	(20)	(20)	(0)	(40)	(40)	(100)	590	
4. Montilla ARC, Tuyo Bataan, Region 3	16				(30)	(60)	(10)	(10)	(100)				(50)	(50)		106	
5. Maulawin ARC, Calauag Quezon, Region 4	57	(10)	(10)	(30)	(20)		(30)	(10)	(110)	(10)	(10)	(20)	(0)	(20)	(100)	357	
6. Pag-Asa ARC, Tinambak Camarines Sur, Region V	39	(0)	(0)	(10)	(10)	(40)	(30)	(10)	(100)	(0)	(0)	(20)	(0)	(30)	(100)	304	
7. Abre Estate, Altavaz Aklan, Region 6	38	(20)	(20)	(70)	(20)	(3)	(0)	(0)	(120)	(0)	(0)	(70)	(0)	(30)	(100)	273	
8. San Vicente ARC, Trinidad, Bohol, Region 7	199	(20)	(20)	(20)	(10)	(10)	(30)	(10)	(110)	(10)	(10)	(20)	(10)	(20)	(100)	546	
9. Marangog-Leyte ARC, Hilongos, Leyte, Region 8	3	(0)	(0)	(0)	(0)	(40)	(30)	(30)	(120)	(10)	(10)	(20)	(0)	(20)	(100)	326	
10. Silat ARC, Malaybalay Bukidnon, Region 10	56	(30)	(30)	(0)	(20)		(30)	(10)	(120)	(20)	(20)	(0)	(30)	(50)	(100)	218	
11. Kipali ARC, Asuncion Davao del Norte, Region 11	54	(20)	(20)	(0)	(20)	(20)	(30)	(10)	(120)	(20)	(20)	(0)	(20)	(20)	(100)	322	
12. Mal-1 ARC, Surigao City Surigao del Norte, Region 13	59	(20)	(20)	(35)	(0)	(35)	(20)	(10)	(120)	(0)	(0)	(35)	(0)	(15)	(100)	180	

Source: Study Team

FIGURE _____

Figure F.1-1 **SOIL MAP**
SAPPAAC ARC., BANGUED ABRA



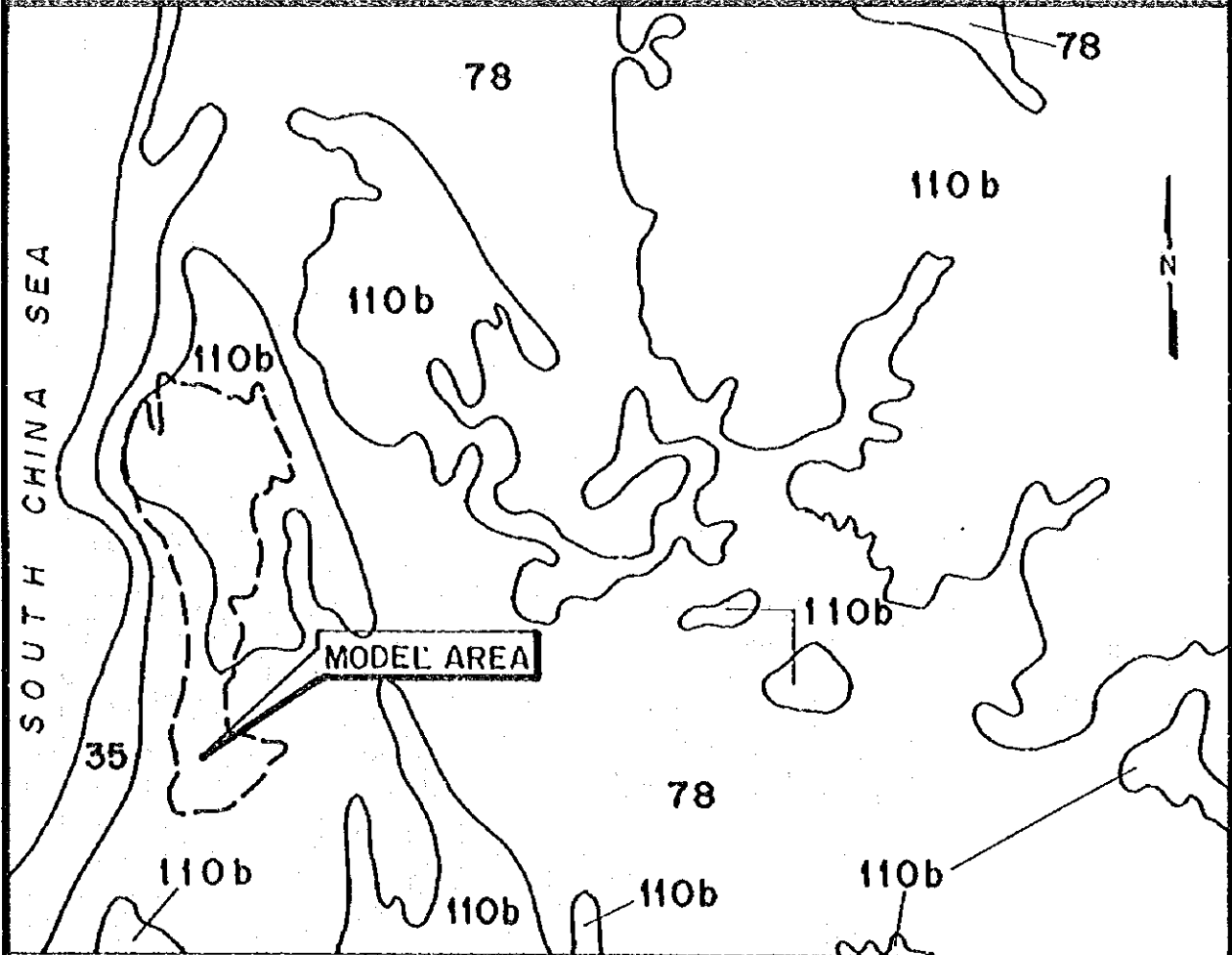
LEGEND

0 0.5 1 1.5 2 2.5 3KM.
SCALE 1:50,000

CODE	ORDER	GREAT GROUP/SUB-GROUP	SYMBOL
1	Inceptisols	Aquic Ustropepts	IjqU/Af0
2	Inceptisols	Typic Ustropepts	IgtU/Ce1
3	Inceptisols	Typic Ustropepts	IgtU/Ce2
4	Inceptisols	Typic Ustropepts	IgtU/De2
5	Inceptisols	Lithic Ustropepts	IgtU/Ee3

FIGURE _____

Figure F.1-2 **SOIL MAP**
TALUGTOG ARC., SAN JUAN, LA UNION



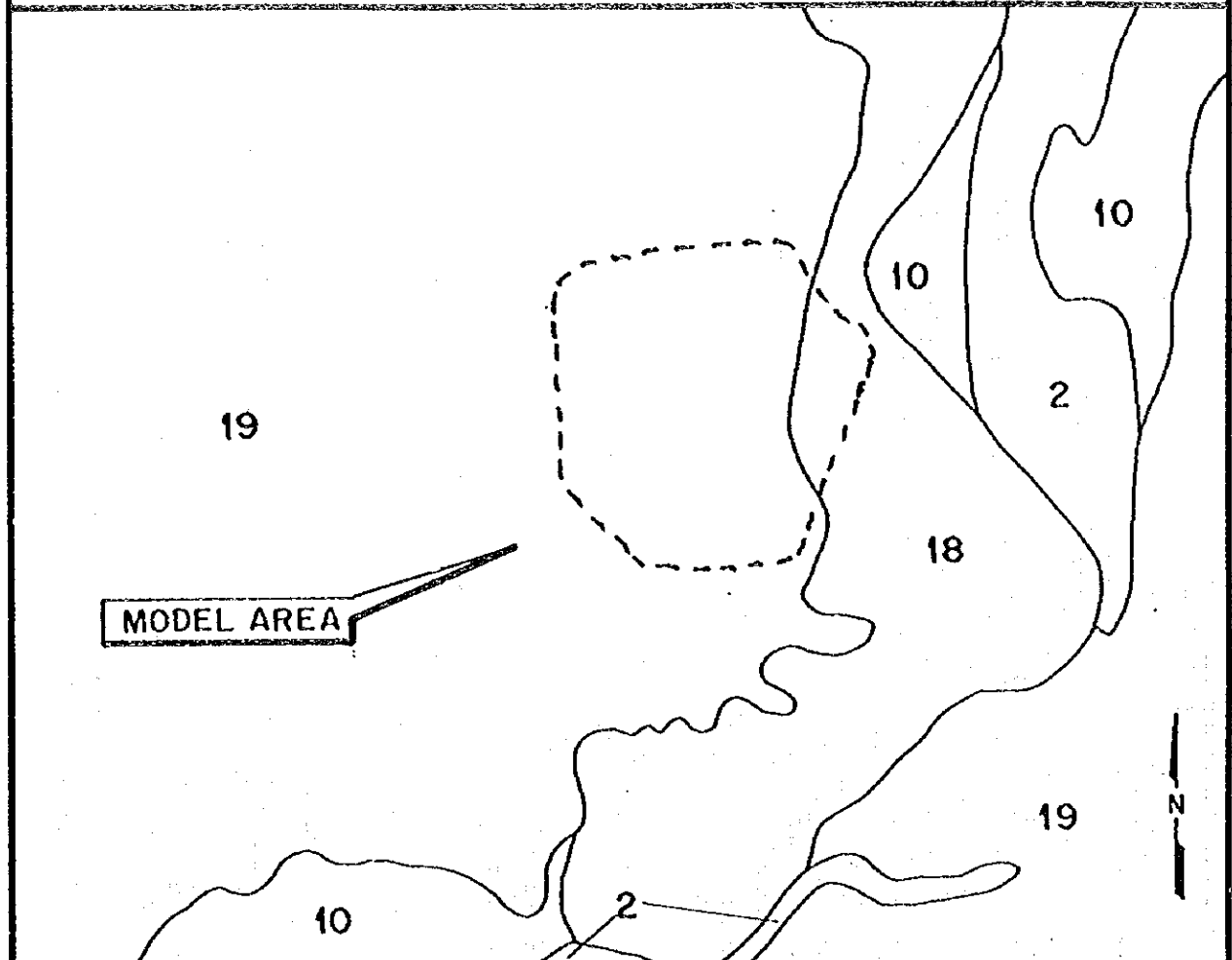
LEGEND

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 SCALE 1:50,000

CODE	ORDER	SUB - GROUP	SYMBOL
35	Entisols	Ustipsamments	-
78	Inceptisols	Ustropepts	-
110b	Ultisols - Entisols	Haplustults - Usthorthents Association	-

FIGURE _____

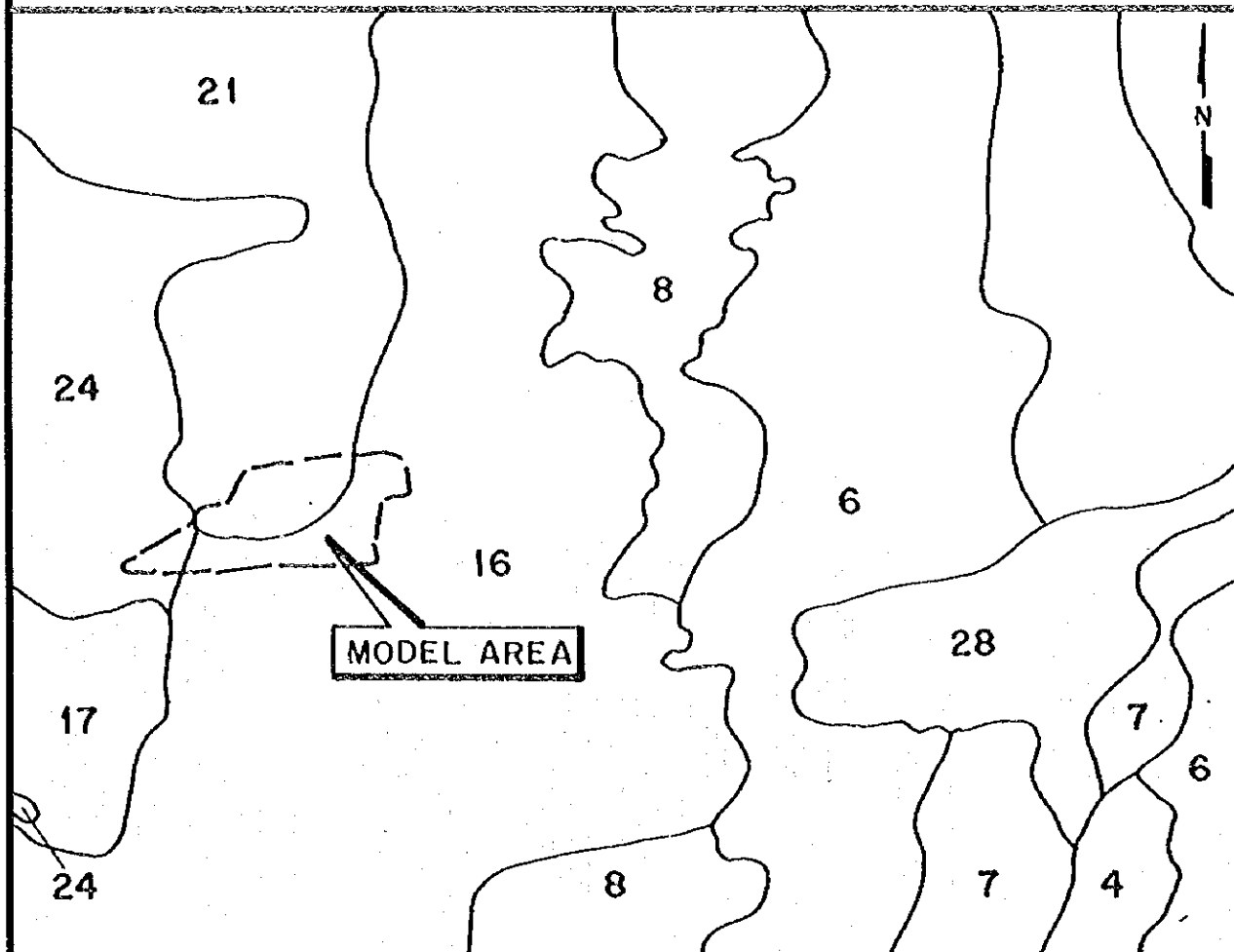
Figure F.1-3 SOIL MAP
COFCAVILLE ARC., MADDELA, QUIRINO



LEGEND		SCALE	
CODE	ORDER	SUB GROUP	SYMBOL
2	Entisols	Tropopsamments	--
10	Inceptisols	Fluventic Eutropepts	--
18	Ultisols	Typic Kandiodults	--
19	Inceptisols	Eutropepts - Dystropepts Association	--

FIGURE

Figure F.1-4 : **SOIL MAP**
MONTILLA ARC., TUYO, BATAAN



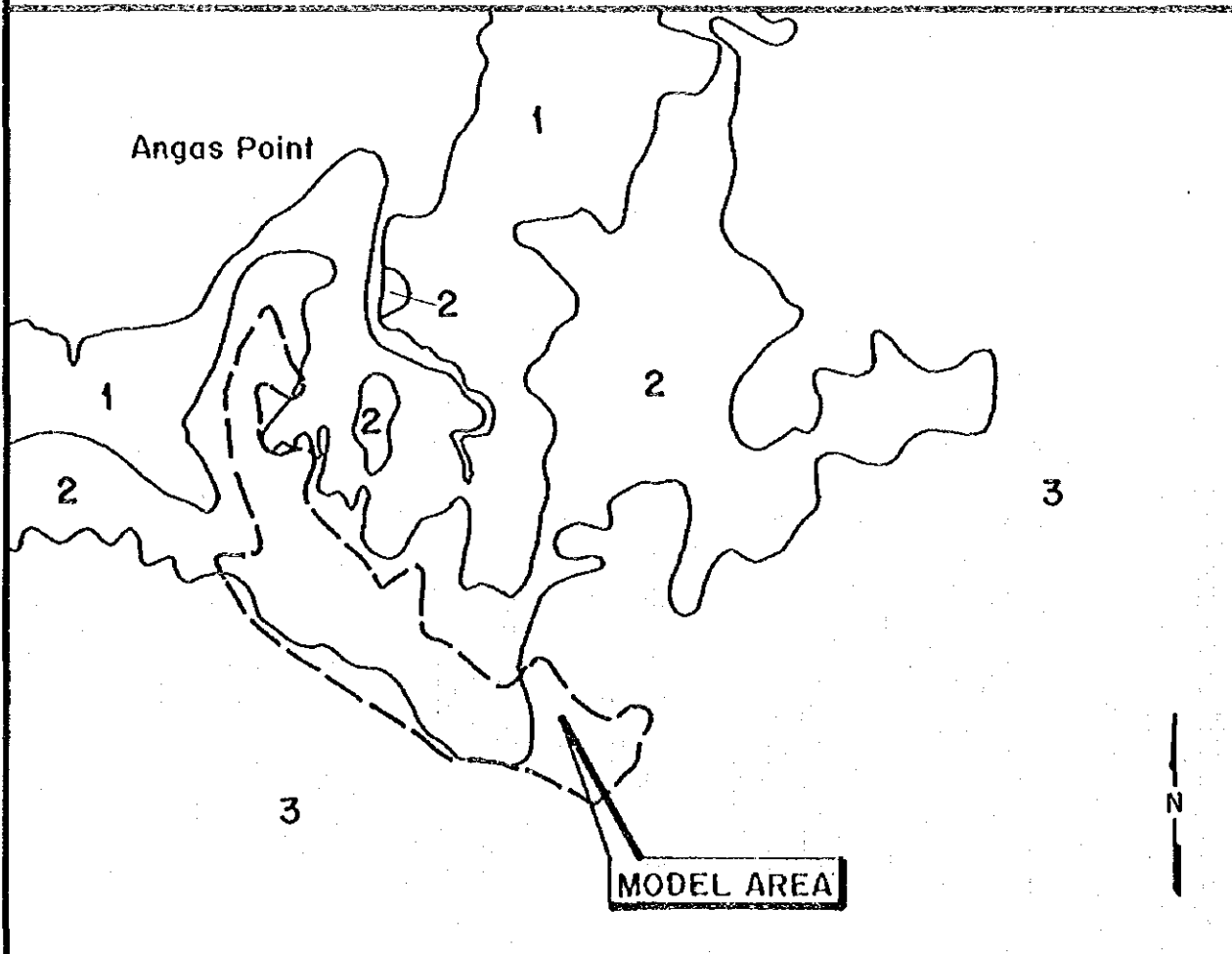
LEGEND

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SCALE 1:50,000

CODE	ORDER	SUB GROUP	SYMBOL
1	Entisols	Typic Hydraquents	EjH/Af3
2	Inceptisols	Aeric Tropaquepts	IgøT/Af2
4	Alfisols	Aeric Tropaqualfs	AjoT/Af3
6	Inceptisols	Aeric Tropaquepts	IpoT/Af1
7	Inceptisols	Aeric Tropaquepts	IpoT/Af2
8	Inceptisols	Typic Ustropepts	IjtU/Af0
16	Inceptisols	Typic Dystropepts	IjtD/Be2
17	Inceptisols	Typic Dystropepts	IjtD/Ce2
21	Alfisols	Typic Kandiustalfs	AkIH/Ce2
24	Inceptisols Entisols, Ultisols Associations	Eutropepts, Kondiudults, Troporthents	IE-UT-AT/ EFG/e2
28	Miscellaneous Land Type	Built-Up Area	BA

FIGURE _____

Figure F.1-5 SOIL MAP
MAULAWIN ARC., CALAUAG, QUEZON



LEGEND

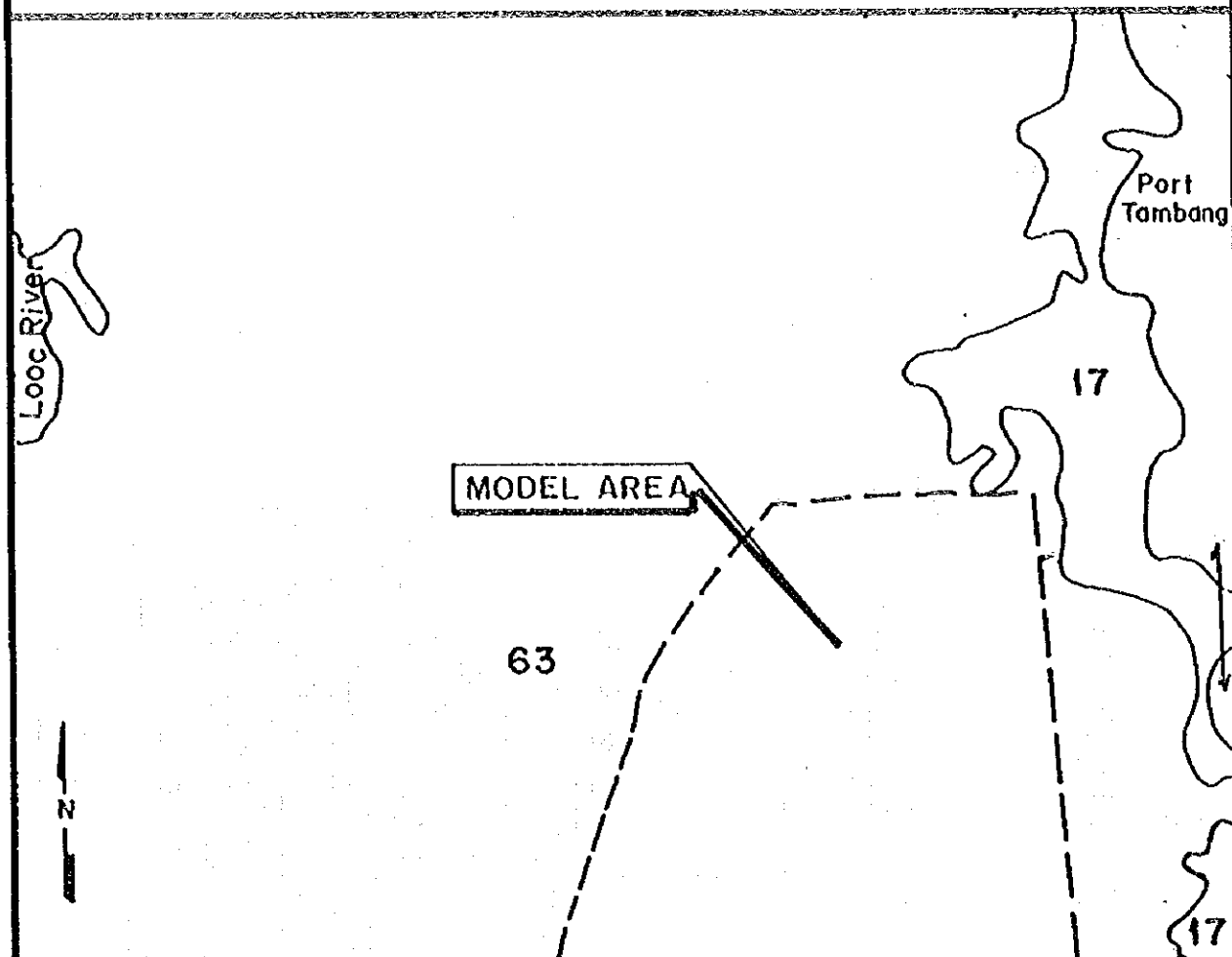
0 0.5 1 1.5 2 2.5 3 KM.
 SCALE 1:50,000

CODE	ORDER	SUB GROUP	SYMBOL
1	Entisols	Hydraquents	--
2	Inceptisols	Typic Eutropepts	-
3	Inceptisols-Alfisol	Typic Eutropepts-Hapludalfs	-

FIGURE _____

Figure F.1-6 **SOIL MAP**

PAG-ASA ARC., TINAMBACK, CAMARINES SUR



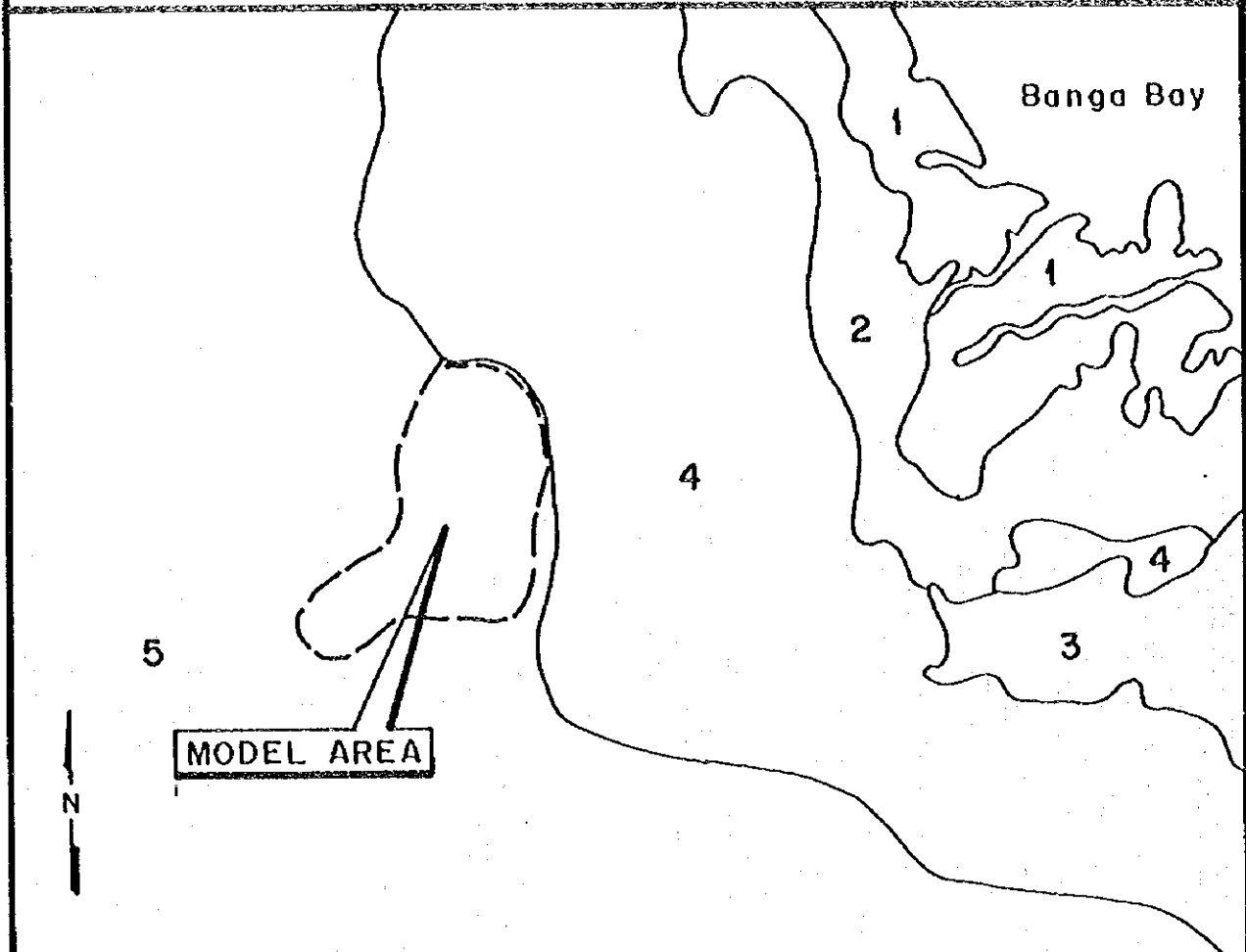
LEGEND

0 0.5 1 1.5 2 2.5 3 KM.
SCALE 1:50,000

CODE	ORDER	SUB GROUP	SYMBOL
17	Entisols	Hydraquents	—
63	Inceptisols	Eutropepts w/Orthents and Ustalfs	—

FIGURE _____

Figure F.1-7 SOIL MAP
ABIERA ESTATE, ALTAVAZ, AKLAN



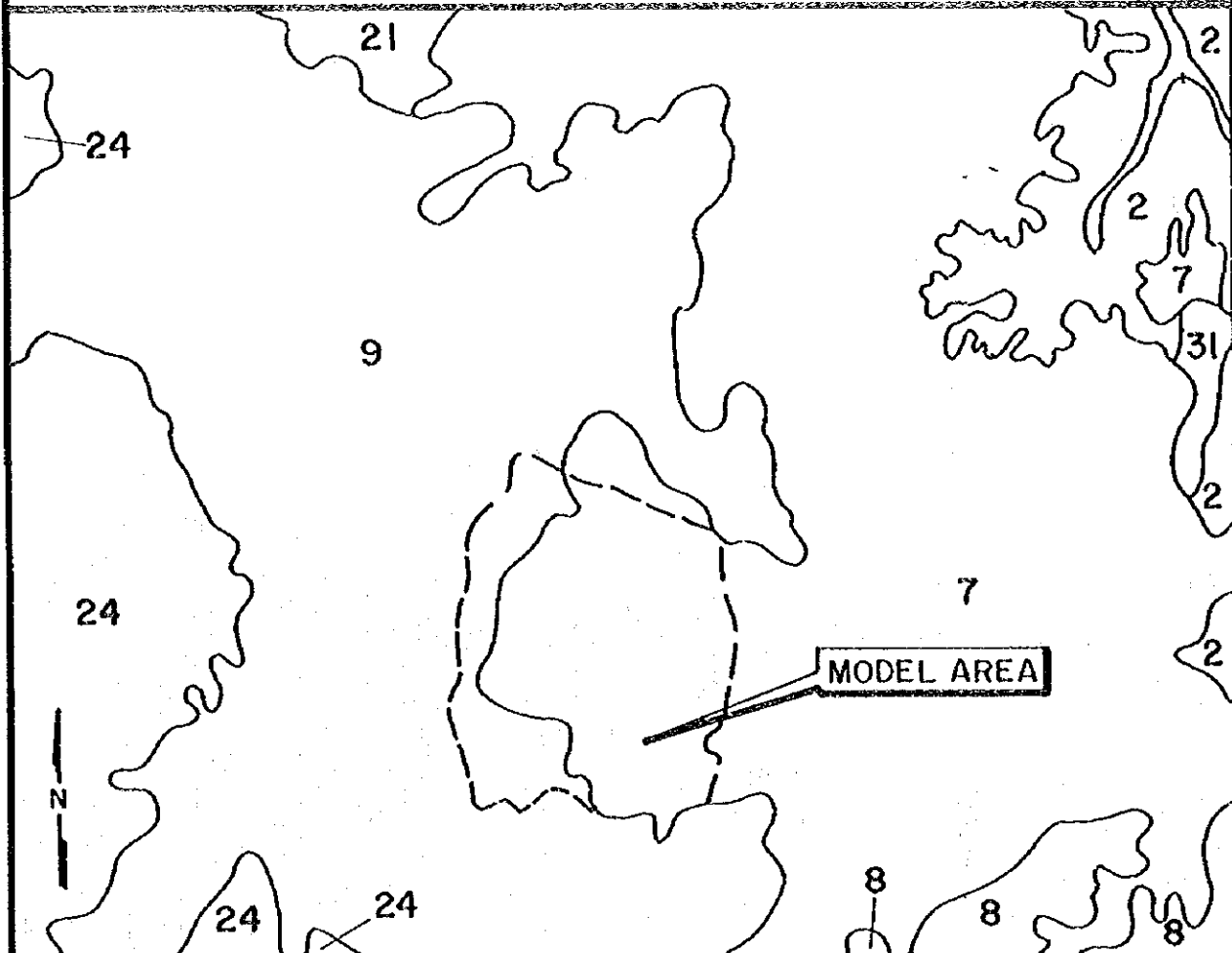
LEGEND

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 SCALE 1:50,000

CODE	ORDER	SUB GROUP	SYMBOL
1	Entisols	Hydraquents	—
2	Inceptisols	Typic Eutropepts	—
3	Entisols	Typic Pellustents	—
4	Inceptisols	Fluventic Eutropepts	--
5	Ultisols	Typic Tropudults	—

FIGURE

Figure F.1-8 **SOIL MAP**
SAN VICENTE ARC., TRINIDAD, BOHOL



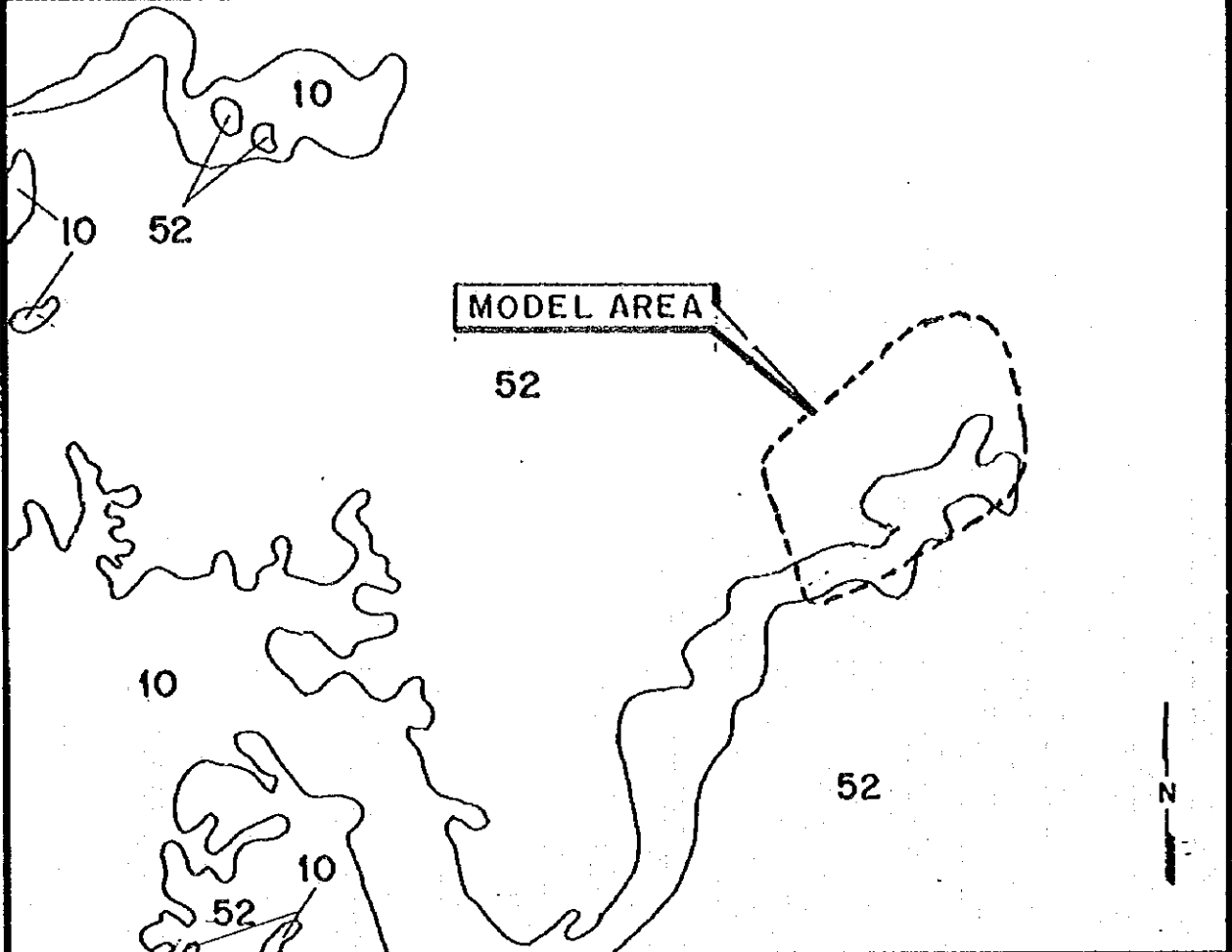
LEGEND

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SCALE 1:50,000

CODE	ORDER	SUB-GROUP	SYMBOL
2	Entisols	Typic Hydraquents	EjH/Af3
7	Alfisols	Typic Hapludalfs	AjD/Ae0
8	Alfisols	Typic Hapludalfs	AjD/Bo1
9	Alfisols	Typic Hapludalfs	AjD/Ce2
21	Inceptisols	Typic Eutropepts	IjE/De2
24	Inceptisols - Entisols	Typic Eutropepts - Troporthents Association	IE-ET/Ee3R4
31	Miscellaneous Land Type	Built - Up Areas	BA

FIGURE _____

Figure F.1-9 **SOIL MAP**
 MARANGOG-LEYTE ARC., HILONGOS, LEYTE



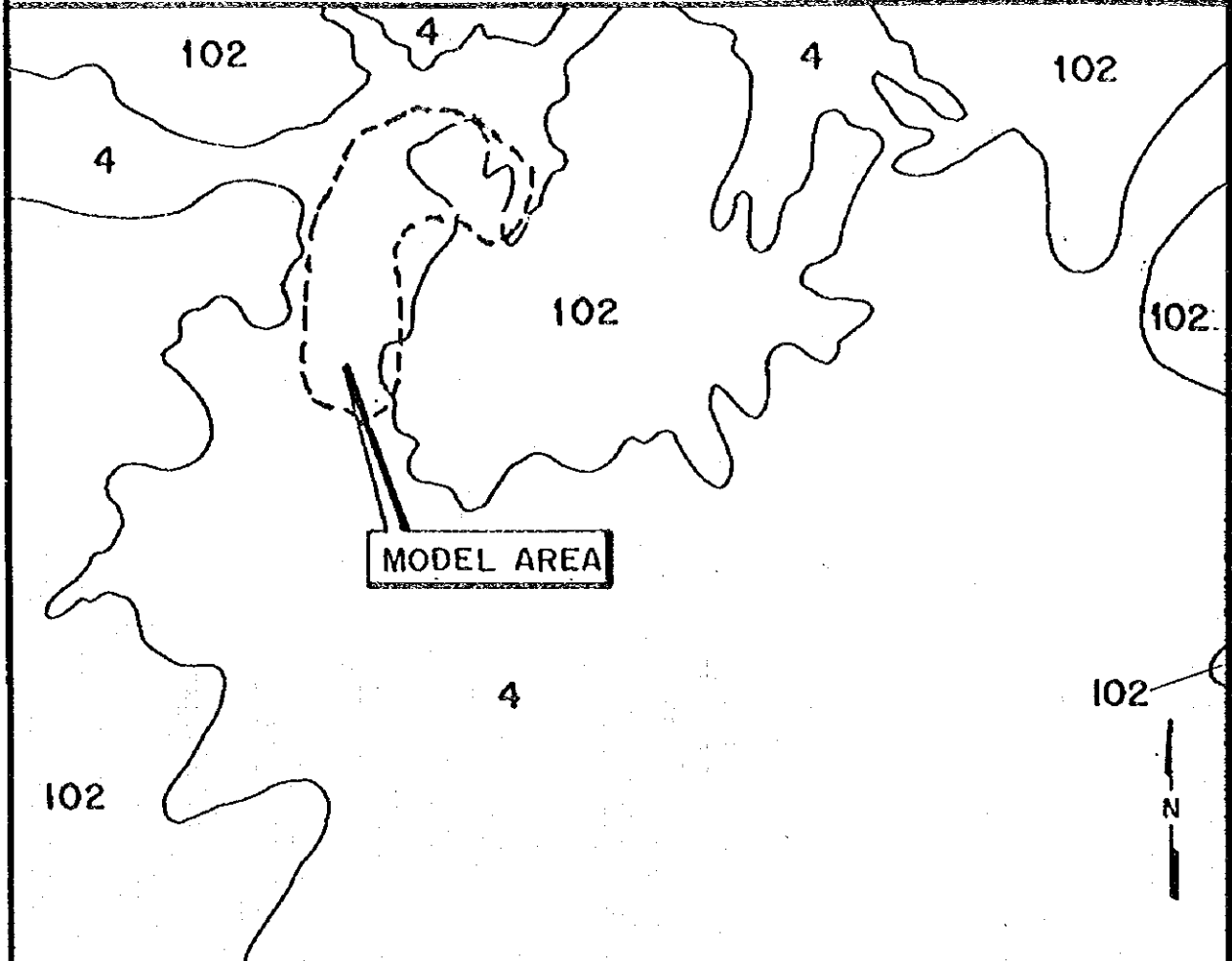
LEGEND

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 SCALE 1:50,000

CODE	ORDER	SUB-GROUP	SYMBOL
10	Alfisols	Paleudalfs	—
52	Inceptisols	Eutropepts	—

FIGURE F.1-10

Figure F.1-10 **SOIL MAP**
 SILAE ARC., MALAYBALAY, BUKIDNON



LEGEND

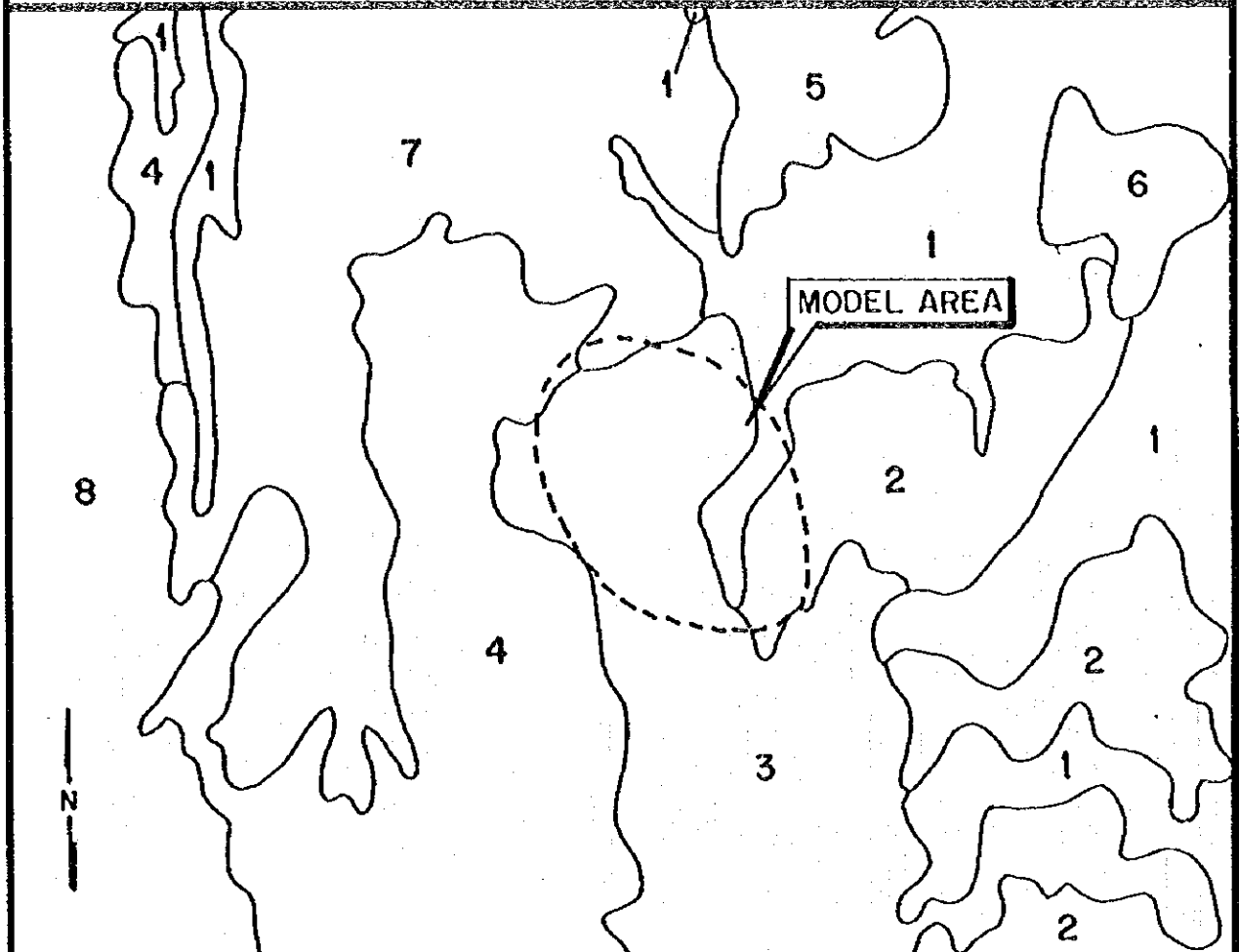
0 0.5 1 1.5 2 2.5 3 KM.
 SCALE 1:50,000

CODE	ORDER	SUB GROUP	SYMBOL
4	Alfisols	Hapludalfs with Tropepts	—
102	Ultisols	Hapludults with Tropepts	—

FIGURE

Figure F.1-11 **SOIL MAP**

MAT-I ARC. SURIGAO CITY, SURIGAO DEL NORTE



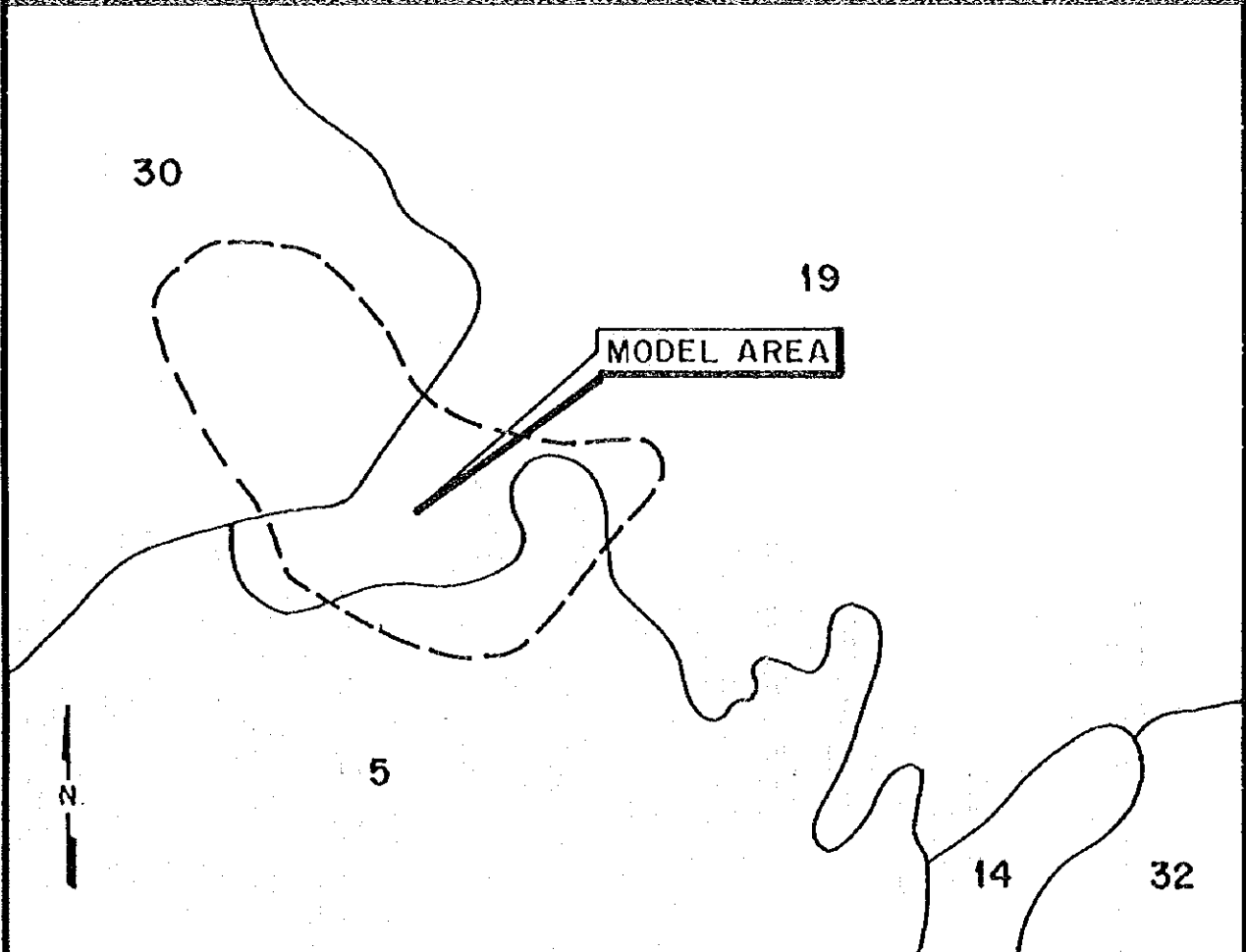
LEGEND

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SCALE 1:50,000

CODE	ORDER	SUB-GROUP	SYMBOL
1	Inceptisols	Aeric Tropoquepts	IjaT/A10
2	Inceptisols	Typic Eutropepts	IjtE/Ba0
3	Inceptisols	Typic Eutropepts	IjtE/Ce1
4	Inceptisols	Typic Eutropepts	IjtE/Ce2
5	Ultisols	Oxic Hapludults	UgoH/De1
6	Inceptisols	Typic Eutropepts	IjtE/De2
7	Inceptisols	Typic Dystropepts	IjtD/Ee2
8	Inceptisols	Typic Eutropepts	IjtE/Fe3

FIGURE _____

Figure F.1-12 **SOIL MAP**
 KAPALILI ARC., ASUNCION, DAVAO DEL NORTE



LEGEND		0 0.5 1 1.5 2 2.5 3KM. SCALE 1:50,000	
CODE	ORDER	SUB GROUP	SYMBOL
5	Inceptisols	Typic Tropaquepts	IjIT/A12
14	Inceptisols	Fluventic Eutropepts	IgfE/Af1
19	Inceptisols	Typic Eutropepts	EjIE/Ce1
30	Entisols-Inceptisols	Troporthents - Eutropepts Association	ET-IE/EFGe3
32	Inceptisols- Entisols	Eutropepts - Troporthents Association	IE-ET/EFGe3

Table F.2-1 Characteristic of Soils, Sappaac

Landform	Obs. No.	Depth	Texture	Layer	pH	NH ₄ -N	NO ₃ -N	P ₂ O ₅	K ₂ O	CaO	MgO	Fe	Mn	NaCl
Narrow alluvial valley	1	50 cm	C	A	6.7	<1.0	<1.0	<5.0	<1.0	<50.0	>1.0	>5.0	<5.0	<0.005
			C	B	6.8	<1.0	<1.0	<5.0	<1.0	<50.0	>1.0	>5.0	<5.0	<0.005
	2	60 cm	SiC	A	6.9	<1.0	<1.0	<5.0	<1.0	<50.0	>1.0	>5.0	<5.0	<0.005
			SiC	B	6.8	<1.0	<1.0	5.0	<1.0	<50.0	>1.0	>5.0	>5.0	<0.005
3	> 1 m	C	A	6.8	1.0	>1.0	>5.0	<1.0	<50.0	>1.0	>5.0	>5.0	<5.0	<0.005
		C	B	7.0	1.0	<1.0	5.0	<1.0	<50.0	>1.0	>5.0	>5.0	<5.0	<0.005
		C	A	7.0	<1.0	<1.0	<5.0	<1.0	<50.0	1.0	5.0	5.0	5.0	<0.005
Shale Sandstone Hills	5	> 1 m	C	B	7.2	<1.0	<1.0	5.0	<1.0	<50.0	1.0	<5.0	<5.0	<0.005
			sl	A	6.5	<1.0	<1.0	<5.0	<1.0	<50.0	>1.0	>5.0	<5.0	<0.005
	6	> 1 m	sl	B	6.7	<1.0	<1.0	<5.0	<1.0	<50.0	>1.0	>5.0	<5.0	<0.005
			hcl	A	6.3	<1.0	<1.0	<5.0	<1.0	<50.0	>1.0	>5.0	<5.0	<0.005
7	> 1 m	cl	B	6.0	<1.0	<1.0	<5.0	<1.0	<50.0	>1.0	>5.0	>5.0	<5.0	<0.005
		cl	A	5.5	<1.0	<1.0	>25.0	<1.0	<50.0	>1.0	>5.0	>5.0	<5.0	<0.005
		sl	B	5.3	<1.0	<1.0	>10.0	<1.0	<50.0	>1.0	>5.0	>5.0	<5.0	<0.005
Hills Onvolcanics	8	> 1 m	cl	A	5.8	<1.0	<1.0	>5.0	<1.0	<50.0	>1.0	>5.0	<5.0	<0.005
			C	B	5.6	<1.0	<1.0	>5.0	<1.0	<50.0	>1.0	>5.0	<5.0	<0.005
	9	> 1 m	cl	A	6.2	<1.0	<1.0	>5.0	<1.0	<50.0	>1.0	>5.0	<5.0	<0.005
			cl	B	6.3	<1.0	<1.0	<5.0	<1.0	<50.0	>1.0	>5.0	<5.0	<0.005
10	> 1 m	C	A	6.3	<1.0	<1.0	<5.0	<1.0	<50.0	>1.0	>5.0	>5.0	<5.0	<0.005
		C	B	6.2	<1.0	<1.0	<5.0	<1.0	<50.0	>1.0	>5.0	>5.0	<5.0	<0.005
Limestone Hills	11	> 1 m	C	A	6.8	1.0	<1.0	<5.0	<1.0	<50.0	>1.0	>5.0	<5.0	<0.005
			C	B	7.0	1.0	<1.0	<5.0	<1.0	<50.0	>1.0	>5.0	<5.0	<0.005
	12	> 1 m	cl	A	6.5	<1.0	<1.0	<5.0	<1.0	<50.0	>1.0	>5.0	<5.0	<0.005

Note:

1. Depth in cm.
2. NH₄-N, NO₃-N, P₂O₅, CaO and MgO are in mg/100 g
3. Fe and Mn are in ppm
4. NaCl is in percent
5. Texture:
 - C - clay
 - SiC - silty clay
 - sl - sandy loam
 - hcl - heavy clay loam
 - cl - clay loam

Table F.2-2 Characteristic of Soils, Cofcaville

Landform	Obs. No.	Depth	Layer	Texture	pH	NH ₄ -N	NO ₃ -N	P ₂ O ₅	K ₂ O	CaO	MgO	Fe	MnO	NaCl	
Narrow alluvial valley	1	1 m	A	C	6.1	<1.0	<1.0	>25	<1.0	<50.0	>1.0	25.0	>10.0	<0.005	
	2	50 cm	B	C	6.3	<1.0	<1.0	>25	<1.0	<50.0	>1.0	25.0	>10.0	<0.005	
Undulating hills;swallow or no dark A horizon	3	> 1 m	A	C	6.5	<1.0	<1.0	<5.0	<1.0	<50.0	>1.0	<5.0	<5.0	<0.005	
	4	> 1 m	B	C	6.5	<1.0	<1.0	<5.0	<1.0	<50.0	1.0	<5.0	<5.0	<0.005	
	5	> 1 m	A	SIC	4.7	<1.0	<1.0	<5.0	1.0	<50.0	5.0	<5.0	<5.0	<0.005	
	6	> 1 m	B	SIC	6.1	<1.0	<1.0	25.0	>1.0	<50.0	>1.0	5.0	<5.0	<0.005	
	7	> 1 m	A	cl	4.5	<1.0	<1.0	10.0	>1.0	<50.0	>1.0	<5.0	5.0	<0.005	
	8	> 1 m	B	cl	4.5	<1.0	<1.0	<5.0	10.0	<50.0	>1.0	>1.0	5.0	<0.005	
	9	> 1 m	A	SIC	4.4	<1.0	<1.0	<5.0	>1.0	>50.0	>50.0	1.0	<5.0	<5.0	<0.005
	10	> 1 m	B	cl	5.5	1.0	<1.0	<0.5	>1.0	<50.0	<50.0	>1.0	<5.0	<5.0	<0.005
	11	> 1 m	A	C	5.5	<1.0	<1.0	<0.5	>1.0	<50.0	<50.0	>1.0	<5.0	<5.0	<0.005
	12	> 1 m	B	hd	5.5	1.0	<1.0	<5.0	<1.0	<50.0	<50.0	>1.0	<5.0	<5.0	<0.005
	13	> 1 m	A	SIC	4.5	1.0	<1.0	10.0	<1.0	<50.0	<50.0	>1.0	<5.0	<5.0	<0.005
	Undulating hills; moderately deep dark A horizon	14	> 1 m	B	cl	4.9	<1.0	<1.0	5.0	<1.0	<50.0	1.0	<5.0	<5.0	<0.005
15		> 1 m	A	C	4.5	<1.0	<1.0	>5.0	<1.0	<50.0	>1.0	<5.0	<5.0	<0.005	
16		> 1 m	B	cl	6.1	<1.0	<1.0	25.0	8.0	<50.0	10.0	<6.0	<5.0	<0.005	
17		> 1 m	A	C	4.5	<1.0	<1.0	25.0	<1.0	<50.0	>1.0	<5.0	<5.0	<0.005	
18		> 1 m	B	C	6.4	<1.0	<1.0	<5.0	1.0	<50.0	>1.0	<5.0	<5.0	<0.005	
19		> 1 m	A	cl	6.2	<1.0	<1.0	<5.0	>1.0	<50.0	>1.0	<5.0	<5.0	<0.005	
20		> 1 m	B	C	6.3	<1.0	<1.0	>10.0	<1.0	<50.0	>1.0	<5.0	<5.0	<0.005	
21		> 1 m	A	cl	6.4	<1.0	<1.0	>10.0	<1.0	<50.0	>1.0	>1.0	<5.0	<5.0	<0.005
22		> 1 m	B	SIC	6.1	<1.0	<1.0	<5.0	<1.0	<50.0	>1.0	>1.0	<5.0	<5.0	<0.005
23		> 1 m	A	cl	6.0	<1.0	<1.0	<5.0	<1.0	<50.0	>1.0	>1.0	<5.0	<5.0	<0.005
24		> 1 m	B	C	6.0	<1.0	<1.0	<5.0	<1.0	<50.0	>1.0	>1.0	<5.0	<5.0	<0.005

Note:

1. Depth in cm.
2. NH₄-N, NO₃-N, P₂O₅, CaO and MgO are in mg/100g
3. Fe and Mn are in ppm
4. NaCl is in percent
5. Texture
 C - clay
 SiC - silty clay
 hcl - heavy clay loam
 cl - clay loam

Table F.2-3 Characteristic of Soils, Marangog

LANDFORM	Obs. No.	Depth	Layer	Texture	pH	NH ₄ -N	NO ₃ -N	P ₂ O ₅	K ₂ O	CaO	MgO	Fe	Mn	NaCl	
Narrow Alluvial Valley or Limestone Depression	5	50 cm	A	C	6.8	1.0	<1.0	<5.0	5.0	600	5.0	25.0	25.0	<0.005	
	5		B	C	7.0	1.0	<1.0	<5.0	5.0	750	8.0	1.0	25.0	<0.005	
Low Limestone Hills, Gently Sloping to Undulating Slope	8	50 cm	A	C	6.5	<1.0	<1.0	10.0	1.0	600	10.0	25.0	25.0	<0.005	
	8		B	C	7.0	<1.0	<1.0	10.0	1.0	600	5.0	25.0	25.0	<0.005	
Low Limestone Hills, Gently Sloping to Undulating Slope	1	> 1 m	A	C	7.0	1.0	<1.0	<5.0	1.0	300	1.0	<5.0	<5.0	<0.005	
	1		B	C	7.1	1.0	<1.0	<5.0	1.0	400	1.5	<5.0	<5.0	<0.005	
	2	> 1 m	A	C	6.8	1.0	<1.0	<5.0	1.0	400	1.0	<5.0	25.0	<0.005	
	2		B	C	6.5	1.0	<1.0	5.0	>1.0	50	1.0	>5.0	>5.0	<0.005	
	3	> 1 m	A	C	6.5	1.0	>1.0	>5.0	1.0	600	1.0	25.0	30.0	<0.005	
	3		B	C	7.0	1.0	>1.0	1.0	1.0	650	1.0	3.0	30.0	<0.005	
	4	> 1 m	A	C	7.1	1.0	<1.0	5.0	7.5	600	3.0	5.0	5.0	<0.005	
	4		B	C	7.0	1.0	<1.0	7.0	7.5	750	1.0	25.0	15.0	<0.005	
	6	> 1 m	A	C	6.5	<1.0	<1.0	<5.0	25.0	100	5.0	5.0	<5.0	<5.0	<0.005
	6		B	C	6.8	<1.0	<1.0	5.0	>35.0	100	10.0	10.0	7.0	<5.0	<0.005
	7	> 1 m	A	C	6.5	<1.0	>1.0	5.0	1.0	50	5.0	1.0	>5.0	<5.0	<0.005
	9	> 1 m	A	C	6.7	<1.0	<1.0	<5.0	1.0	400	>1.0	>1.0	30.0	30.0	<0.005
Low Limestone Hills, Undulating to Moderately Steep Slopes	9		B	C	7.1	<1.0	<1.0	<5.0	1.0	500	>1.0	35.0	35.0	<0.005	
	10	> 1 m	A	C	6.5	<1.0	<1.0	<5.0	1.0	600	10.0	<5.0	<5.0	<0.005	
	10		B	C	7.0	<1.0	<1.0	10.0	1.0	600	10.0	17.5	17.5	<0.005	
	11	> 1 m	A	C	6.5	1.0	1.0	<5.0	3.0	600	5.0	25.0	25.0	<0.005	
	11		B	C	6.7	1.0	>1.0	<5.0	5.0	750	7.0	35.0	35.0	<0.005	
	12	> 1 m	A	C	6.8	<1.0	>1.0	>5.0	1.0	600	1.0	30.0	30.0	<0.005	
12		B	C	6.3	<1.0	>1.0	>5.0	1.0	600	1.0	25.0	25.0	<0.005		

Texture:

C - clay

1. NH₄-N, NO₃-N, P₂O₅ and MgO are in mg/100 g

2. Fe and Mn are in ppm.

3. NaCl is in percent

Table F.2-4 Characteristic of Soils, Silae

LANDFORM	Obs. No.	Depth	Layer	Texture	pH	NH ₄ -N	NO ₃ -N	P ₂ O ₅	K ₂ O	CaO	MgO	Fe	Mn	NaCl
Gently Sloping to Undulating Hills	1	> 1 m	A	C	5.2	<1.0	<1.0	>5.0	<1.0	<50.0	1.0	<5.0	5.0	<0.005
			B	C	5.4	<1.0	<1.0	8.0	<1.0	<50.0	1.0	<5.0	5.0	<0.005
Collu-alluvial Valley	2	> 1 m	A	C	5.0	1.0	<1.0	30.0	<1.0	<50.0	1.0	<5.0	5.0	<0.005
			B	C	5.0	1.0	<1.0	15.0	<1.0	<50.0	1.0	<5.0	5.0	<0.005
	3	> 1 m	A	C	5.5	<1.0	<1.0	<5.0	<1.0	<50.0	1.0	50	50.0	<0.005
			B	C	6.5	<1.0	<1.0	<5.0	<1.0	<5.0	1.0	<5.0	5.0	<0.005
4	> 1 m	A	C	6.2	<1.0	<1.0	<5.0	<1.0	<50.0	1.0	50.0	>100.0	<0.005	
		B	C	6.2	<1.0	<1.0	<5.0	<1.0	<50.0	1.0	<5.0	<5.0	<0.005	
5	50 cm	A	C	6.3	<1.0	<1.0	<5.0	<1.0	<50.0	>1.0	>1.0	<5.0	>5.0	<0.005
		B	C	6.2	<1.0	<1.0	10.0	1.0	<50.0	>1.0	>1.0	<5.0	>5.0	<0.005
6	> 1 m	A	C	6.4	<1.0	<1.0	10.0	1.0	<50.0	>1.0	>1.0	10	>5.0	<0.005
		B	C	6.5	<1.0	<1.0	10.0	<1.0	<50.0	>1.0	>1.0	<5.0	>5.0	<0.005
7	> 1 m	A	C	5.2	<1.0	<1.0	<5.0	<1.0	<50.0	>25.0	>25.0	3.0	<5.0	<0.005
		B	C	4.8	<1.0	<1.0	5.0	<1.0	<50.0	>25.0	>25.0	<5.0	<5.0	<0.005
8	> 1 m	A	C	6.1	<1.0	<1.0	15.0	<1.0	<50.0	>150.0	>150.0	<5.0	<5.0	<0.005
		B	SCL	6.4	<1.0	<1.0	<5.0	<1.0	<50.0	>150.0	>150.0	<5.0	<5.0	<0.005
9	> 1 m	A	C	6.3	<1.0	<1.0	<5.0	<1.0	<50.0	>150.0	>150.0	<5.0	<5.0	<0.005
		B	C	6.2	<1.0	<1.0	<5.0	<1.0	<50.0	>150.0	>150.0	<5.0	<5.0	<0.005
10	> 1 m	A	C	6.3	<1.0	<1.0	<5.0	<1.0	<50.0	>150.0	>150.0	<5.0	<5.0	<0.005
		B	C	6.2	<1.0	<1.0	<5.0	<1.0	<50.0	>150.0	>150.0	<5.0	<5.0	<0.005
11	> 1 m	A	C	5.8	<1.0	<1.0	<5.0	<1.0	<50.0	>150.0	>150.0	<5.0	<5.0	<0.005
		B	C	6.4	<1.0	<1.0	<5.0	<1.0	<50.0	50.0	50.0	<5.0	<5.0	<0.005
12	> 1 m	A	C	5.8	<1.0	<1.0	5.0	1.0	<50.0	>150.0	>150.0	<5.0	<5.0	<0.005
		B	HCL	5.9	<1.0	<1.0	<5.0	<1.0	<50.0	>150.0	>150.0	<5.0	<5.0	<0.005

Note:

1. Depth in cm.
2. NH₄-N, NO₃-N, P₂O₅, CaO, and MgO are in mg/100g
3. Fe and Mn are in ppm
4. NaCl is in percent

5. Texture

- C - clay
- HCL - heavy clay loam
- SCL - sandy clay loam

Table F.2.-5 Planting Area in Idle/Uncultivated Land,Sappaac (Case 3)

Item	Physical Area (ha)	Cropping Intensity			Planting Area (ha)
		Whole Period (%)	Average (%)	Rounded (%)	
1. Fruit-based Contour Farming	110				
<u>Fruit Trees</u>	(100%)				
(1) Fruit trees(Mango)	66	1-90	90	90	59
(2) Nurse trees(Kakawate)	(60%)	20-0	20	20	13
(3) Hedgerows plant(Flemingia)		12	12	10	7
(4) Corn, Wet Season		51-3	27	25	17
(5) Beans(Peanut), Wet Season		26-2	14	15	10
(6) Bean(Mungbean), Dry Season		26-2	14	15	10
Subtotal					116
<u>Banana</u>	11				
(1) Nurse tree(Kakawate)	(10%)	10	10	10	1
(2) Banana		90	90	90	10
Subtotal					11
<u>Forest Trees *1</u>	33				
(1) Fast growing tees(Bagras *2)	(30%)	90	90	90	30
Subtotal					157
2. Reforestation *3	69				
(1) Climax trees(Mahogany)		90	90	90	62
(2) Nurse trees(Bagras) *4		*1 90	*1 90	*1 90	62
Subtotal					124
Total	179				281

Note: (1) The crops in the parenthesis show the representative crops.

(2) *1...Out of 33 ha, 3ha (33haX10%) are excluded as the land of fireline

*2...Eucalyptus deglupta

*3...Out of 69 ha, 7ha (10% of 69ha) are excluded as the land of fireline

*4...Intercropped with climax trees

Table F.2-6 Planting Area in Idle/Uncultivated Land, Cofcaville (Case 3)

Item	Physical Area (ha)	Cropping Intensity			Planting Area (ha)
		Whole Period (%)	Average (%)	Rounded (%)	
1. Cassava and Fruit-based Contour Farming	89 (100%)				
<u>Cassava</u>	62 (70%)	100	100	100	62
<u>Banana</u>	27				
(1) Nurse tree (Kakawate)	(30%)	10	10	10	3
(2) Banana		90	90	90	24
Subtotal					27
Total					89
2. Reforestation *1	132				
(1) Climax trees (Mahogany)		90	90	90	119
(2) Nurse trees (Gmelina*2)		*1 90	*1 90	*1 90	119
Subtotal					238
Total	221				327

Note: (1) The crops in the parenthesis show the representative crops.
(2) *1...Out of 132 ha, 13 ha (132ha x 10%) are excluded for the land of fireline.
*2...Gmelina aborea (intercropped with climax trees)

Table F.2-7 Planting Area in Idle/Uncultivated Land,Marangog (Case 3)

Item	Physical Area (ha)	Cropping Intensity			Planting Area (ha)
		Whole Period (%)	Average (%)	Rounded (%)	
1. Fruit-based Contour Farming	17				
<u>Fruit Trees</u>	(100%)				
(1) Fruit trees (Jackfruit)	15	1-90	90	90	14
(2) Nurse trees (Falcata)	(90%)	20-0	20	20	3
(3) Hedgerows plant (Flemingia)		12	12	10	2
(4) Corn, Wet Season		38-5	22	20	3
(5) Beans (Peanut), Wet Season		38-5	22	20	3
(6) Corn, Dry Season		38-5	22	20	3
(7) Beans (Peanut), Dry Season		38-5	22	20	3
Subtotal					31
<u>Forest Trees</u>	2				
(1) Fast growing trees (Gmelina*1)	(10%)	90	90	90	2
Total					33
2. Reforestation *2	32				
(1) Climax trees (Mahogany)		90	90	90	29
(2) Nurse trees (Bagalunga *3)		*1 90	*1 90	*1 90	29
Subtotal					58
Total	52				90

Note: (1) The crops in the parenthesis show the representative crops.

(2) *1...Gmelina aborea

*2...Out of 32ha, 3ha(32hax10%) are excluded as the land of fire line

*3...Intercropped with climax trees

(3) The fruit-based contour farming is applied for the 17 ha of existing upland.

Table F.2-8 Area in Idle/Uncultivated Land, Silae (Case 3)

Item	Physical Area (ha)	Cropping Intensity			Planting Area (ha)
		Whole Period (%)	Average (%)	Rounded (%)	
1. Fruit-based Contour Farming	10				
<u>Fruit Trees</u>	(100%)				
(1) Fruit trees (Durian)	9	1-90	90	90	8
(2) Nurse trees (Kakawate)	(90%)	20-0	20	20	2
(3) Hedgerows plant (Flemingia)		12	12	10	1
(4) Corn, Wet Season		51-3	27	25	2
(5) Beans (Mungbean), Wet Season		26-2	14	15	1
(6) Corn, Dry Season		51-3	27	25	2
(7) Beans (Peanut), Dry Season		26-2	12	15	1
Subtotal					17
<u>Forest Trees</u>	1				
(1) Fast Growing Tees (Gmelina *1)	(10%)	90	90	90	1
Total					18
2. Reforestration *2	42				
(1) Climax trees (Mahogany)		90	90	90	38
(2) Nurse trees (Bagras *3)		*1 90	*1 90	*1 90	38
Total					76
Grandtotal	52				94

- Note: (1) The crops in the parenthesis show the representative crops.
 (2) *1..Gmelina aborea
 *2...Out of 42ha, 4ha (42hax10%) are excluded as the land of fireline.
 *3...Eucalyptus deglupta, intercroppedwi the climax trees.

Table E.2-9 Proposed Cropping Area, Sappaac (Case 3)

Kind of Land	Land Area (ha)	Cropping Intensity (%)	Crop	Season	Area (ha)
1. Rice Land					
- Irrigated	30	100	Paddy Rice	Wet	30
		20	Diversified Crops (Garlic*1)	Dry	6
			Subtotal		36
- Rainfed	58	100	Paddy Rice	Wet	58
		40	Diversified Crops (Corn)	Dry	23
			Subtotal		81
Total	88				117
2. Upland	30				
- Rainfed		30	Corn	Wet	9
		70	Root Crops (Sweet Potato*2)	Wet	21
		40	Mungbean	Dry	12
			Subtotal		42
3. Orchard	8	60	Mango		5
		40	Banana		3
			Subtotal		8
4. 8-18% Slope Land	110	15	Corn	Wet	17
		9	Beans (Peanut)	Wet	10
		9	Beans (Mungbean)	Dry	10
		9	Banana		10
		54	Mango		50
		6	Hedge row plants (Flemingia)		7
		13	Nurse trees (Kakawate)		14
		27	Forest Trees (Bagras)		30
			Subtotal		157
6. 18-30% Slope Land	60	90	Forest trees (Mahogany)		62
			Forest trees (Bagras)		62
			Subtotal		124
6. More than 30% *3	45				
7. Other Land	32				
Grandtotal	382				448

Overall cropping intensity = $448 \text{ ha} / (375 \text{ ha} - 45 \text{ ha} - 32 \text{ ha}) \times 100 = 150.1\%$

Note: The crops in the parenthesis show the respective representative crops.

*1... including such vegetables as squash, cabbage, and eggplant

*2... including cassava

Source: Study Team

Table F.2-10 Proposed Cropping Area(Case 3),Cofcaville

Kind of Land	Land Area (ha)	Cropping Intensity (%)	Crop	Season	Area (ha)
1. Rice Land					
- Irrigated	7	86	Paddy Rice	Wet	6
		100	Paddy Rice	Dry	7
		86	Diversified Crops(Mungbean)	Dry	6
			Subtotal		19
- Rainfed	32	100	Paddy Rice	Wet	32
		40	Paddy Rice	Dry	13
			Subtotal		45
Total	39				64
2. Upland	163				
- Rainfed		95	Corn	Wet	155
		5	Root Crops(Sweet Potato*1)	Wet	8
		76	Corn	Dry	124
		10	Beans(Mungbean)	Dry	16
			Subtotal		303
3. Orchard	23	100	Fruit Trees(Banana)		23
4. 8-18% Slope Land	89	70	Cassava		62
		27	Fruit Trees(Banana)		24
		3	Nurse Tree(Kakawate)		3
			Subtotal		89
5. 18-30% Slope Land	132		Forest trees(Mahogany*2)		
		90	Mahogany		119
		90	Coelina		119
			Subtotal		238
6. Over 30% Slope Land	16				
7. Other Land	28				
Total	490				717

Overall cropping intensity= $717 / (490\text{ha} - 16\text{ha} - 28\text{ha}) \times 100 = 160.8\%$

Note: The crops in the parenthesis show the respective representative crops
 *1...including gabi and cassava
 *2...including narra
 *3...including 13ha of land for fireline in 18-30% slope land.

Source: Study Team

Table F.2-11 Proposed Cropping Area,Marangog(Case 3)

Kind of Land	Land Area (ha)	Cropping Intensity (%)	Crop	Season	Area (ha)
1. Rice Land					
- Irrigated	11	100	Paddy Rice	Wet	11
		100	Diversified Crops(Squash*1)	Dry	11
			Subtotal		22
- Rainfed	13	100	Paddy Rice	Wet	13
		60	Paddy Rice	Dry	8
		40	Diversified Crops(Corn)	Dry	5
			Subtotal		26
Total	24				48
2. Upland	16				
- Rainfed		30	Corn	Wet	5
		70	Root Crops(Sweet Potato*2)	Wet	11
		80	Corn	Dry	13
		20	Beans(Peanut)	Dry	3
			Subtotal		32
3. Coconut	86				
		100	Coconut		86
		20	Corn	Wet	17
		20	Beans(Peanut)	Dry	17
		10	Banana		9
		10	Abaca		9
			Subtotal		138
4. Orchard	29				
		40	Banana		12
		60	Abaca		17
			Subtotal		29
5. 8-18% Slope Land	17				
		20	Corn	Wet	3
		20	Beans(Mungbean)	Wet	3
		20	Corn	Dry	3
		20	Beans(Peanut)	Dry	3
		80	Fruit trees(Jackfruit)		14
		10	Hedgerow plants(Flemingia)		2
		18	Nurse trees(Falcata)		3
		12	Fast growing tree(Gmelina)		2
			Subtotal		33
6. 18-30% Slope Land	29				
		100	Climax trees(Nahogany*3)		29
		100	Nurse trees(Bagalunga)		29
			Subtotal		58
7. More than 30% Slope Land	106				
8. Other Land	23				
Total	330				338

Overall cropping intensity=338ha/(330ha-106ha-23ha)X100=168.2%

Note: The crops in the parenthesis show the respective representative crops.

*1...including stringbean, tomato, eggplant, etc.

*2...including Gabi, cassava, etc.

*3...including Narra

Source: Study Team

Table F.2-12 Proposed Cropping Area, Silae(Case 3)

Kind of Land	Land Area (ha)	Cropping Intensity (%)	Crop	Season	Area (ha)
1. Rice Land					
- Irrigated	30	100	Paddy Rice	Wet	30
		37	Paddy Rice	Dry	11
		47	Mungbean	Dry	14
			Subtotal		55
2. Upland	45				
- Rainfed		80	Corn	Wet	36
		20	Beans(Mungbean)	Wet	9
		80	Corn	Dry	36
		20	Beans(Peanut)	Dry	9
			Subtotal		90
3. 8-18% Slope Land	10	20	Corn	Wet	2
		5	Beans(Mungbean)	Wet	1
		20	Corn	Dry	2
		5	Beans(Peanut)	Dry	1
		80	Fruit trees(Durian*1)		8
		20	Nurse trees(Kakawate)		2
		10	Hedgerow plants(Flemingia)		1
		10	Fast growing trees(Gemelina)		1
			Subtotal		18
4. 18-30% Slope Land	38	100	Climax trees(Mahogany*2)		38
		100	Nurse trees(Bagras)		38
			Subtotal		76
5. More than 30% Slope Land	29				
6. Other Land	12				
Total	164				239

Overall cropping intensity=239ha/(164ha-29ha-12ha)X100=194.3%

Note: The crops in the parenthesis show the respective representative crops.

*1... Including marang, lanzones, rambutan, and mango

*2... Including Bagras to be intercropped

Source: Study Team

Table F.2-13 Target Crop Yield by Land Suitability Class

Crop	Estimated Yield by Land Class (Unit: ton/ha)														
	Land Class			Sappac			Cofcaville			Marangog			Silae		
	Potential (100%)	S1 (95%)	S2 (85%)	S3 (75%)	Land Class	Yield	Land Class	Yield	Land Class	Yield	Land Class	Yield	Land Class	Yield	
1. Paddy Rice, Irrigated															
- Wet Season	5.2	4.9	4.4	3.9	S2	4.4	S1	4.4	S2	4.9	S2	4.4	S1	4.9	
- Dry Season	5.8	5.5	4.9	4.3	S2	4.9	S1	4.9	S2	5.5	S2	4.9	S1	5.5	
2. Paddy Rice, Rainfed	3.7	3.5	3.1	2.8	S2	3.1	S1	3.1	S2	3.5	S2	3.1	S1	3.5	
3. Corn, White (Open pollinated)	4.0	3.8	3.4	3.0	S3	3.0	S3	3.0	S3	3.5	S3	3.0	S3	3.0	
4. Corn, Yellow (Hybrid)	4.7	4.5	4.0	3.5			S3			3.5			S3	3.5	
5. Mungbean	1.2	1.1	1.0	0.9	S3	0.9	S3	0.9	S3	0.9	S3	0.9	S3	0.9	
6. Peanut	1.2	1.1	1.0	0.9	S3	0.9	S3	0.9	S3	0.9	S3	0.9	S3	0.9	
7. Sweet Potato	9.0	8.6	7.7	6.8	S3	6.8	S3	6.8	S3	6.8	S3	6.8	S3	6.8	
8. Cassava	12.8	12.2	10.9	9.6		9.6	S3		9.6						
9. Squash	3.8	3.6	3.2	2.9	S2	2.9	S2	2.6	S2	3.2	S2	3.2	S2	3.2	
10. Garlic	3.0	2.9	2.6	2.3	S2	2.3	S2	2.6	S2	2.6	S2	2.6	S2	2.6	

Note: (1) The source of data on the respective potential yield

Paddy rice, irrigated... Bohol Irrigation Development Project Phase II, JICA, 1985

Paddy rice rainfed... Philippine Integrated Agriculture Infrastructure and Support Services Project, Draft Final Report, ADB, 1996

Corn, White... Gintong Ani Corn Production Program, 9 Basic Steps towards a Bountiful Corn Harvest, DA

85 % of attained yield for IES Cn 1

Corn, Yellow... Gintong Ani Corn Production Program, 9 Basic Steps towards a Bountiful Corn Harvest, DA

85 % of average attained yield for SMC 305 and other four varieties

Peanut... Estimated the attained yield in the recommended component technology program, DA II, 1995)

Sweet Potato... Average of statistical data for Abra, Quirino, Leyte, and Bukidnon provinces, 1991-1995 in BAS data

Cassava... Investment opportunity of cassava, DA Region X

Squash... Development Project of Viable Agrarian Communities in Southern Palawan, JICA, 1995

Garlic... Ilocos Norte Irrigation Project, JICA, 1980

(2) Land class by study area... Estimated by the soil survey result for most part of land to be cultivated the respective crops.

Table F.2-14 Crop Production With Project,Sappaac(Case-3)

Crop	Area (ha)	Unit Yield (ton/ha)	Production (ton)	Remarks
1. Rice land, Irrigated				
Wet season				
- Paddy Rice	30	4.4	132	
Dry Season				
- Diversified Crops(Carlic)	6	1.0	6	
Subtotal	36			
2. Rice land, Rainfed				
Wet Season				
- Paddy Rice	58	3.1	180	
Dry Season				
- Diversified Crops(Corn)	23	3.0	69	
Subtotal	81			
3. Upland				
Wet Season				
- Corn	9	3.0	27	
- Root Crops(Sweet Potato)	21	6.8	143	
Dry Season				
- Mungbean	12	0.9	11	
Subtotal	42			
4. Orchard				
- Mango	5	17.9	90	
- Banana	3	10.0	30	
Subtotal	8			
5. Contour Farming & Agroforestry				
- Cashew Nut	59	2.0	118	15th Year
- Banana	10	10.0	120	3rd Year
- Corn, Wet Season	17	3.0	51	
- Beans(Peanut), Wet Season	10	0.9	9	
- Beans(Mungbean), Dry Season	10	0.9	9	
- Nurse trees(Kakawate)	14			
Fuelwood		9.0 cu. m	126	4th Year
- Forest Trees(Bagras)	92			
Fuelwood		11.6 cu. m	1,067	6th Year
Poles		25.0 cu. m	184	10th Year
Sawlog		64.4 cu. m	5,925	14th Year
- Forest Trees(Mahogany)	62			
Fuelwood		7.0 cu. m	434	6th Year
Poles		8.2 cu. m	508	15th Year
Sawlog		77.9 cu. m	4,830	25th Year
- Hedgerow(Flemingia)	7			
Subtotal	281			
Total	448			

Note: The crops in the parenthesis show the representative crops.

Source: Study Team

Table F.2-15 Crop Production With Project, Cofcaville(Case-3)

Crop	Area (ha)	Unit Yield (ton/ha)	Production (ton)	Remarks
1. Rice land, Irrigated				
Wet season				
- Paddy Rice	6	4.9	29	
Dry Season				
- Paddy Rice	7	5.5	39	
- Beans(Mungbean)	6	0.9	5	
Subtotal	19			
2. Rice Land, Rainfed				
Wet Season				
- Paddy Rice	32	3.5	112	
Dry Season				
- Paddy Rice	13	3.5	46	
Subtotal	45			
3. Upland				
Wet Season				
- Corn	155	3.5	543	
- Root Crops(Sweet Potato)	8	6.8	54	
Dry Season				
- Corn	124	3.5	434	
- Beans(Mungbean)	16	0.9	14	
Subtotal	303			
4. Orchard				
- Banana	23	10.0	230	3rd Year
5. Contour Farming & Agroforestry				
- Cassava	62	9.6	595	
- Banana	24	10.0	240	
- Nurse trees(Kakawate)	3			
Fuelwood		9.0 cu. m	27	4th year
- Forest trees(Genelina)	119			
Fuelwood		10.8 cu. m	130	7th Year
Poles		20.8 cu. m	2,475	10th Year
Sawlog		51.7 cu. m	6,152	15th Year
- Forest trees(Mahogany)	119			
Fuelwood		7.0 cu. m	126	6th Year
Poles		8.2 cu. m	976	15th Year
Sawlog		77.9 cu. m	9,270	25th year
Subtotal	327			
Total	717			

Note: The crops in the parenthesis show the representative crops.

Source: Study Team

Table F.2-16 Crop Production with Project, Marangog(Case-3)

Crop	Area (ha)	Unit Yield (ton/ha)	Production (ton)	Remarks
1. Rice Land, Irrigated				
Wet season				
- Paddy Rice	11	4.4	48	
Dry Season				
- Vegetables(Squash)	11	3.2	35	
Subtotal	22			
2. Rice Land, Rainfed				
Wet Season				
- Paddy Rice	13	3.1	40	
Dry Season				
- Paddy Rice	8	3.1	25	
- Diversified Crops(Corn)	5	3.0	15	
Subtotal	26			
3. Upland				
Wet Season				
- Corn	5	3.0	15	
- Root Crops(Sweet Potato)	11	6.8	75	
Dry Season				
- Corn	13	3.0	39	
- Peanut	3	0.9	3	
Subtotal	32			
4. Coconut Land				
- Coconut, Existing Crop	34	0.7	24	
- Coconut, Newly Planted	52	2.5	130	
- Banana	9	10.0	90	
- Abaca	9	1.3	12	
- Corn, Wet Season	17	3.0	51	
- Beans(Peanut)	17	0.9	15	
Subtotal	138			
5. Orchard & Abaca				
- Banana	12	10.0	120	
- Abaca	17	1.3	22	
Subtotal	29			
6. Contour Farming & Agroforestry				
- Fruit trees(Jackfruit)	14	3.3-7.5	105	
- Corn, Wet Season	3	3.0	9	
- Beans(Mungbeans), Wet Season	3	0.9	3	
- Corn, Dry Season	3	3.0	9	
- Beans(Peanut)	3	0.9	3	
- Nurse tress(Falcata)	3			
Pulpwood		20.0 cu. m	6	6th Year
Pulpwood		47.7 cu. m	143	10th Year
Fuelwood		4.0 cu. m	12	10th Year
- Forest Trees(Mahogany)	29			
Fuelwood		7.0 cu. m	203	6th Year
Poles		8.2 cu. m	238	15th Year
Sawlog		77.9 cu. m	2,259	25th Year
- Forest trees(Bagalunga)	29			
Poles		16.6 cu. m	481	7th Year
Poles		56.1 cu. m	1,627	15th Year
Fuelwood		8.0 cu. m	232	15th Year
- Gemelina	2			
Fuelwood		10.8 cu. m	22	7th Year
Poles		20.8 cu. m	42	10th Year
Sawlog		51.7 cu. m	103	15th Year
- Hedgerows(Flemingia)	2			
Subtotal	91			
Total	338			

Note: The crops in the parenthesis show the representative crops.

Source: Study Team

Table F.2-17 Crop Production With Project,Silae(Case-3)

Crop	Area (ha)	Unit Yield (ton/ha)	Production (ton)	Remarks
1. Rice land, Irrigated				
Wet season				
- Paddy Rice	30	4.9	147	
Dry Season				
- Paddy Rice	11	5.5	61	
- Mungbean	14	0.9	13	
Subtotal	55			
2. Upland				
Wet Season				
- Corn	36	3.5	126	
- Beans(Mungbean)	9	0.9	8	
Dry Season				
- Corn	36	3.5	126	
- Beans(Peanut)	9	0.9	8	
Subtotal	90			
3. Contour Farming & Agroforestry				
- Fruit trees(Durian)	8	6.0	48	13th Year
- Corn, Wet Season	2	3.5	7	
- Beans(Mungbean), Wet Season	1	0.9	1	
- Corn, Dry Season	2	3.5	7	
- Beans(Peanut), Dry Season	1	0.9	1	
- Nurse trees(Kakawate)	2			
Fuelwood		9.0 cu. m	18	4th Year
- Fast growing trees(Gemelina)	1			
Fuelwood		10.8 cu. m	11	7th Year
Poles		20.8 cu. m	21	10th Year
Sawlog		51.7 cu. m	52	
- Climax trees(Mahogany)	38			
Fuelwood		7.0 cu. m	266	7th Year
Poles		8.2 cu. m	312	15th Year
		77.9 cu. m	2,960	25th Year
- Nurse trees(Bagras)	38			
Fuelwood		11.6 cu. m	441	6th year
Poles		25.0 cu. m	950	10th Year
Sawlog		64.4 cu. m	2,447	14th Year
- Heagerows(Flemingia)	1			
Subtotal	94			
Total	239			

Note: The crops in the parenthesis show the representative crops.

Source: Study Team

Table F.2-18 Labor Requirement, Paddy Rice, Transplanted (Irrigated)

(Unit: man-day/ha)

Operation	With Project, Future		Remarks
	Man-day	Animal-day	
1. Seed-bedding			
a. Land Preparation/Sowing	1.2	1.0	
b. Care of Seedlings	1.5	-	
Sub-total	2.7	1.0	
2. Land Preparation			
a. Cleaning /dike Mending	3.0	-	
b. Plowing	(1x) 8.4	8.4	
c. Breaking/Harrowing	(2x) 2.7	2.7	
d. Final Harrowing/Leveling	(4x) 3.8	3.8	
Sub-total	17.9	14.9	
3. Planting			
a. Pulling/Deliver of Seedlings	7.5	0.5	
b. Furrowing/Planting/Thinning	20.0	-	
Sub-total	27.5	0.5	
4. Fertilizing			
a. Basal Fertilizers	1.5	0.4	
b. Top-dressing	1.5	0.4	
Sub-total	3.0	0.8	
5. Pest Control	3.5	2.0	
6. Cultivation/Weeding	12.0	-	
7. Irrigation/Drainage	5.0	-	
8. Harvesting			
a. Reaping/Plucking/Bundling	16.0	-	
b. Hauling/Piling	3.4	1.7	
c. Threshing/Winnowing	6.9	-	Fare of thresher - 5% of produce
Sub-total	26.4	5.9	
9. Post Harvesting			
a. Drying	-	-	
b. Sacking/Piling/Delivery	3.5	1.3	
Sub-total	3.5	1.3	
Total	101.5	26.4	

Table F.2-19 Labor Requirement, Paddy Rice, Transplanted (Rainfed)

(Unit: man-day/ha)

Operation	With Project, Future		Remarks
	Man-day	Animal-day	
1. Seed-bedding			
a. Land Preparation/Sowing	1.2	1.0	
b. Care of Seedlings	1.5	-	
Sub-total	2.7	1.0	
2. Land Preparation			
a. Cleaning /dike Mending	3.0	-	
b. Plowing	(1x) 8.4	8.4	
c. Breaking/Harrowing	(2x) 2.7	2.7	
d. Final Harrowing/Leveling	(4x) 3.8	3.8	
Sub-total	17.9	14.9	
3. Planting			
a. Pulling/Deliver of Seedlings	7.5	0.5	
b. Furrowing/Planting/Thinning	20.0	-	
Sub-total	27.5	0.5	
4. Fertilizing			
a. Basal Fertilizers	1.5	0.4	
b. Top-dressing	1.5	0.4	
Sub-total	3.0	0.8	
5. Pest Control	3.0	1.5	
6. Cultivation/Weeding	12.0	-	
7. Drainage	4.0	-	
8. Harvesting			
a. Reaping/Plucking/Bundling	14.4	-	
b. Hauling/Piling	3.1	1.7	
c. Threshing/Winninging	6.2	-	Fare of thresher - 5% of produce
Sub-total	23.7	1.7	
9. Post Harvesting			
a. Drying	-	-	
b. Saching/Piling/Delivery	3.0	1.3	
Sub-total	3.0	1.3	
Total	96.8	21.7	

Table F.2-20 Labor Requirement, Corn

(Unit: man-day/ha)

Operation	With Project, Future		Remarks
	Man-day	Animal-day	
1. Seed-bedding			
a. Land Preparation/Sowing	-	-	
b. Care of Seedlings	-	-	
Sub-total	-	-	
2. Land Preparation			
a. Cleaning /Bund Mending	3.0	-	
b. Plowing	(1x) 8.4	8.4	
c. Breaking/Harrowing	(2x) 5.9	5.9	
d. Final Harrowing/Leveling	(4x) 4.6	4.6	
Sub-total	21.9	18.9	
3. Planting			
b. Furrowing/Planting/Thinning	6.0	2.0	
Sub-total	6.0	2.0	
4. Fertilizing			
a. Basal Fertilizers	1.5	0.5	
b. Side-dressing	1.0	-	
Sub-total	2.5	0.5	
5. Pest Control	(2x) 3.0	3.0	
6. Cultivation/Weeding	10.0	2.0	
7. Harvesting			
a. Harvesting/hauling	19.0	3.0	
b. Shelling	-	-	
c. Threshing/Winnowing	-	-	Fare of mechanical sheller = P0.2/kg.
Sub-total	19.0	3.0	
9. Post Harvesting			
a. Drying	-	-	
b. Saching/Piling/Delivery	-	-	
Sub-total	-	-	
Total	62.4	29.4	

Table F.2-21 Labor Requirement, Mungbean

(Unit: man-day/ha)

Operation	With Project, Future		Remarks
	Man-day	Animal-day	
1. Seed-bedding			
a. Land Preparation/Sowing	-	-	
b. Care of Seedlings	-	-	
Sub-total	-	-	
2. Land Preparation			
a. Cleaning /Bund Mending	3.0	-	
b. Plowing	(1x) 8.4	8.4	
c. Breaking/Harrowing	(2x) 5.9	5.9	
d. Final Harrowing/Leveling	(4x) 4.6	4.6	
Sub-total	21.9	18.9	
3. Planting			
a. Pulling/Deliver of Seedlings	-	-	
b. Furrowing/Planting/Thinning	6.0	2.0	
Sub-total	6.0	2.0	
4. Fertilizing			
a. Basal Fertilizers	1.5	0.5	
b. Top-dressing	-	-	
Sub-total	1.5	0.5	
5. Pest Control	(2x) 3.0	3.0	
6. Cultivation/Weeding	10.0	2.0	
7. Irrigation/Drainage	(3x) 3.0	-	
8. Harvesting			
a. Reaping/Plucking/Bundling	12.5	-	
b. Hauling/Piling	2.0	1.5	
c. Threshing/Winnowing	12.0	1.0	
Sub-total	26.5	2.5	
9. Post Harvesting			
a. Drying	-	-	
b. Saching/Piling/Delivery	-	-	
Sub-total	-	-	
Total	71.9	28.9	

Table F.2-22 Labor Requirement, Peanut

(Unit: man-day/ha)

Operation	With Project, Future		Remarks
	Man-day	Animal-day	
1. Seed-bedding			
a. Land Preparation/Sowing	-	-	
b. Care of Seedlings	-	-	
Sub-total	-	-	
2. Land Preparation			
a. Cleaning /Bund Mending	3.0	-	
b. Plowing	(1x) 8.4	8.4	
c. Breaking/Harrowing	(2x) 5.9	5.9	
d. Final Harrowing/Leveling	(2x) 2.3	2.3	
Sub-total	19.6	16.6	
3. Planting			
a. Pulling/Deliver of Seedlings	-	-	
b. Furrowing/Planting/Thinning	6.0	2.0	
Sub-total	6.0	2.0	
4. Fertilizing			
a. Basal Fertilizers	1.5	0.5	
b. Top-dressing	1.0	-	
Sub-total	2.5	0.5	
5. Pest Control	(2x) 3.0	1.0	
6. Cultivation/Weeding	10.0	2.0	
7. Harvesting and Post Harvesting			
a. Reaping/Plucking/Bundling	8.0	-	
b. Hauling/Piling	2.0	2.0	
c. Threshing/Winnowing/Drying	2.0	-	
Sub-total	12.0	2.0	
Total	53.1	24.1	

Table F.2-23 Labor Requirement, Sweet Potato

(Unit: man-day/ha)

Operation	With Project, Future		Remarks
	Man-day	Animal-day	
1. Seed-bedding			
a. Land Preparation/Sowing	-	-	
b. Care of Seedlings	-	-	
Sub-total	-	-	
2. Land Preparation			
a. Cleaning /Bund Mending	3.0	-	
b. Plowing	(1x) 8.4	8.4	
c. Breaking/Harrowing	(2x) 5.9	5.9	
d. Final Harrowing/Leveling	(4x) 4.6	4.6	
Sub-total	21.9	18.9	
3. Planting			
a. Pulling/Deliver of Seedlings	-	-	
b. Furrowing/Planting/Thinning	6.0	2.0	
Sub-total	6.0	2.0	
4. Fertilizing			
a. Basal Fertilizers	1.5	0.5	
b. Top-dressing	-	-	
Sub-total	1.5	0.5	
5. Pest Control	2.0	-	
6. Cultivation/Weeding	10.0	2.0	
7. Harvesting and Post Harvesting			
a. Reaping/Plucking/Bundling	12.5	-	
b. Hauling/Piling	6.0	6.0	
c. Sorting/Piling	12.0	1.0	
Sub-total	30.5	7.0	
Total	71.9	30.4	

Table F.2-24 Labor Requirement, Cassava

(Unit: man-day/ha)

Operation	With Project, Future		Remarks
	Man-day	Animal-day	
1. Seed-bedding			
a. Land Preparation/Sowing	-	-	
b. Care of Seedlings	-	-	
Sub-total	-	-	
2. Land Preparation			
a. Cleaning /Bund Mending	3.0	-	
b. Plowing	(1x) 8.4	8.4	
c. Breaking/Harrowing	(2x) 5.9	5.9	
d. Final Harrowing/Leveling	(4x) 4.6	4.6	
Sub-total	21.9	18.9	
3. Planting			
a. Pulling/Deliver of Seedlings	-	-	
b. Furrowing/Planting/Thinning	10.0	2.0	
Sub-total	10.0	2.0	
4. Fertilizing			
a. Basal Fertilizers	1.5	0.5	
b. Top-dressing	-	-	
Sub-total	1.5	0.5	
5. Cultivation/Weeding	30.0	2.0	
6. Harvesting and Post Harvest			
a. Reaping/Plucking/Bundling	12.5	-	
b. Hauling/Piling	6.0	6.0	
c. Sorting/Piling	12.0	1.0	
Sub-total	30.5	7.0	
Total	93.9	30.4	

Table F.2-25 Labor Requirement, Squash

(Unit: man-day/ha)

Operation	With Project, Future		Remarks
	Man-day	Animal-day	
1. Seed-bedding			
a. Land Preparation/Sowing	-	-	
b. Care of Seedlings	-	-	
Sub-total	-	-	
2. Land Preparation			
a. Cleaning /Bund Mending	3.0	-	
b. Plowing	(1x) 8.4	8.4	
c. Breaking/Harrowing	(2x) 5.9	5.9	
d. Final Harrowing/Leveling	(4x) 4.6	4.6	
Sub-total	21.9	18.9	
3. Planting			
a. Pulling/Deliver of Seedlings	-	-	
b. Furrowing/Planting/Thinning	8.0	-	
Sub-total	8.0	-	
4. Fertilizing			
a. Basal Fertilizers	1.5	0.5	
b. Top-dressing	1.5	0.5	
Sub-total	3.0	1.0	
5. Pest Control	(4x) 6.0	-	
6. Cultivation/Weeding	10.0	3.0	
7. Irrigation/Drainage	(6x) 9.0	-	
8. Harvesting and Post Harvesting			
a. Reaping/Plucking/Bundling	20.0	-	
b. Hauling/Piling	8.0	3.0	
c. Threshing/Winnowing	-	-	
Sub-total	28.0	3.0	
Total	85.9	25.9	

Table F.2-26 Labor Requirement, Garlic

(Unit: man-day/ha)

Operation	With Project, Future		Remarks
	Man-day	Animal-day	
1. Seed-bedding			
a. Land Preparation/Sowing	-	-	
b. Care of Seedlings	-	-	
Sub-total	-	-	
2. Land Preparation			
a. Cleaning /Bund Mending	4.0	-	
b. Plowing		-	
c. Breaking/Harrowing		-	
d. Final Harrowing/Leveling		-	
Sub-total	4.0	-	
3. Planting			
a. Preparation of Seedlings	15.0	-	
b. Mulling/Planting/Replanting	73.0	2.0	
Sub-total	88.0	2.0	
4. Fertilizing			
a. Basal Fertilizers	2.0	1.0	
b. Top-dressing	5.0	-	
Sub-total	7.0	1.0	
5. Pest Control	(2x) 20.0	3.0	
6. Cultivation/Weeding	10.0	2.0	
7. Irrigation/Drainage	(3x) 6.0	-	
8. Harvesting			
a. Harvesting	10.0	-	
b. Hauling/Piling	2.0	1.5	
Sub-total	12.0	1.5	
9. Post Harvesting			
a. Sorting/Drying	5.0	-	
b. Cleaning/Classifying/Bundling	40.0	-	
Sub-total	45.0	-	
Total	192.0	9.5	

Table F. 2-27 Farm Input Requirement, Sappac

Crop	Seed/ Seedlings (kg. No.)	Lime (kg)	Fertilizer		Zinc Phosphate (kg)	Soil Inoculant (g)	Pesticides		Herbicides
			Urea (45-0-0)	Super Phosphate (0-18-0)			MP (0-0-60)	Composed (14-14-14)	
1. Paddy Rice, Transplanted									
Irrigated									
- Wet season	50		100		150	15		L 1.0 lit Basudin 400EC G 34kg Furadan 3G	L 2.0 lit 2.4D Amine EC
- Dry season	50		100		150	15		L 1.0 lit Basudin 400EC G 34kg Furadan 3G	L 2.0 lit 2.4D Amine EC
2. Paddy Rice, Transplanted									
Rainfed									
- Wet season	50		100		150	15		L 1.0 lit Basudin 400EC G 34kg Furadan 3G	L 2.0 lit 2.4D Amine EC
- Dry season	50		100		150	15		L 1.0 lit Basudin 400EC G 34kg Furadan 3G	L 2.0 lit 2.4D Amine EC
3. Corn(White)									
- Wet season	20	3,000	150		150			L 1.0 lit Decis 2.5EC 140 cards Trichogramma	L 2.0 lit 2.4D Amine EC
- Dry season	20	3,000	150		150			L 1.0 lit Decis 2.5EC 140 cards Trichogramma	L 2.0 lit 2.4D Amine EC
4. Mungbean	25	3,000			150			100 G. 16kg Furadan 3G	
5. Peanut	120	3,000			200			200 L 3.0 lit Azodrin 202R	
6. Sweet potato	50,000			200				L 1.0 lit Lannate EC	
7. Garlic	420		50					L 2.0 lit Malathion	
8. Fruit trees									
- Mango	100				350			L 34 Insecticides L 14 Fugicides	
- Cashew nut	100				200			L 14 Hormon L 4 Insecticides	
- Banana	625		200	450	175			L 1.5 Fugicides L 2.0 lit Insecticides	
8. Forest trees									
- Kakawate	900				50				
- Gemelina	833				50				
- Mahogany	833				50				
- Bayras	833				50				

Note: Seeds of peanut...shelled

Table F.2-28 Farm Input Requirement, Cofcaville

Crop	Seed/ Seedlings (kg. No.)	Fertilizer		Zinc Phosphate (kg)	Soil Phosphate (kg)	Pesticides Quantity	Herbicides Quantity	Chemicals Quantity	Chemicals
		Urea (45-0-0)	Super Phosphate (0-18-0)						
1. Paddy Rice, Transplanted									
- Irrigated									
- Wet season	50	138	210			L 1.0 lit	L 2.0 lit	2.4D Amine	EC
- Dry season	50	160	210			G 34kg	L 2.0 lit	2.4D Amine	EC
2. Paddy Rice, Transplanted									
- Rainfed									
- Wet season						L 1.0 lit	L 2.0 lit	2.4D Amine	EC
- Dry season						G 34kg	L 2.0 lit	2.4D Amine	EC
3. Corn									
- Wet season	17	3,000	200	300		L 1.0 lit	L 2.0 lit	2.4D Amine	EC
- Dry season	17	3,000	200	300		L 1.0 lit	L 2.0 lit	2.4D Amine	EC
4. Mungbean	25	3,000		150		L 1.0 lit	L 2.0 lit	2.4D Amine	EC
5. Peanut	120	3,000		200		200 cards	L 2.0 lit	2.4D Amine	EC
6. Sweet potato	50,000		100	200		200 cards	L 2.0 lit	2.4D Amine	EC
7. Cassaba						100 G. 16kg	L 2.0 lit	2.4D Amine	EC
8. Fruit trees						200	L 1.0lit	2.4D Amine	EC
- Jackfruit	100					Decis 2.5EC			
- Rambutan	100					Trichogramma			
- Banana	625	200	450	175		Trichogramma			
9. Forest trees						100 G. 16kg	L 2.0 lit	2.4D Amine	EC
- Kakawate	900			50		200	L 2.0 lit	2.4D Amine	EC
- Gemelina	833			50		200	L 2.0 lit	2.4D Amine	EC
- Mahogany	833			50		L 1.0lit	L 2.0 lit	2.4D Amine	EC

Note: Seeds of peanut...shelled

Table F. 2-29 Farm Input Requirement, Karangge

Crop	Seed/ Seedlings		Lime Manure		Fertilizer		Zinc		Soil		Pesticides		Herbicides	
	(kg. No.)	(kg)	(ton)	(45-0-0)	(0-18-0)	(0-0-60)	(16-20-0)	(14-14-14)	(kg)	(g)	Quantity	Chemicals	Quantity	Chemicals
1. Paddy Rice, Transplanted Irrigated														
- Wet season	50			100			100	150	15		L 1.0 lit Sasudin 400ECL G 34kg Furadan 3G	2.0 lit	2.4D Amine EC	
- Dry season	50			100			100	150	15		L 1.0 lit Sasudin 400ECL G 34kg Furadan 3G	2.0 lit	2.4D Amine EC	
2. Paddy Rice, Transplanted Rainfed														
- Wet season	50			100			100	150	15		L 1.0 lit Sasudin 400ECL L 1.0 lit Decis 2.5EC	2.0 lit	2.4D Amine EC	
- Dry season	50			100			100	150	15		L 1.0 lit Decis 2.5EC 140cards Trichogramma	2.0 lit	2.4D Amine EC	
3. Corn(White)														
- Wet season	20			50			150	120			L 1.0 lit Decis 2.5EC 140cards Trichogramma	2.0 lit	2.4D Amine EC	
- Dry season	20			100			200	120			L 1.0 lit Decis 2.5EC 140cards Trichogramma	2.0 lit	2.4D Amine EC	
4. Mungbean	25							150			100 G. 16kg Furadan 3G			
5. Peanut	120							200			200 L 3.0 lit Azodrin 202R			
6. Sweet potato	50,000						200				L 1.0 lit Lannate EC			
7. Squash	4						200				L 2.0 lit Malathion			
8. Fruit trees											L 3.0 lit Malation			
- Jackfruit	100			50			700				L 8.0 lit Insecticides			
- Banana	625			200		450		175			L 4.0 lit Insecticide			
8. Forest trees														
- Kakawate	900							50						
- Gemelina	833							50						
- Mahogany	833							50						
9. Coconut	168													
10. Abaca	2,750			101				150						

Note: The seeds of peanut...shelled

Table F. 2-30 Farm Input Requirement, Silae

Crop	Seed/ Seedlings (kg. No.)	Lime (kg)	Fertilizer		Zinc Phosphate (kg)	Soil Inoculant (g)	Pesticides		Herbicides
			Urea (45-0-0)	Super Phosphate (0-18-0)			MP (0-0-60)	Composed (16-20-0)	
1. Paddy Rice, Transplanted Irrigated - Wet season	50		138	210				Basudin 400EC L 2.0 lit Furadan 3G G 34kg	2. 4D Amine EC
- Dry season	50		160	210				Basudin 400EC L 2.0 lit Furadan 3G G 34kg	2. 4D Amine EC
2. Corn - Wet season	17	3,000	200		*1 100	200		Decis 2.5EC L 1.0 lit Trichogramma 200 cards	
- Dry season	17	3,000	200		*1 100	200		Decis 2.5EC L 1.0 lit Trichogramma 200 cards	
3. Mungbean	25	3,000				150		Furadan 3G 100 G, 18kg	
4. Peanut	120	3,000				200		Azodrin 202R 200 L, 3.0 lit Lannate EC L 1.0lit	
5. Sweet potato	50,000			100	200				
6. Fruit trees - Durian								L 8.0 lit Insecticides L 8.0 lit Fungicides	
- Rambutan						350		L 4.0 lit Insecticides L 4.0 lit Fungicides	
7. Forest trees - Kakawate	900								
- Gemelina	833								
- Mahogany	833								
- begras	833								

Note: *1... 18-46-0
Fl... Liquid fungicides

Table F.2-31 Cost on Nursery per Site

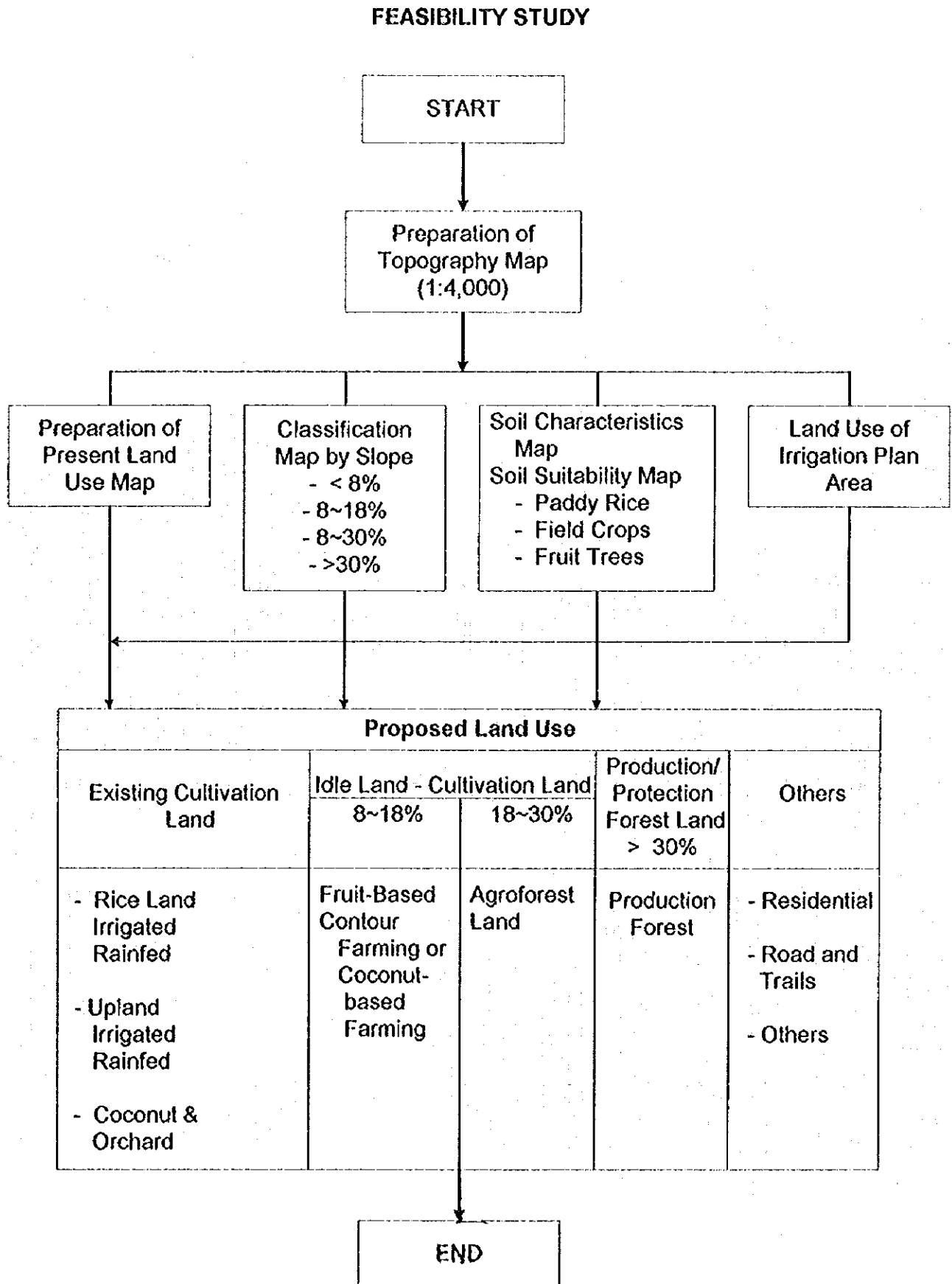
(Unit:Yen)

Item	Unit	Amount	Unit Price	Amount
1. Land(Rental, 4years)	sq. m	500	300	150,000
2. Bulding				
(1) Warehouse	sq. m	60	1,000	60,000
(2) Fence		1. s		100,000
Total		60		160,000
3. Machinery and Tools				
(1) Wheel barrows	Unit	10	1,200	12,000
(2) Knapsack sprayer		1	32,000	32,000
(3) Shovel		2	5,000	10,000
(4) Mattocks		2	6,800	13,600
(5) Mesh screen wire	sq. m	30	3,200	96,000
(6) Hoes	unit	2	5,500	11,000
(7) Rakes		5	2,700	13,500
(8) Watering cans		5	1,400	7,000
(9) Pruning shar		10	2,000	20,000
(10) Carpentry tool		1. s		50,000
Total				195,100
4. Materials				
(1) Plastic seedling bags		1. s		5,000
(2) Seeds		1. s		100,000
(3) Pesticides		1. s		20,000
(4) Materials		1. s		100,000
Total				125,000
Grandtotal				630,100

Table E.2-32 Cost on Training and Demonstration Farm(3 ha)

Item	Unit	Amount	(Unit:Yen)	
			Unit Price	Amount
1. Training				
(1) Technologist	M/M	10	160,000	1,920,000
(2) Site Forest Ranger	M/M	10	80,000	800,000
(3) Development Workers(Four Workers)	M/M	192	10,000	1,920,000
Subtotal		212		4,640,000
2. Machinery and Tools				
(1) Motorcycle	unit	2	100,000	200,000
(2) Office equipment	l.s	1	100,000	100,000
Subtotal				300,000
3. Materials				
(1) Teaching Materials	l.s			200,000
(2) Training supplies	l.s			50,000
(3) Office supplies	l.s			30,000
Subtotal				280,000
4. Development of Model Farm				
(1) Design of model farm	ha	3	8,000	24,000
(2) Construction of model farm	ha	3	160,000	480,000
Subtotal				504,000
5. Farm Inputs				
(Seeds and seedlings, fertilizer, and chemicals)	ha	3ha x 4year	10,000	120,000
Grandtotal				5,564,000

FIGURE F.2-1 PROCESS OF FORMULATION ON LAND USE PLAN



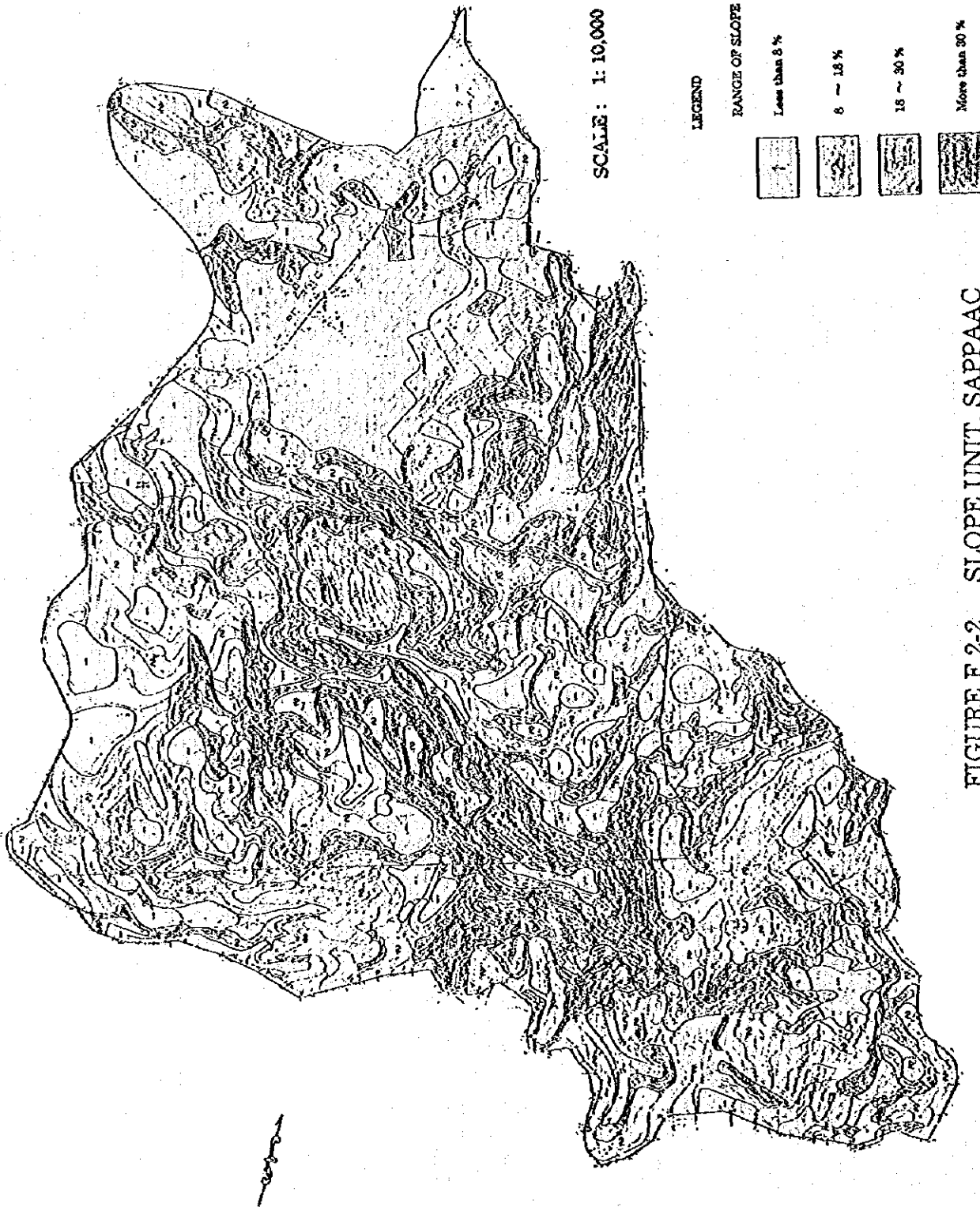


FIGURE F.2-2 SLOPE UNIT, SAPPAAC

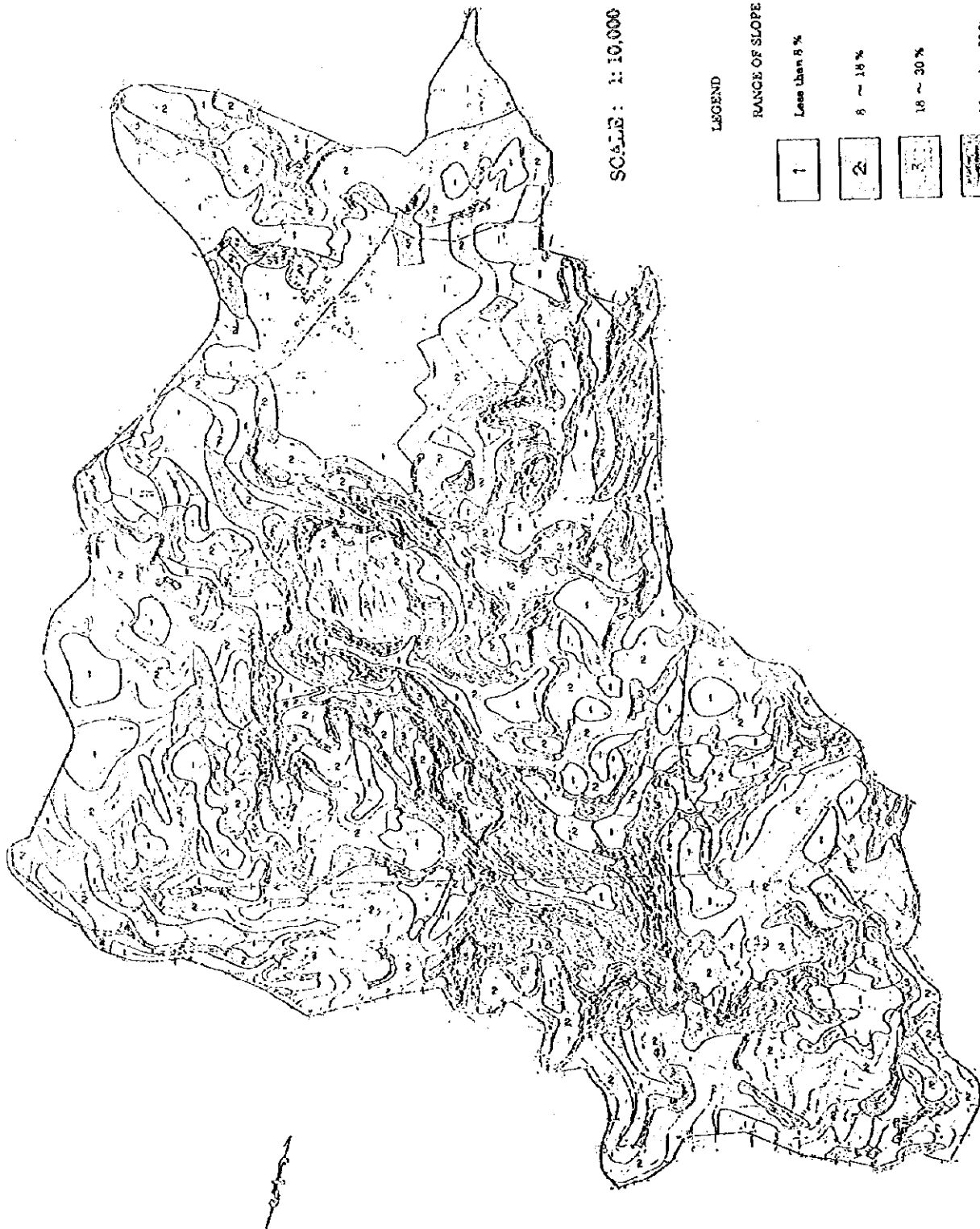
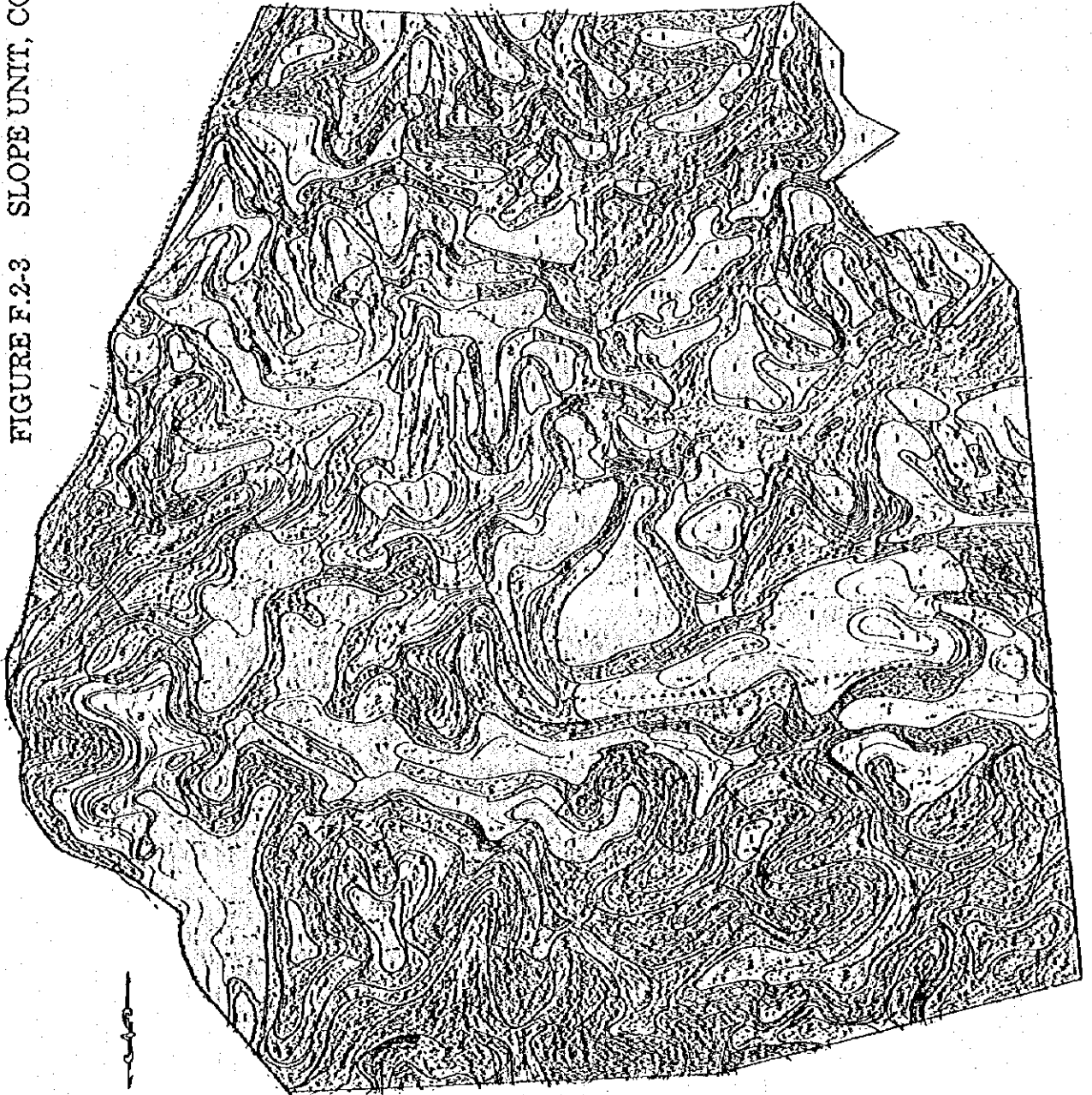


FIGURE F.2-2 SLOPE UNIT, SAPPAAC

FIGURE F.2-3 SLOPE UNIT, COFCVILLE



SCALE: 1:10,000

LEGEND

RANGE OF SLOPE

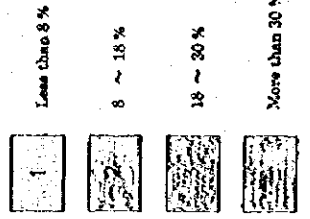


FIGURE F.2-3 SLOPE UNIT, COFCVILLE

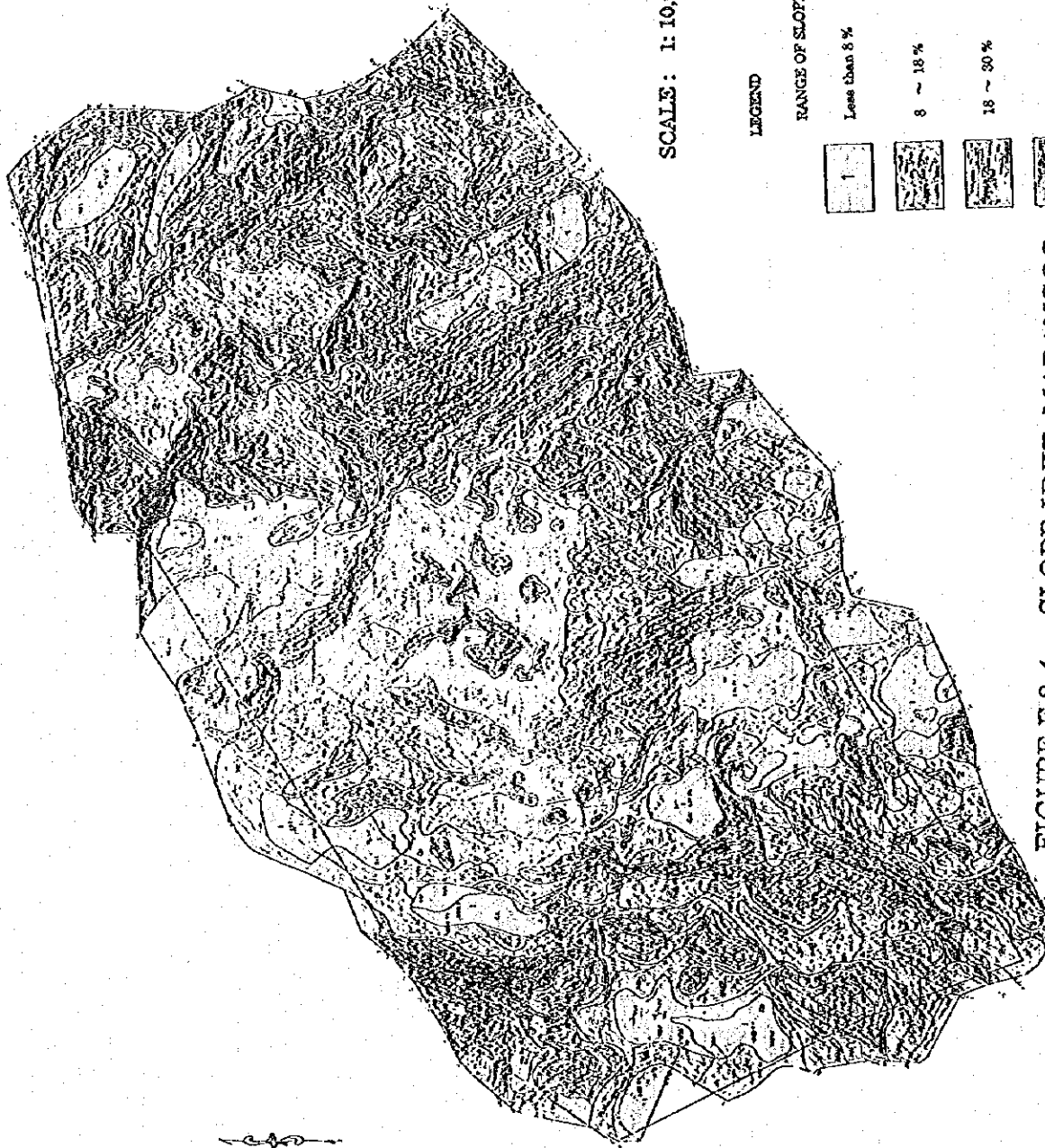


SCALE: 1:10,000

LEGEND

RANGE OF SLOPE

- 1 Less than 6%
- 2 6 ~ 18%
- 3 18 ~ 30%
- 4 More than 30%



SCALE: 1:10,000

LEGEND

RANGE OF SLOPE





- Less than 8% 
- 8 ~ 18% 
- 18 ~ 30% 
- More than 30% 

FIGURE F.2-4 SLOPE UNIT, MARANGOG

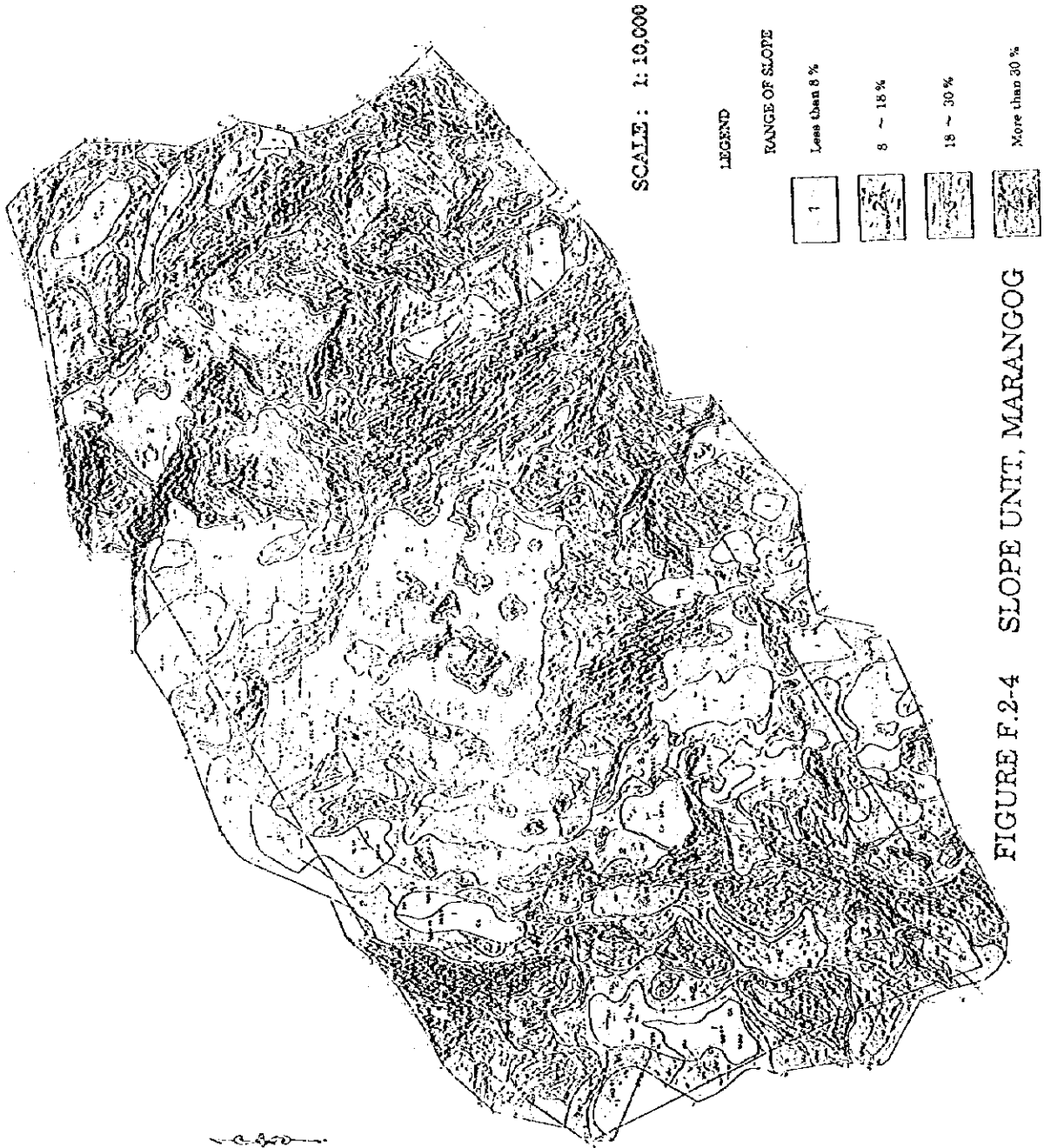
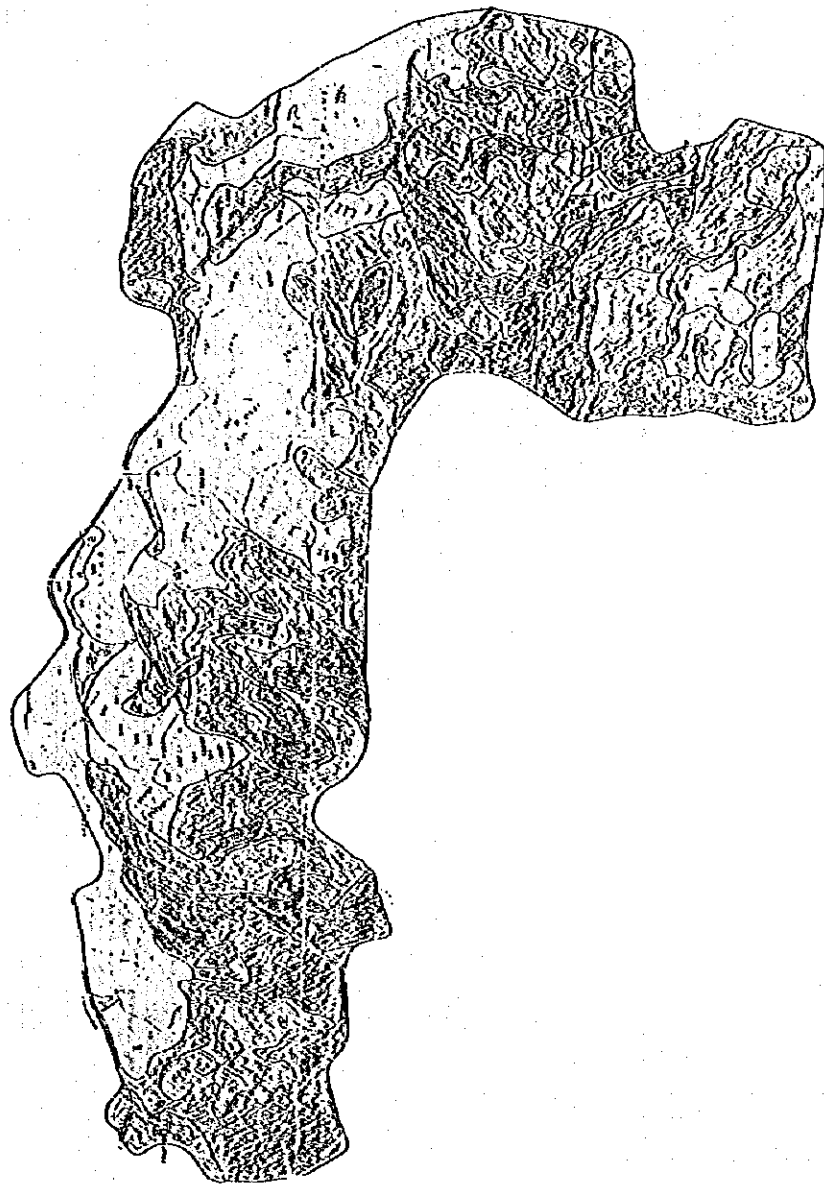


FIGURE F.2-4 SLOPE UNIT, MARANGOG



SCALE: 1:10,000

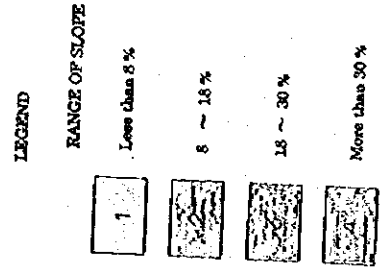
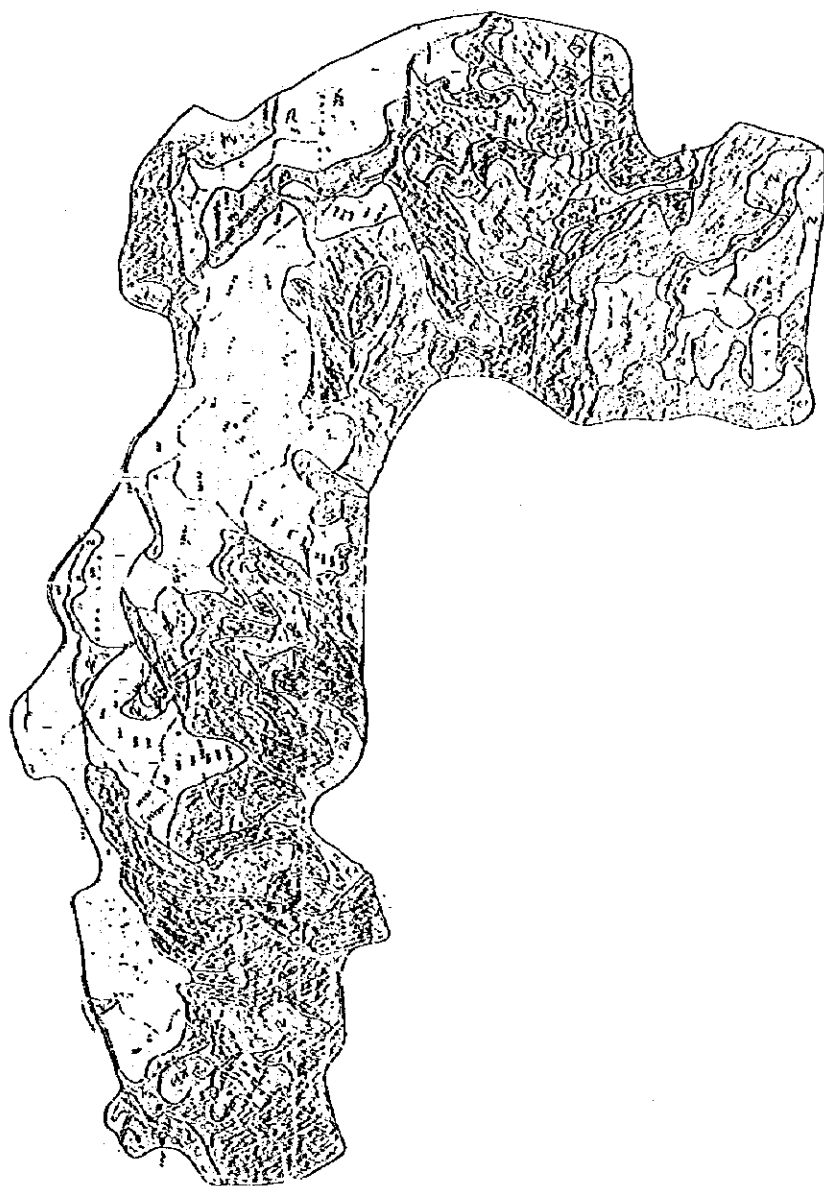


FIGURE F.2-5 SLOPE UNIT, SILAE



SCALE: 1:10,000

LEGEND

RANGE OF SLOPE





- Less than 8% 
- 8 ~ 18% 
- 18 ~ 30% 
- More than 30% 

FIGURE F.2-5 SLOPE UNIT, SILAE

FIGURE F.2-6 PROPOSED LANDUSE PATTERN (Case 1)

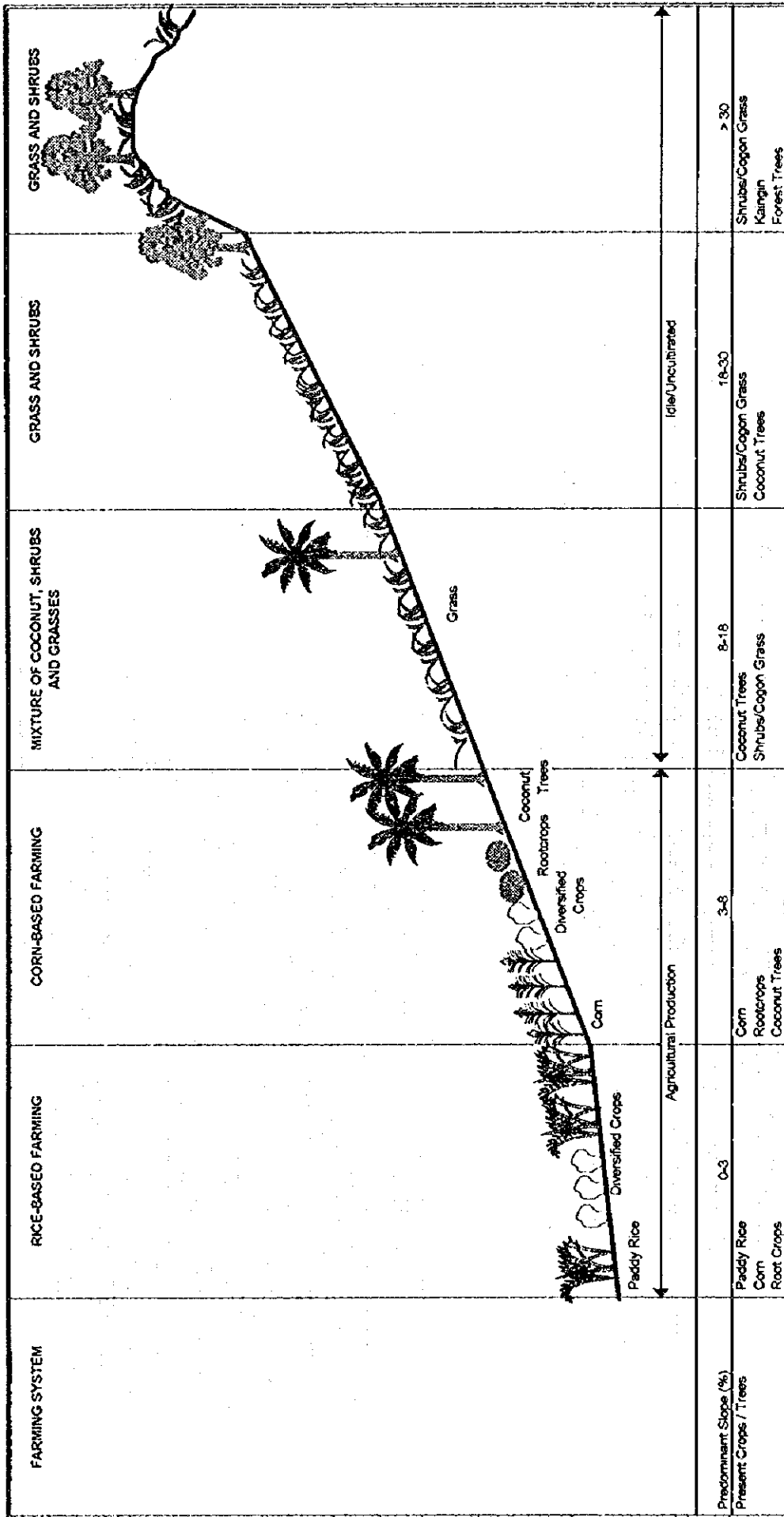


FIGURE F.2.7 PROPOSED LANDUSE PATTERN (Case 2)

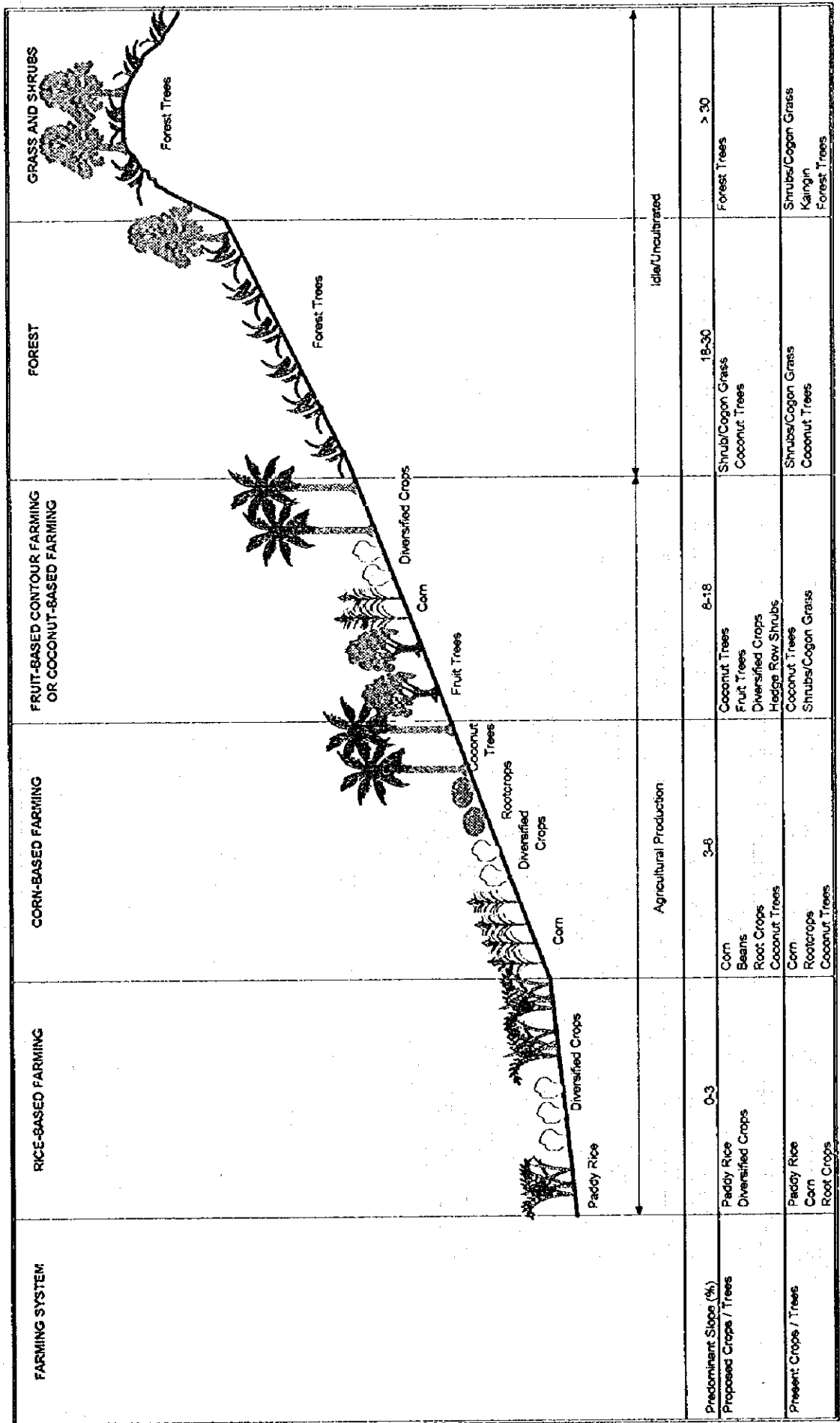


FIGURE F.2-8 PROPOSED LANDUSE PATTERN (Case 3)

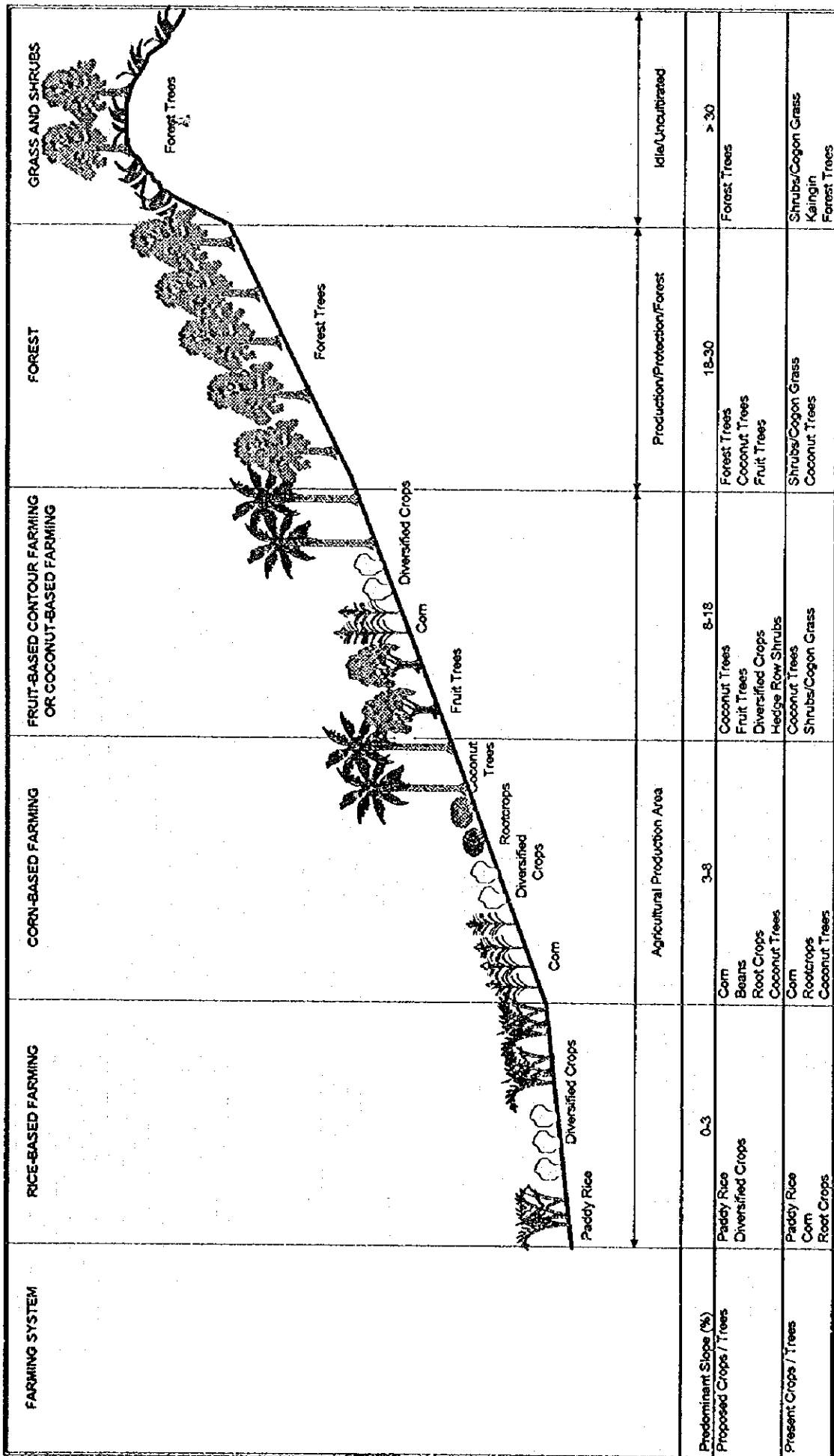


FIGURE F.2-9 PROPOSED LANDUSE PATTERN (Case 4)

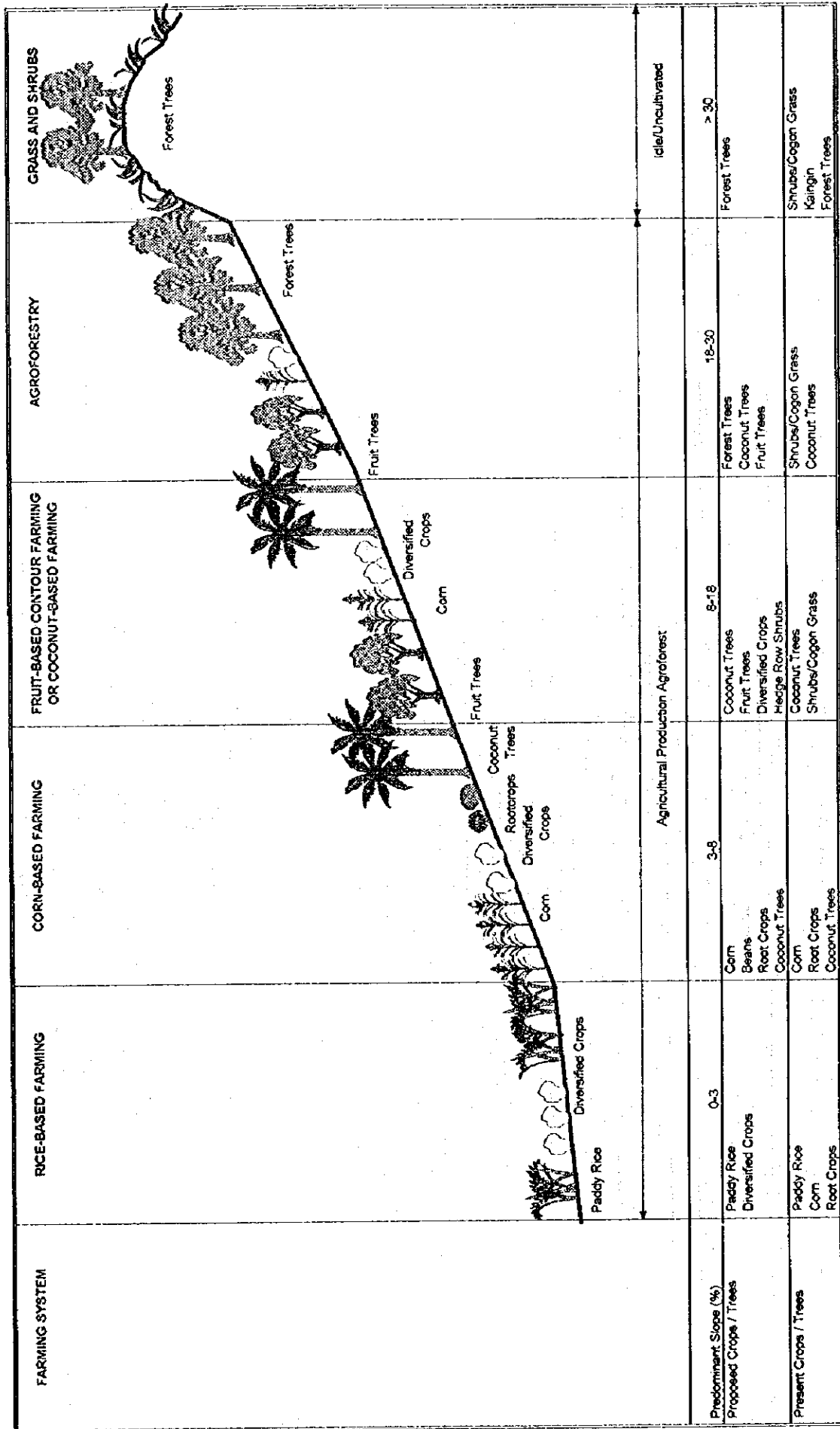


FIGURE F.2-10 PROPOSED LANDUSE PATTERN (Case 5)

