Use of land in the eastern shore of the 2 lakes

Zone	Rural commune	Fokontany	Households interviewed		Eastern shore of the 2 lakes														
					Rice fields					Tanety					Afforestation				
			Households	%	Number of households	%	Average area (a)	Min.	Max.	Number of households	%	Average area (a)	Min.	Max.	Number of households	%	Average area (a)	Min.	Max.
Mantasoa	Ambatolaona	Ambatolaona	30	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Mahitsitady	70	100	0	0	0	0	0	2	3	0	0	10	0	0	0	0	0
	Mantasoa	Andrefanivorona	22	100	0	0	0	0	0	0	0	0	0	0	1	5	10	10	10
		Anjozoro	26	100	0	0	0	0	0	3	12	6	3	10	0	0	0	0	0
		Mantasoa	48	100	1	2	70	70	70	3	6	520	30	1500	2	4	500	500	500
		Masombahiny	55	100	0	0	0	0	0	0	0	0	0	0	2	4	102	3	200
		Miadamanjaka	33	100	0	0	0	0	0	0	0	0	0	0	1	3	5	5	5
	Miadanandriana	Ambohimanjaka	86	100	2	2	11	2	19	1	1	9	9	9	1	1	1	1	1
		Ambohipeno	44	100	4	9	79	3	300	4	9	83	5	300	4	9	108	1.5	400
	Merikanjaka	Merikanjaka	39	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Tsiazompaniry-Kely	34	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Miarinarivo	22	100	0	0	0	0	0	1	5	80	80	80	0	0	0	0	0
	Sub-Total		509	100	7	1				14	3				11	2			
Tsiazompaniry	Anosibe	Andriantsiajo	25	100	10	40	76	0.5	400	6	24	34	0.2	100	4	16	50	0.4	200
	Trimoloharano	Angodongodona	61	100	17	28	48	1	200	7	11	10	1	50	3	5	18	1	50
		Mahatsinjo	24	100	3	13	3	1	60	2	8	0	0	3	0	0	0	0	0
		Ambohitsoa	23	100	1	4	20	20	20	1	4	1	1	1	0	0	0	0	0
	Ambohimiadana	Iharamalaza	68	100	2	3	4	3	5	1	1	2	2	2	0	0	0	0	0
		Manandriana	32	100	3	9	18	1	50	3	9	18	0.5	50	0	0	0	0	0
	Tankafatora	Morarano	99	100	12	12	34	3	100	8	8	15	1.2	40	0	0	0	0	0
		Analamihoatra	24	100	2	8	33	25	40	0	0	0	0	0	0	0	0	0	0
	Fitsinjovana	Ambohijanaka	109	100	1	1	3	3	3	1	1	2	2	2	0	0	0	0	0
	Bakaro	Kelimafana	27	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sub-Total		492	100	51	10				29	6				7	1			
Total			1001	100	58	6				100	10				18	2			

Source: JICA socio-economic study, 1998

Reasons for using the land in the eastern shore of the 2 lakes

Zone	Rural commune	Fokontany	Households interviewed		Households which responded		To increase income		To increase farm production		Lack of agricultural land		Low productivity		To obtain land		Others	
			Households	%	Households	%	Households	%	Households	%	Households	%	Households	%	Households	%	Households	%
Mantasoa	Ambatolaona	Ambatolaona	30	100	0	0												
		Mahitsitady	70	100	2	100	1	50	1	50								
	Mantasoa	Andrefanivorona	22	100	2	100			1	50	1	50						
		Anjozoro	26	100	3	100			1	33	1	33					1	33
		Mantasoa	48	100	8	100			4	50	2	25			1	12.5	1	12.5
		Masombahiny	55	100	3	100											3	100
		Miadamanjaka	33	100	3	100					1	33			1	33	1	33
	Miadanandriana	Ambohimanjaka	86	100	3	100	1	33	1	33	1	33						
		Ambohipeno	44	100	4	100	2	50			2	50						
	Merikanjaka	Merikanjaka	39	100	0	0												
		Tsiazompaniry-Kely	34	100		0												
		Miarinarivo	22	100	1	100											1	100
	Sub-Total		509	100	29	100	4	14	8	28	8	28			2	6	7	24
Tsiazompaniry	Anosibe	Andriantsiajo	25	100	11	100			4	36	4	36	2	18			1	9
	Trimoloharano	Angodongodona	61	100	30	100			14	47	8	27					8	26
		Mahatsinjo	24	100	4	100			2	50							2	50
		Ambohitsoa	23	100	1	100	1	100										
	Ambohimiadana	Iharamalaza	68	100	4	100			3	75			1	25				
		Manandriana	32	100	12	100	2	17	4	33	5	42					1	8
	Tankafatora	Morarano	99	100	22	100	7	32	10	45					1	5	4	18
		Analamihoatra	24	100	5	100			2	40	2	40					1	20
	Fitsinjovana	Ambohijanaka	109	100	8	100			2	25	4	50					2	26
	Bakaro	Kelimafana	27	100	0	0												
	Sub-Total		492	100	97	100	10	10	41	42	23	24	3	3	1	1	19	20
Total			1001	100	126	100	14	11	49	39	31	25	3	2	3	2	26	21

Source: JICA socio-economic study, 1998

Production and sales of charcoal

Zone	Rural commune	Fokontany	Households interviewed		Households producing charcoal		Objectives of production		Number of products per month	Obtaining materials				Others		Average production per manufacture	Average annual sales		Average sale price	Percentage per destination					Percentage per selling zone	
							Sale	Family use		Private forest	Paid purchase	Free purchase	Others	Eucalyptus	Others		1997	1998		Middlemen	Farm cooperative	Consumers	Retailers	Others	Antananarivo	Others
			Households	%	Households	%	%	%		%	%	%	%	%	%		(sac)	(sac)	FMG/1sac							
Mantasoa	Ambatolaona	Ambatolaona	30	100	14	47	100	0	2	23	54	0	23	100	0	17	336	144	7556	82	0	9	9	0	77	23
		Mahitsitady	70	100	16	23	94	6	2	7	80	0	13	100	0	7	85	19	6500	75	0	0	6	19	100	0
	Mantasoa	Andrefanivorona	22	100	10	45	100	0	1	30	50	0	20	100	0	86	1542	161	8250	40	0	0	20	40	90	10
		Anjozoro	26	100	4	15	100	0	2	25	75	0	0	100	0	12	205	217	7500	75	0	0	25	0	100	0
		Mantasoa	48	100	12	25	83	17	1	18	64	0	18	100	0	44	350	79	6409	70	10	0	0	20	100	0
		Masombahiny	55	100	14	25	100	0	2	15	46	8	31	86	14	40	240	74	6375	69	0	0	0	31	100	0
		Miadamanjaka	33	100	16	48	88	12	16	0	71	7	22	100	0	59	782	380	8833	57	7	0	29	7	100	0
	Miadanandriana	Ambohimanjaka	86	100	41	48	100	0	3	20	49	0	31	100	0	47	534	204	7831	68	0	7	15	10	98	2
		Ambohipeno	44	100	10	22	90	10	2	78	0	11	11	100	0	35	232	253	6722	89	0	0	0	11	88	12
	Merikanjaka	Merikanjaka	39	100	14	36	100	0	2	84	0	8	8	93	7	24	83	104	6750	54	0	8	15	23	79	21
		Tsiazompaniry-Kely	34	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Miarinarivo	22	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sub-Total		509	100	151	30																				
Tsiazompaniry	Anosibe	Andriantsiajo	25	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Trimoloharano	Angodongodona	61	100	3	5	100	0	2	100	0	0	0	100	0	85	125	150	8167	33	0	33	33	0	66	34
		Mahatsinjo	24	100	4	17	100	0	1	50	50	0	0	100	0	5	45	26	4750	75	0	25	0	0	100	0
		Ambohitsoa	23	100	6	24	100	0	3	40	40	0	20	100	0	46	168	60	6000	80	0	0	20	0	100	0
	Ambohimiadana	Iharanalaza	68	100	3	4	100	0	19	66	34	0	0	100	0	140	115	200	4667	66	0	0	34	0	100	0
		Manandriana	32	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Tankafatora	Morarano	99	100	1	1	100	0	8	100	0	0	0	100	0	48	0	124	0	0	0	0	0	100	100	0
		Analamihoatra	24	100	1	4	100	0	2	50	50	0	0	100	0	20	100	600	3500	60	0	40	0	0	0	0
	Fitsinjovana	Ambohijanaka	109	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Bakaro	Kelimafana	27	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sub-Total		492	100	18	4																				
Total			1001	100	169	17																				

Source: JICA socio-economic study, 1998

Gathering of firewood and honey

Zone	Rural commune	Fokontany	Households interviewed		Firewood					Gathering radius				Honey	
					Gathering for family use		Gathering for sal		Average amount gathered per	Less than 1 km	1 - 4km	5 - 10 km	More than 10 km	Gathering of honey for sale	
			Households	%	Households	%	Households	%						Households	%
Mantasoa	Ambatolaona	Ambatolaona	30	100	28	93	1	3	3	39	54	7	0	0	0
		Mahitsitady	70	100	70	100	0	0	3	43	51	4	1	1	1
	Mantasoa	Andrefanivorona	22	100	22	100	0	0	4	82	18	0	0	0	0
		Anjozoro	26	100	26	100	1	4	2	54	46	0	0	0	0
		Mantasoa	48	100	46	96	1	2	4	57	37	7	0	0	0
		Masombahiny	55	100	48	87	2	4	3	41	59	0	0	0	0
		Miadamanjaka	33	100	33	100	0	0	4	55	45	0	0	0	0
	Miadanandriana	Ambohimanjaka	86	100	81	94	1	1	4	55	44	1	0	2	2
		Ambohipeno	44	100	44	100	0	0	4	43	57	0	0	6	14
	Merikanjaka	Merikanjaka	39	100	35	90	0	0	1	70	30	0	0	2	5
		Tsiazompaniry-Kely	34	100	33	97	0	0	4	59	41	0	0	9	26
		Miarinarivo	22	100	20	91	1	5	2	50	50	0	0	0	0
	Sub-Total		509	100	486	95	7	1						20	4
Tsiazompaniry	Anosibe	Andriantsiajo	25	100	25	100	0	0	5	71	29	0	0	0	0
	Trimoloharano	Angodongodona	61	100	60	98	0	0	4	56	39	5	0	2	3
		Mahatsinjo	24	100	21	88	2	8	4	65	35	0	0	0	0
		Ambohitsoa	23	100	23	100	0	0	4	74	26	0	0	0	0
	Ambohimiadana	Iharamalaza	68	100	66	97	0	0	4	88	12	0	0	3	4
		Manandriana	32	100	28	88	1	3	4	88	12	0	0	3	9
	Tankafatora	Morarano	99	100	97	98	0	0	4	66	34	0	0	2	2
		Analamihoatra	24	100	24	100	0	0	5	75	25	0	0	1	4
	Fitsinjovana	Ambohijanaka	109	100	107	98	2	2	5	66	34	0	0	3	3
	Bakaro	Kelimafana	27	100	27	100	0	0	5	85	11	4	0	0	0
	Sub-Total		492	100	478	97	5	1						14	3
Total			1001	100	964	96	12	1						34	3

Source: JICA socio-economic study, 1998

Afforestation

Zone	Rural commune	Fokontany	Households interviewed		Number of owners of afforestation		Afforestation area owned			Tree species				Recent year of planting								Planter							
										Eucalyptus		Others		Before 1970		1970~1980		1980~1990		After 1990		Head of household		Family		Government		Others	
			Households	%	Households	%	Households	Min.	Max.	Households	%	Households	%	Households	%	Households	%	Households	%	Households	%	Households	%	Households	%	Households	%	Households	%
Mantasoa	Ambatolaona	Ambatolaona	30	100	6	20	2	1	5	6	100	0	0	3	10	0	0	0	0	1	3	0	0	4	13	0	0		
		Mahitsitady	70	100	18	26	43	1	400	18	100	0	0	5	45	1	9	1	9	4	36	0	0	0	0	0	0	0	0
	Mantasoa	Andrefanivorona	22	100	11	50	20	0.5	70	11	100	0	0	6	55	0	0	0	0	0	0	0	0	7	32	0	0	0	0
		Anjozoro	26	100	14	54	8	1	50	14	100	0	0	13	100	0	0	0	0	0	0	0	0	11	42	0	0	0	0
		Mantasoa	48	100	17	35	25	0.05	250	17	100	0	0	1	9	3	27	2	18	4	36	0	0	9	19	0	0	0	0
		Masombahiny	55	100	13	24	24	1	200	13	100	0	0	2	25	1	13	1	13	4	50	0	0	4	50	0	0	4	50
		Miadamanjaka	33	100	16	48	9	0.1	84	16	100	0	0	16	100	0	0	0	0	0	0	3	30	3	30	0	0	6	60
	Miadanandriana	Ambohimanjaka	86	100	38	44	37	1	500	38	100	0	0	2	8	2	8	7	27	15	58	4	14	14	50	0	0	10	36
		Ambohipeno	44	100	32	73	57	1	500	32	100	0	0	35	100	0	0	0	0	0	0	0	0	27	61	0	0	0	0
	Merikanjaka	Merikanjaka	39	100	23	59	15	0.04	200	23	100	0	0	2	10	0	0	4	20	14	70	18	46	0	0	0	0	0	0
		Tsiazompaniry-Kely	34	100	11	32	48	0.3	200	11	100	0	0	11	100	0	0	0	0	0	0	5	15	0	0	0	0	0	0
		Miarinarivo	22	100	14	64	63	1	600	14	100	0	0	0	0	1	7	4	29	9	64	0	0	13	59	0	0	0	0
	Sub-Total		509	100	213	43				213	100	0	0	96	55	8	5	19	11	51	29	30	21	92	65	0	0	20	14
Tsiazompaniry	Anosibe	Andriantsiajo	25	100	14	56	12	0.5	50	14	100	0	0	0	1	8	18	11	84	5	36	14	64	0	0	0	0	0	0
	Trimoloharano	Angodongodona	61	100	28	46	5	1	50	39	100	0	0	4	31	0	0	2	15	7	54	0	0	26	73	0	0	10	27
		Mahatsinjo	24	100	15	63	5	0.5	50	19	100	0	0	4	25	1	6	1	6	10	63	5	27	13	73	0	0	0	0
		Ambohitsoa	23	100	11	44	2	0.5	8	12	100	0	0	1	14	1	14	0	0	5	71	0	0	6	75	0	0	2	25
	Ambohimiadana	Iharamalaza	68	100	23	34	7	0.5	75	36	100	0	0	3	12	2	8	2	8	18	72	0	0	14	56	0	0	11	44
		Manandriana	32	100	13	41	8	0.5	50	19	100	0	0	4	25	1	6	1	13	9	56	0	0	7	44	0	0	9	56
	Tankafatora	Morarano	99	100	38	38	1	0.1	14	57	100	0	0	3	6	4	9	5	11	33	74	0	0	8	16	0	0	41	84
		Analamihoatra	24	100	15	63	1	0.5	5	21	100	0	0	1	5	3	15	1	5	15	75	0	0	11	58	0	0	8	42
	Fitsinjovana	Ambohijanaka	109	100	59	54	1	0.01	16	58	100	0	0	6	11	4	8	6	11	37	70	0	0	30	58	0	0	22	42
	Bakaro	Kelimafana	27	100	14	52	6	0.5	72	18	100	0	0	1	6	0	0	6	33	11	61	0	0	8	44	0	0	10	56
	Sub-Total		492	100	230	47				293	100	0	0	27	11	24	10	35	15	150	64	19	7	123	48	0	0	113	44
Total			1001	100	443	43				518	100	0	0	123	30	32	8	54	13	201	49	49	12	215	54	0	0	133	34

Source: JICA socio-economic study, 1998

Production of farm products and prices (rice)

Zone	Rural commune	Fokontany	Households interviewed		Rice							
					Number of producer		Average area planted	Yield kg/10 a	Average percentage of family consumption (%)	Average sale percentage (%)	Vendor households who responded	Average price FMG/Kg
			Households	%	Households	%						
Mantasoa	Ambatolaona	Ambatolaona	30	100	17	57	21	230	100	0	0	0
		Mahitsitady	70	100	59	84	26	242	67	33	1	1500
	Mantasoa	Andrefanivorona	22	100	20	91	28	320	57	43	1	1500
		Anjozoro	26	100	24	92	21	464	51	49	0	-
		Mantasoa	48	100	38	79	28	232	46	54	1	1700
		Masombahiny	55	100	38	69	18	313	97	3	1	1700
		Miadamanjaka	33	100	28	85	21	210	51	49	0	-
	Miadanandriana	Ambohimanjaka	86	100	78	91	27	239	99	1	4	1513
		Ambohipeno	44	100	41	93	46	191	100	0	2	1500
	Merikanjaka	Merikanjaka	39	100	33	85	36	259	94	6	3	1433
		Tsiazompaniry-Kely	34	100	24	71	30	346	77	23	6	1667
		Miarinarivo	22	100	20	91	36	221	99	1	5	1500
	Sub-Total		509	100	420	83					24	
Tsiazompaniry	Anosibe Trimoloharano	Andriantsiajo	25	100	25	100	70	257	75	25	2	1050
		Angodongodona	61	100	56	92	66	273	74	26	8	1153
		Mahatsinjo	24	100	22	92	46	238	75	25	3	1310
		Ambohitsoa	23	100	21	84	28	263	92	18	1	1400
	Ambohimiadana	Iharamalaza	68	100	68	100	41	293	98	2	16	697
		Manandriana	32	100	29	91	30	378	100	0	0	0
	Tankafatora	Morarano	99	100	95	96	46	286	100	0	13	859
		Analamihoatra	24	100	23	96	64	234	73	27	6	767
	Fitsinjovana Bakaro	Ambohijanaka	109	100	92	84	42	273	71	29	26	815
		Kelimafana	27	100	27	100	44	245	100	0	1	1850
	Sub-Total		492	100	458	93					76	
Total			1001	100	878	87					100	

Notes:

1 Average percentage of family consumption (%) = family consumption/total production x 100

2 Average sale percentage (%) = (Total production - family consumption)/total production x 100

3 Table indicates unknown elements

Source: JICA socio-economic study, 1998

Production of farm products and prices (cassava)

Zone	Rural commune	Fokontany	Households interviewed		Cassava							
					Number of producer		Average area planted	Yield kg/10 a	Average percentage of family consumption (%)	Average sale percentage (%)	Vendor households who responded	Average price FMG/Kg
			Households	%	Households	%						
Mantasoa	Ambatolaona	Ambatolaona	30	100	10	34	4	100	0	0	0	0
		Mahitsitady	70	100	36	51	11	231	87	23	3	4840
	Mantasoa	Andrefanivorona	22	100	9	41	15	183	100	0	0	0
		Anjozoro	26	100	12	46	7	547	-	-	1	500
		Mantasoa	48	100	24	50	13	362	9	91	4	8600
		Masombahiny	55	100	16	29	16	646	87	13	3	350
		Miadamanjaka	33	100	15	45	11	573	86	14	1	1150
	Miadanandriana	Ambohimanjaka	86	100	40	47	18	345	97	3	11	467
		Ambohipeno	44	100	17	39	41	197	53	47	2	300
	Merikanjaka	Merikanjaka	39	100	4	10	24	946	38	63	2	213
		Tsiazompaniry-Kely	34	100	9	26	20	110	90	10	0	-
		Miarinarivo	22	100	11	50	13	154	63	37	1	500
	Sub-Total		509	100	203	40					28	
Tsiazompaniry	Anosibe	Andriantsiajo	25	100	13	52	16	429	100	0	0	0
	Trimoloharano	Angodongodona	61	100	32	52	30	214	86	14	4	403
		Mahatsinjo	24	100	14	58	31	220	67	33	2	275
		Ambohitsoa	23	100	14	56	20	353	79	21	3	800
	Ambohimiadana	Iharamalaza	68	100	35	51	28	596	77	23	7	907
		Manandriana	32	100	18	56	14	601	94	6	4	2500
	Tankafatora	Morarano	99	100	51	52	32	275	100	0	9	841
		Analamihoatra	24	100	12	50	59	321	84	16	1	650
	Fitsinjovana	Ambohijanaka	109	100	48	44	12	393	66	34	6	500
	Bakaro	Kelimafana	27	100	14	52	19	712	94	6	2	350
	Sub-Total		492	100	251	49					38	
Total			1001	100	454	45					66	

Notes:

1 Average percentage of family consumption (%) = family consumption/total production x 100

2 Average sale percentage (%) = (Total production - family consumption)/total production x 100

3 Table indicates unknown elements

Source: JICA socio-economic study, 1998

Production of farm products and prices (potatoes)

Zone	Rural commune	Fokontany	Households interviewed		Potatoes							
					Number of producer		Average area planted	Yield kg/10 a	Average percentage of family consumption (%)	Average sale percentage (%)	Vendor households who responded	Average price FMG/Kg
			Households	%	Households	%						
Mantasoa	Ambatolaona	Ambatolaona	30	100	5	17	6	503	-	-	-	-
		Mahitsitady	70	100	20	29	9	164	56	44	3	567
	Mantasoa	Andrefanivorona	22	100	7	32	7	480	30	70	4	313
		Anjozoro	26	100	9	35	7	74	-	-	0	-
		Mantasoa	48	100	15	31	4	338	74	26	3	433
		Masombahiny	55	100	9	16	5	380	100	0	4	363
		Miadamanjaka	33	100	8	24	4	413	97	3	0	-
	Miadanandriana	Ambohimanjaka	86	100	42	49	18	464	55	45	32	370
		Ambohipeno	44	100	16	36	27	424	63	37	7	317
	Merikanjaka	Merikanjaka	39	100	29	74	17	884	47	53	26	343
		Tsiazompaniry-Kely	34	100	16	47	22	440	59	41	13	264
		Miarinarivo	22	100	18	82	17	1004	54	46	13	304
	Sub-Total		509	100	194	38					105	
Tsiazompaniry	Anosibe	Andriantsiajo	25	100	23	92	43	758	22	78	19	343
	Trimoloharano	Angodongodona	61	100	53	87	37	960	16	84	46	390
		Mahatsinjo	24	100	20	83	30	1111	16	84	17	353
		Ambohitsoa	23	100	16	64	19	492	32	68	8	297
	Ambohimiadana	Iharamalaza	68	100	48	71	32	718	26	74	44	344
		Manandriana	32	100	23	72	23	881	39	61	21	336
	Tankafatora	Morarano	99	100	91	92	36	705	27	73	82	348
		Analamihoatra	24	100	24	100	58	731	20	80	23	375
	Fitsinjovana	Ambohijanaka	109	100	101	93	32	870	19	81	96	346
	Bakaro	Kelimafana	27	100	23	85	21	871	27	73	15	356
	Sub-Total		492	100	422	83					371	
Total			1001	100	616	62					479	

Notes:

1 Average percentage of family consumption (%) = family consumption/total production x 100

2 Average sale percentage (%) = (Total production - family consumption)/total production x 100

3 Table indicates unknown elements

Source: JICA socio-economic study, 1998

Production of farm products and prices (sweet potatoes)

Zone	Rural commune	Fokontany	Households interviewed		Sweet potatoes							
					Number of producer		Average area planted	Yield kg/10 a	Average percentage of family consumption (%)	Average sale percentage (%)	Vendor households who responded	Average price FMG/Kg
			Households	%	Households	%						
Mantasoa	Ambatolaona	Ambatolaona	30	100	13	43	4	-	0	0	0	0
		Mahitsitady	70	100	32	46	8	310	100	0	2	450
	Mantasoa	Andrefanivorona	22	100	7	32	2	625	100	0	0	0
		Anjozoro	26	100	9	35	5	460	-	-	1	500
		Mantasoa	48	100	19	40	15	635	100	0	1	300
		Masombahiny	55	100	11	20	96	77	99	1	1	150
		Miadamanjaka	33	100	11	33	8	275	99	1	0	0
	Miadanandriana	Ambohimanjaka	86	100	27	31	17	298	84	16	2	400
		Ambohipeno	44	100	7	16	10	367	100	0	0	0
	Merikanjaka	Merikanjaka	39	100	5	13	15	-	-	-	-	-
		Tsiazompaniry-Kely	34	100	4	12	26	138	100	0	1	750
		Miarinarivo	22	100	8	36	16	362	100	0	0	0
	Sub-Total		509	100	153	30					8	
Tsiazompaniry	Anosibe	Andriantsiajo	25	100	7	28	8	154	78	22	0	0
	Trimoloharano	Angodongodona	61	100	22	36	8	503	29	71	1	500
		Mahatsinjo	24	100	9	38	21	208	100	0	0	0
		Ambohitsoa	23	100	7	28	10	160	-	-	1	200
	Ambohimiadana	Iharamalaza	68	100	22	32	9	755	47	53	1	350
		Manandriana	32	100	8	25	9	862	46	54	3	350
	Tankafatora	Morarano	99	100	31	31	7	857	100	0	0	0
		Analamihoatra	24	100	9	38	31	174	100	0	0	0
	Fitsinjovana	Ambohijanaka	109	100	41	38	5	1200	86	14	1	500
	Bakaro	Kelimafana	27	100	11	41	11	0	0	0	0	0
	Sub-Total		492	100	167	34					7	
Total			1001	100	320	32					15	

Notes:

1 Average percentage of family consumption (%) = family consumption/total production x 100

2 Average sale percentage (%) = (Total production - family consumption)/total production x 100

3 Table indicates unknown elements

Source: JICA socio-economic study, 1998

Production of farm products and prices (corn)

Zone	Rural commune	Fokontany	Households interviewed		Corn							
					Number of producer		Average area planted	Yield kg/10 a	Average percentage of family consumption (%)	Average sale percentage (%)	Vendor households who responded	Average price FMG/Kg
			Households	%	Households	%						
Mantasoa	Ambatolaona	Ambatolaona	30	100	0	0	0	0	0	0	0	0
		Mahitsitady	70	100	0	0	0	0	0	0	0	0
	Mantasoa	Andrefanivorona	22	100	0	0	0	0	0	0	0	0
		Anjozoro	26	100	0	0	0	0	0	0	0	0
		Mantasoa	48	100	0	0	0	0	0	0	0	0
		Masombahiny	55	100	0	0	0	0	0	0	0	0
		Miadamanjaka	33	100	0	0	0	0	0	0	0	0
	Miadanandriana	Ambohimanjaka	86	100	0	0	0	0	0	0	0	0
		Ambohipeno	44	100	0	0	0	0	0	0	0	0
	Merikanjaka	Merikanjaka	39	100	0	0	0	0	0	0	0	0
		Tsiazompaniry-Kely	34	100	0	0	0	0	0	0	0	0
		Miarinarivo	22	100	0	0	0	0	0	0	0	0
	Sub-Total		509	100	0						0	
Tsiazompaniry	Anosibe	Andriantsiajo	25	100	0	0	0	0	0	0	0	0
	Trimoloharano	Angodongodona	61	100	2	3	6	133	50	50	1	1250
		Mahatsinjo	24	100	0	0	0	0	0	0	0	0
		Ambohitsoa	23	100	0	0	0	0	0	0	0	0
	Ambohimiadana	Iharamalaza	68	100	3	4	11	0	0	0	0	0
		Manandriana	32	100	1	3	4	25	100	0	0	0
	Tankafatora	Morarano	99	100	0	0	0	0	0	0	0	0
		Analamihoatra	24	100	1	4	2	0	0	0	0	0
	Fitsinjovana	Ambohijanaka	109	100	0	0	0	0	0	0	0	0
	Bakaro	Kelimafana	27	100	0	0	0	0	0	0	0	0
	Sub-Total		492	100	7	1					1	
Total			1001	100	7	1					1	

Notes:

1 Average percentage of family consumption (%) = family consumption/total production x 100

2 Average sale percentage (%) = (Total production - family consumption)/total production x 100

3 Table indicates unknown elements

Source: JICA socio-economic study, 1998

Production of farm products and prices (taro)

Zone	Rural commune	Fokontany	Households interviewed		Taro							
					Number of producer		Average area planted	Yield kg/10 a	Average percentage of family consumption (%)	Average sale percentage (%)	Vendor households who responded	Average price FMG/Kg
			Households	%	Households	%						
Mantasoa	Ambatolaona	Ambatolaona	30	100	0	0	0	0	0	0	0	0
		Mahitsitady	70	100	0	0	0	0	0	0	0	0
	Mantasoa	Andrefanivorona	22	100	0	0	0	0	0	0	0	0
		Anjozoro	26	100	0	0	0	0	0	0	0	0
		Mantasoa	48	100	0	0	0	0	0	0	0	0
		Masombahiny	55	100	0	0	0	0	0	0	0	0
		Miadamanjaka	33	100	0	0	0	0	0	0	0	0
	Miadanandriana	Ambohimanjaka	86	100	0	0	0	0	0	0	0	0
		Ambohipeno	44	100	0	0	0	0	0	0	0	0
	Merikanjaka	Merikanjaka	39	100	0	0	0	0	0	0	0	0
		Tsiazompaniry-Kely	34	100	0	0	0	0	0	0	0	0
		Miarinarivo	22	100	0	0	0	0	0	0	0	0
	Sub-Total		509	100	0						0	
Tsiazompaniry	Anosibe	Andriantsiajo	25	100	3	12	14	357	0	100	1	1000
	Trimoloharano	Angodongodona	61	100	13	21	4	173	100	0	0	0
		Mahatsinjo	24	100	2	8	4	-	0	0	0	0
		Ambohitsoa	23	100	1	4	0	0	0	0	0	0
	Ambohimiadana	Iharamalaza	68	100	5	7	3	333	0	0	0	0
		Manandriana	32	100	3	9	4	0	0	0	0	0
	Tankafatora	Morarano	99	100	0	0	0	0	0	0	0	0
		Analamihoatra	24	100	3	13	5	0	0	0	0	0
	Fitsinjovana	Ambohijanaka	109	100	6	6	4	0	0	0	0	0
	Bakaro	Kelimafana	27	100	2	7	3	0	0	0	0	0
	Sub-Total		492	100	38	8					1	
Total			1001	100	38	4					1	

Notes:

1 Average percentage of family consumption (%) = family consumption/total production x 100

2 Average sale percentage (%) = (Total production - family consumption)/total production x 100

3 Table indicates unknown elements

Source: JICA socio-economic study, 1998

Production of farm products and prices (beans)

Zone	Rural commune	Fokontany	Households interviewed		Beans							
					Number of producer		Average area planted	Yield kg/10 a	Average percentage of family consumption (%)	Average sale percentage (%)	Vendor households who responded	Average price FMG/Kg
			Households	%	Households	%						
Mantasoa	Ambatolaona	Ambatolaona	30	100	0	0	0	0	0	0	0	0
		Mahitsitady	70	100	0	0	0	0	0	0	0	0
	Mantasoa	Andrefanivorona	22	100	0	0	0	0	0	0	0	0
		Anjozoro	26	100	0	0	0	0	0	0	0	0
		Mantasoa	48	100	0	0	0	0	0	0	0	0
		Masombahiny	55	100	0	0	0	0	0	0	0	0
		Miadamanjaka	33	100	0	0	0	0	0	0	0	0
	Miadanandriana	Ambohimanjaka	86	100	0	0	0	0	0	0	0	0
		Ambohipeno	44	100	0	0	0	0	0	0	0	0
	Merikanjaka	Merikanjaka	39	100	0	0	0	0	0	0	0	0
		Tsiazompaniry-Kely	34	100	0	0	0	0	0	0	0	0
		Miarinarivo	22	100	0	0	0	0	0	0	0	0
	Sub-Total		509	100	0						0	
Tsiazompaniry	Anosibe	Andriantsiajo	25	100	0	0	0	0	0	0	0	0
	Trimoloharano	Angodongodona	61	100	6	8	20	36	69	31	6	2000
		Mahatsinjo	24	100	0	0	0	0	0	0	0	0
		Ambohitsoa	23	100	1	4	4	63	100	0	1	2400
	Ambohimiadana	Iharamalaza	68	100	3	4	15	40	100	0	0	0
		Manandriana	32	100	4	13	11	42	83	17	2	1625
	Tankafatora	Morarano	99	100	0	0	0	0	0	0	0	0
		Analamihoatra	24	100	3	13	24	240	39	61	2	700
	Fitsinjovana	Ambohijanaka	109	100	5	5	2	235	100	0	0	0
	Bakaro	Kelimafana	27	100	3	11	13	25	76	24	3	2200
	Sub-Total		492	100	25	5					14	
Total			1001	100	25	2					14	

Notes:

1 Average percentage of family consumption (%) = family consumption/total production x 100

2 Average sale percentage (%) = (Total production - family consumption)/total production x 100

3 Table indicates unknown elements

Source: JICA socio-economic study, 1998

Production of farm products and prices (other vegetables)

Zone	Rural commune	Fokontany	Households interviewed		Other vegetables							
					Number of producer		Average area planted	Yield kg/10 a	Average percentage of family consumption (%)	Average sale percentage (%)	Vendor households who responded	Average price FMG/Kg
			Households	%	Households	%						
Mantasoa	Ambatolaona	Ambatolaona	30	100	2	7	2	-	-	-	1	3500
		Mahitsitady	70	100	4	6	2	2500	-	-	0	-
	Mantasoa	Andrefanivorona	22	100	0	0	0	0	0	0	0	0
		Anjozoro	26	100	1	4	-	-	-	-	0	-
		Mantasoa	48	100	3	6	4	250	80	20	3	5000
		Masombahiny	55	100	0	0	0	0	0	0	0	0
		Miadamanjaka	33	100	2	6	2	-	-	-	0	-
	Miadanandriana	Ambohimanjaka	86	100	2	2	1	500	100	0	0	0
		Ambohipeno	44	100	1	2	5	14	100	0	1	-
	Merikanjaka	Merikanjaka	39	100	0	0	0	0	0	0	0	0
		Tsiazompaniry-Kely	34	100	0	0	0	0	0	0	0	0
		Miarinarivo	22	100	0	0	0	0	0	0	0	0
	Sub-Total		509	100	15	3					5	
Tsiazompaniry	Anosibe	Andriantsiajo	25	100	0	0	0	0	0	0	0	0
	Trimoloharano	Angodongodona	61	100	1	2	2	0	0	0	0	0
		Mahatsinjo	24	100	0	0	0	0	0	0	0	0
		Ambohitsoa	23	100	0	0	0	0	0	0	0	0
	Ambohimiadana	Iharamalaza	68	100	1	1	2	0	0	0	0	0
		Manandriana	32	100	0	0	0	0	0	0	0	0
	Tankafatora	Morarano	99	100	1	1	0	0	100	0	0	0
		Analamihoatra	24	100	0	0	0	0	0	0	0	0
	Fitsinjovana	Ambohijanaka	109	100	0	0	0	0	0	0	0	0
	Bakaro	Kelimafana	27	100	0	0	0	0	0	0	0	0
	Sub-Total		492	100	3	1					0	
Total			1001	100	18	2					5	

Notes:

1 Average percentage of family consumption (%) = family consumption/total production x 100

2 Average sale percentage (%) = (Total production - family consumption)/total production x 100

3 Table indicates unknown elements

Source: JICA socio-economic study, 1998

Total number of cattle sold and prices

Zone	Rural commune	Fokontany	Households interviewed		Cattle				Pigs				Ducks				Rabbits				Chickens				Geese			
					Number of vendor households		Average annual number of heads sold	Sale price FMG/head	Number of vendor households		Average annual number of heads sold	Sale price FMG/head	Number of vendor households		Average annual number of heads sold	Sale price FMG/head	Number of vendor households		Average annual number of heads sold	Sale price FMG/head	Number of vendor households		Average annual number of heads sold	Sale price FMG/head	Number of vendor households		Average annual number of heads sold	Sale price FMG/head
			Households	%	Households	%			Households	%			Households	%			Households	%			Households	%			Households	%		
Mantasoa	Ambatolaona	Ambatolaona	30	100	0	0	0	0	0	0	0	0	2	7	18	12,250	1	3	1	9,000	6		6	9,917	0	0	0	0
		Mahitsitady	70	100	1	1	1	700,000	15		7	432,154	7	10	8	11,906	9	13	4	7,300	34	49	9	9,257	0	0	0	0
	Mantasoa	Andrefanivorona	22	100	0	0	0	0	8	36	1	450,000	1	5	10	10,000	1	5	5	3,000	6	27	3	9,917	0	0	0	0
		Anjozoro	26	100	0	0	0	0	9	35	1	300,000	2	8	6	13,000	2	8	2	8,750	10	38	8	9,450	0	0	0	0
		Mantasoa	48	100	1	2	1	1,000,000	11	23	5	311,417	2	4	5	11,000	2	4	3	6,350	17	35	5	9,765	1	2	4	15,000
		Masombahiny	55	100	0	0	0	0	11	20	1	225,286	2	4	9	12,500	0	0	0	0	7	13	-	9,167	1	2	4	15,000
		Miadamanjaka	33	100	0	0	0	0	3	9	1	255,500	1	3	6	15,000	0	0	0	0	10	30	6	-	1	3	5	2,500
	Miadanandriana	Ambohimanjaka	86	100	0	0	0	0	36	42	5	386,423	4	5	7	8,500	8	9	6	5,588	26	30	7	8,240	0	0	0	0
		Ambohipeno	44	100	2	5	1	300,000	17	37	2	291,250	0	0	0	0	2	5	8	5,000	15	34	5	7,893	1	2	20	10,000
	Merikanjaka	Merikanjaka	39	100	0	0	0	0	9	23	2	317,500	1	3	3	14,000	2	5	7	2,500	15	38	7	8,233	0	0	0	0
		Tsiazompaniry-Kely	34	100	0	0	0	0	4	12	1	312,500	1	3	8	4,000	5	15	8	2,200	18	53	5	8,605	2	6	7	13,500
		Miarinarivo	22	100	0	0	0	0	4	18	3	195,000	1	5	1	11,000	1	5	8	3,000	7	32	7	8,071	0	0	0	0
Sub-Total			509	100	4	1			127	25			24	5			33	6			171	34			6	1		
Tsiazompaniry	Anosibe	Andriantsiajo	25	100	3	12	1	645,000	18	72	7	285,000	3	12	7	12,000	0	0	0	0	9	36	9	8,444	0	0	0	0
	Trimoloharano	Angodongodona	61	100	2	3	1	1,000,000	25	41	4	230,250	2	3	6	6,630	3	5	12	4,833	29	48	11	8,672	0	0	0	0
		Mahatsinjo	24	100	5	21	1	1,016,667	9	38	1	290,556	2	8	7	13,750	1	4	6	4,000	15	63	9	8,500	0	0	0	0
		Ambohitsoa	23	100	5	20	1	900,000	4	16	2	233,333	2	8	12	11,750	1	4	3	8,500	16	64	9	7,469	1	4	6	7,500
	Ambohimiadana	Tharamalaza	68	100	8	12	2	825,000	21	31	5	208,211	12	18	15	12,083	6	9	13	7,917	41	60	9	9,452	3	4	31	12,500
		Manandriana	32	100	1	3	1	-	13	41	2	262,778	0	0	0	0	2	6	8	10,000	16	50	9	9,067	0	0	0	0
	Tankafatora	Morarano	99	100	0	0	0	0	0	0	0	0	2	2	6	12,750	9	9	5	4,944	46	26	10	8,344	0	0	0	0
		Analamihoatra	24	100	3	13	1	1,433,333	16	67	1	248,462	2	8	4	15,000	2	8	13	2,250	18	75	9	8,000	0	0	0	0
	Fitsinjovana	Ambohijanaka	109	100	2	2	2	200,000	41	38	2	245,278	10	9	7	12,250	3	3	4	2,417	52	48	8	7,069	3	3	3	10,833
	Bakaro	Kelimafana	27	100	1	4	1	250,000	15	56	1	175,417	9	33	7	14,944	2	7	38	5,425	17	63	12	6,588	0	0	0	0
Sub-Total			492	100	30	6			162	33			44	9			29	6			259	53			7	1		
Total			1001	100	34	3			289	29			68	7			62	6			430	43			13	1		

Source: JICA socio-economic study, 1998

Income from forest products

Zone	Rural commune	Fokontany	Households interviewed		Charcoal			Firewood			Honey			Construction wood			Others (medicinal plants, mushrooms, etc.)		
					No. of households which responded		Total amount of income	No. of households which responded		Total amount of income	No. of households which responded		Total amount of income	No. of households which responded		Total amount of income	No. of households which responded		Total amount of income
			Households	%	Households	%	FMG	Households	%	FMG	Households	%	FMG	Households	%	FMG	Households	%	FMG
Mantasoa	Ambatolaona	Ambatolaona	30	100	15	50	1,700,000	1	3	2,000,000	0	0	0	0	0	0	4	13	143,450
		Mahitsitady	70	100	14	20	2,395,000	2	3	705,000	1	1	20,000	2	3	1,000,000	0	0	0
	Mantasoa	Andrefanivorona	22	100	10	45	10,802,500	1	5	200,000	0	0	0	1	5	2,000,000	0	0	0
		Anjozoro	26	100	4	15	1,583,500	3	12	468,333	0	0	0	2	8	175,000	0	0	0
		Mantasoa	48	100	9	19	1,020,000	1	2	2,500,000	0	0	0	0	0	0	0	0	0
		Masombahiny	55	100	13	24	1,319,846	1	2	240,000	3	5	246,667	0	0	0	0	0	0
		Miadamanjaka	33	100	17	52	5,760,941	0	0	0	3	9	69,167	1	3	1,500,000	0	0	0
	Miadanandriana	Ambohimanjaka	86	100	40	47	3,202,563	1	1	200,000	3	3	61,667	1	1	500,000	1	1	50,000
		Ambohipeno	44	100	8	18	1,669,375	0	0	0	4	9	235,000	5	11	174,000	0	0	0
	Merikanjaka	Merikanjaka	39	100	13	33	416,077	0	0	0	3	8	210,000	2	5	675,000	1	3	120,000
		Tsiazompaniry-Kely	34	100	0	0	0	0	0	0	7	21	40,000	0	0	0	0	0	0
		Miarinarivo	22	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sub-Total		509	100	143	29		10	7		24	5		14	3		6	1	
Tsiazompaniry	Anosibe	Andriantsiajo	25	100	0	0	0	0	0	0	3	12	153,333	1	4	300,000	1	4	520,000
	Trimoloharano	Angodongodona	61	100	3	5	491,667	2	3	115,000	1	2	50,000	1	2	240,000,000	1	2	2,000,000
		Mahatsinjo	24	100	3	13	1,200,000	1	4	250,000	4	17	63,750	4	17	1,300,000	0	0	0
		Ambohitsoa	23	100	4	16	1,343,750	1	4	75,000	1	4	220,000	1	4	150,000	1	4	2,400,000
	Ambohimiadana	Iharamalaza	68	100	2	3	837,500	0	0	0	8	12	80,938	6	9	216,667	0	0	0
		Manandriana	32	100	0	0	0	0	0	0	5	16	111,000	2	6	225,000	2	6	4,200,000
	Tankafatora	Morarano	99	100	1	1	3,450,000	0	0	0	1	1	30,000	5	5	786,000	0	0	0
		Analamihoatra	24	100	1	4	350,000	0	0	0	0	0	0	0	0	0	0	0	0
	Fitsinjovana	Ambohijanaka	109	100	0	0	0	0	0	0	5	5	286,000	2	2	285,000	2	2	112,500
	Bakaro	Kelimafana	27	100	0	0	0	0	0	0	1	4	9,000	0	0	0	1	4	40,000
	Sub-Total		492	100	14	3		4	1		29	6		22	4		8	2	
Total			1001	100	157	16		14	1		53	5		36	4		14	1	

Source: JICA socio-economic study, 1998

Other income

Zone	Rural commune	Fokontany	Households interviewed		Fishing			Average income			Employment with wage			Others		
					No. of households which responded		Total amount of income	No. of households which responded		Total amount of income	No. of households which responded		Total amount of income	No. of households which responded		Total amount of income
			Households	%	Households	%	FMG	Households	%	FMG	Households	%	FMG	Households	%	FMG
Mantasoa	Ambatolaona	Ambatolaona	30	100			0	2	7	12,015,000	8	27	254,063	23	77	-
		Mahitsitady	70	100	2		82,500	5		1,002,000	32		414,938	16		-
	Mantasoa	Andrefanivorona	22	100	0	0	0	1	5	3,000,000	14	64	657,321	2	10	-
		Anjozoro	26	100	0	0	0	3	12	2,575,000	9	35	388,167	22	85	-
		Mantasoa	48	100	8	17	1,614,875	4	8	1,178,750	25	52	189,520	8	17	-
		Masombahiny	55	100	3	5	283,333	5	9	681,000	22	40	850,591	14	25	-
		Miadamanjaka	33	100	3	9	560,667	2	6	5,815,000	17	52	938,088	5	15	-
	Miadanandriana	Ambohimanjaka	86	100	2	2	6,000,000	6	7	2,837,333	30	35	240,433	9	10	-
		Ambohipeno	44	100	18	41	1,158,000	3	7	1,946,667	22	50	460,477	9	20	-
	Merikanjaka	Merikanjaka	39	100	0	0	0	7	18	1,441,571	13	33	324,000	13	33	-
		Tsiazompaniry-Kely	34	100	0	0	0	2	6	430,000	16	47	158,125	3	9	-
		Miarinarivo	22	100	0	0	0	2	9	50,000	11	50	725,318	11	50	-
	Sub-Total		509	100	36	7		42	8		219	43		135	27	-
Tsiazompaniry	Anosibe	Andriantsiajo	25	100	4	16	180,000	5	20	327,000	8	32	519,750	7	28	-
	Trimoloharano	Angodongodona	61	100	12	20	1,003,083	6	10	4,486,000	18	30	310,444	15	25	-
		Mahatsinjo	24	100	1	4	45,000	3	13	300,000	10	42	239,500	5	21	-
		Ambohitsoa	23	100	0	0	0	6	24	1,024,167	6	24	260,833	6	26	-
	Ambohimiadana	Iharamalaza	68	100	2	3	270,000	10	15	577,800	17	25	287,176	6	9	-
		Manandriana	32	100	4	13	1,975,000	3	9	184,167	8	25	471,938	11	34	-
	Tankafatora	Morarano	99	100	26	26	1,261,846	11	11	622,455	21	21	151,095	38	38	-
		Analamihoatra	24	100	0	0	0	10	42	196,700	1	4	300,000	10	42	-
	Fitsinjovana	Ambohijanaka	109	100	2	2	247,500	16	15	1,780,000	46	42	242,543	42	39	-
	Bakaro	Kelimafana	27	100	0	0	0	4	15	356,250	12	44	266,667	9	33	-
	Sub-Total		492	100	51	10		74	15		147	30		149	30	-
Total			1,001	100	87	9		116	12		366	37		284	28	-

Source: JICA socio-economic study, 1998

Annual expenses of households

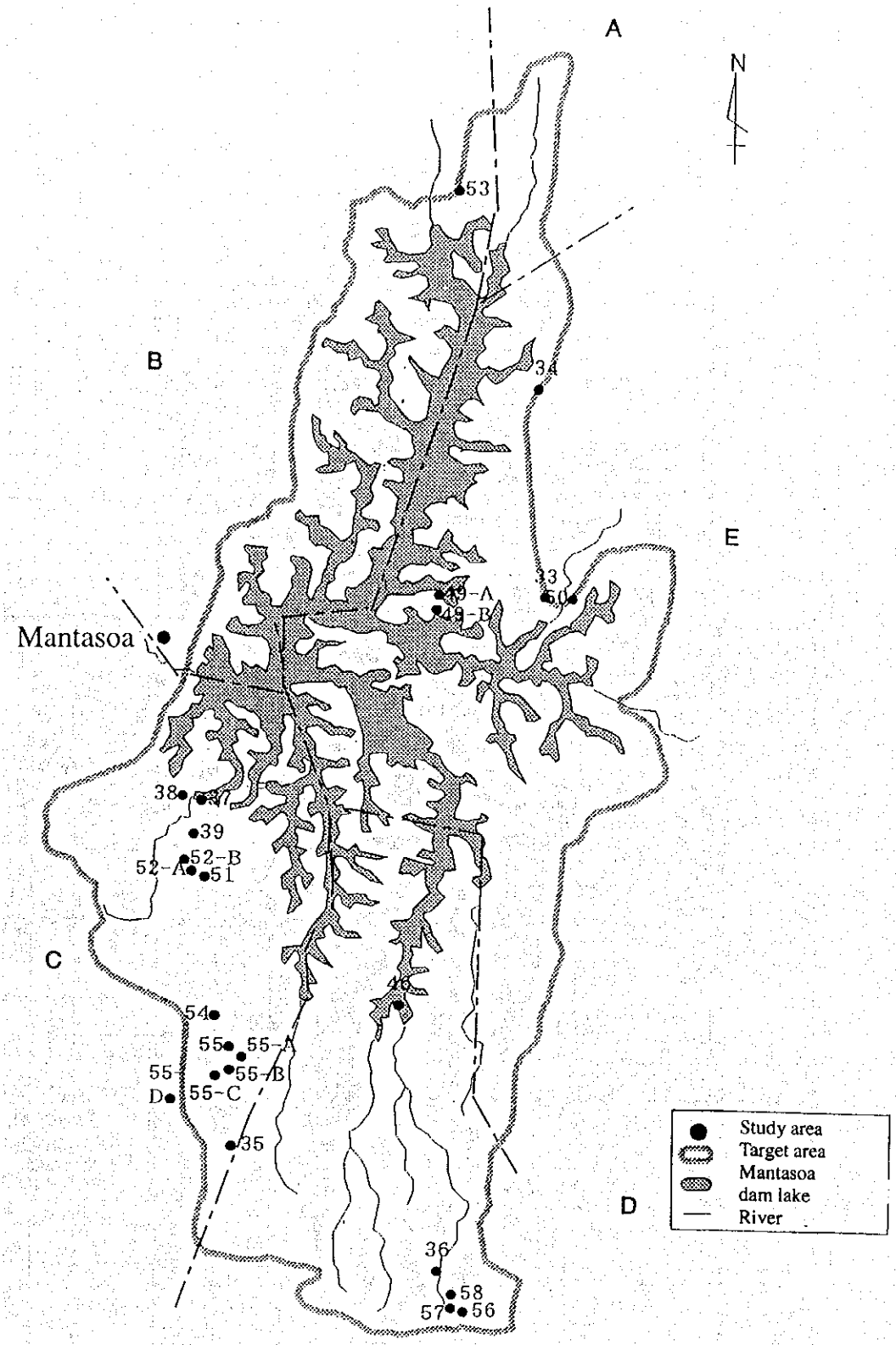
Zone	Rural commune	Fokontany	Households interviewed		Total expenses		Breakdown				
							Food	Clothes	Education	Farming expenses	Others
			Households	%	FMG	%	%	%	%	%	%
Mantasoa	Ambatolaona	Ambatolaona	30	100	1,497,403	100	76	9	4	5	6
		Mahitsitady	70	100	1,424,584	100	71	10	7	9	3
	Mantasoa	Andrefanivorona	22	100	1,635,355	100	70	11	11	8	0
		Anjozoro	26	100	1,815,712	100	61	8	15	12	4
		Mantasoa	48	100	2,166,798	100	55	7	7	11	20
		Masombahiny	55	100	1,395,277	100	73	11	6	8	2
		Miadamanjaka	33	100	1,550,209	100	78	10	5	7	0
	Miadanandriana	Ambohimanjaka	86	100	1,413,833	100	70	11	6	10	3
		Ambohipeno	44	100	1,230,469	100	66	14	4	16	0
	Merikanjaka	Merikanjaka	39	100	1,611,877	100	58	16	13	13	0
		Tsiazompaniry-Kely	34	100	906,780	100	75	18	2	5	0
		Miarinarivo	22	100	1,559,745	100	60	12	5	23	0
	Sub-Total		509	100							
Tsiazompaniry	Anosibe	Andriantsiajo	25	100	3,538,265	100	15	6	22	19	38
	Trimoloharano	Angodongodona	61	100	1,694,582	100	42	12	6	37	3
		Mahatsinjo	24	100	1,339,323	100	51	10	5	29	5
		Ambohitsoa	23	100	826,578	100	55	14	11	20	0
	Ambohimiadana	Iharamalaza	68	100	1,246,651	100	49	13	5	33	0
		Manandriana	32	100	1,185,041	100	62	11	5	22	0
	Tankafatora	Morarano	99	100	1,313,557	100	45	15	4	34	2
		Analamihoatra	24	100	1,588,767	100	39	18	3	34	6
	Fitsinjovana	Ambohijanaka	109	100	1,334,666	100	44	14	4	34	4
	Bakaro	Kelimafana	27	100	1,174,137	100	62	13	1	24	0
	Sub-Total		492	100							
Total			1001	100							

Source: JICA socio-economic study, 1998

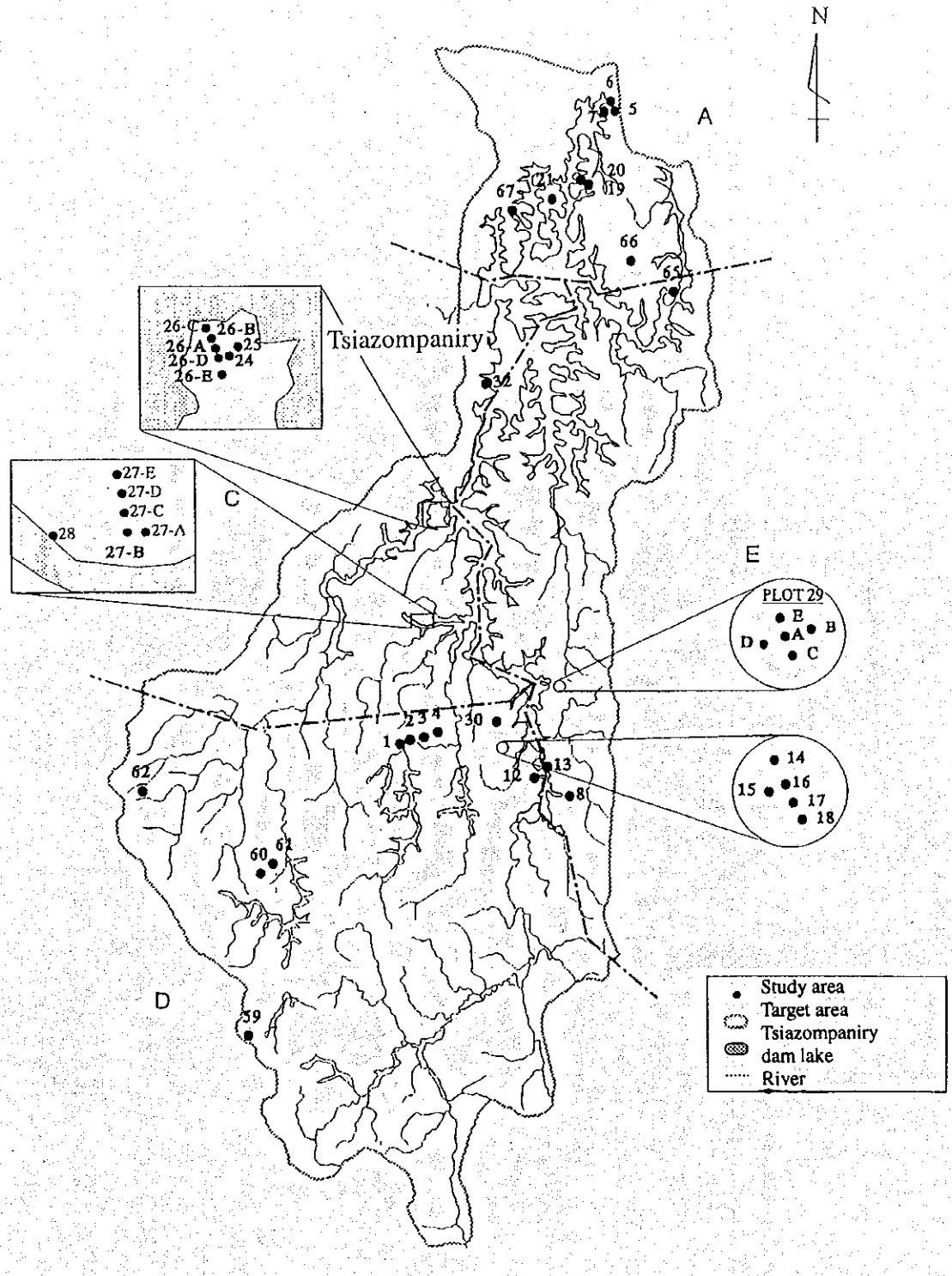
Results of the study on needs

Zone	Rural commune	Fokontany	Households interviewed		1st level	2nd level	3rd level	4th level	5th level
			Households	%					
Mantasoa	Ambatolaona	Ambatolaona	30	100	Possibilities of employment	Electrical supply	Increase in revenue	Increasing farm production	Maintenance of hospitals
		Mahitsitady	70	100	Electrical supply	Increasing farm production	Building of a dam	Maintenance of hospitals	Road repair
	Mantasoa	Andrefanivorona	22	100	Road repair	Increasing farm production	Obtaining fertilizers	Maintenance of hospitals	Maintenance of schools
		Anjozoro	26	100	Road repair	Building of a dam	Increasing farm production	Electrical supply	Maintenance of hospitals
		Mantasoa	48	100	Obtaining fertilizers	Increasing farm production	Maintenance of hospitals	Road repair	Obtaining land
		Masombahiny	55	100	Increasing farm production	Maintenance of hospitals	Road repair	Improving health	Electrical supply
		Miadamanjaka	33	100	Obtaining fertilizers	Increasing farm production	Electrical supply	Road repair	Improving agricultural techniques
	Miadanandriana	Ambohimanjaka	86	100	Obtaining fertilizers	Road repair	Increasing farm production	Maintenance of hospitals	Improving health
		Ambohipeno	44	100	Road repair	Increasing farm production	Maintenance of hospitals	Obtaining fertilizers	Maintenance of schools
	Merikanjaka	Merikanjaka	39	100	Road repair	Increasing farm production	Obtaining fertilizers	Maintenance of schools	Improving health
		Tsiazompaniry-Kely	34	100	Increasing farm production	Obtaining fertilizers	Improving health	Road repair	Maintenance of schools
		Miarinarivo	22	100	Road repair	Obtaining fertilizers	Increasing farm production	Maintenance of schools	Maintenance of hospitals
	Sub-Total		509	100					
Tsiazompaniry	Anosibe	Andriantsiajo	25	100	Road repair	Obtaining fertilizers	Increasing farm production	Maintenance of hospitals	Obtaining land
	Trimoloharano	Angodongodona	61	100	Obtaining fertilizers	Road repair	Maintenance of hospitals	Electrical supply	Increasing farm production
		Mahatsinjo	24	100	Road repair	Obtaining fertilizers	Maintenance of hospitals	Maintenance of schools	Increasing farm production
		Ambohitsoa	23	100	Obtaining fertilizers	Road repair	Increasing farm production	Maintenance of schools	Security in the village
	Ambohimiadana	Iharamalaza	68	100	Road repair	Increasing farm production	Electrical supply	Obtaining fertilizers	Increasing possibilities of employment
		Manandriana	32	100	Road repair	Increasing farm production	Electrical supply	Improving agricultural techniques	Building of a bridge
	Tankafatora	Morarano	99	100	Obtaining fertilizers	Obtaining the right to autonomy	Road repair	Increasing farm production	Maintenance of hospitals
		Analamihoatra	24	100	Obtaining fertilizers	Increasing farm production	Road repair	Improving agricultural techniques	Building of a bridge
	Fitsinjovana	Ambohijanaka	109	100	Obtaining fertilizers	Road repair	Maintenance of hospitals	Increasing farm production	Increase in revenue
	Bakaro	Kelimafana	27	100	Obtaining fertilizers	Road repair	Increasing farm production	Extension of farm lands	Maintenance of schools
	Sub-Total		492	100					

Source: JICA socio-economic study, 1998



Points of the pedological study (Mantasoa zone)



Points of the pedological study (Tsiazompaniry zone)

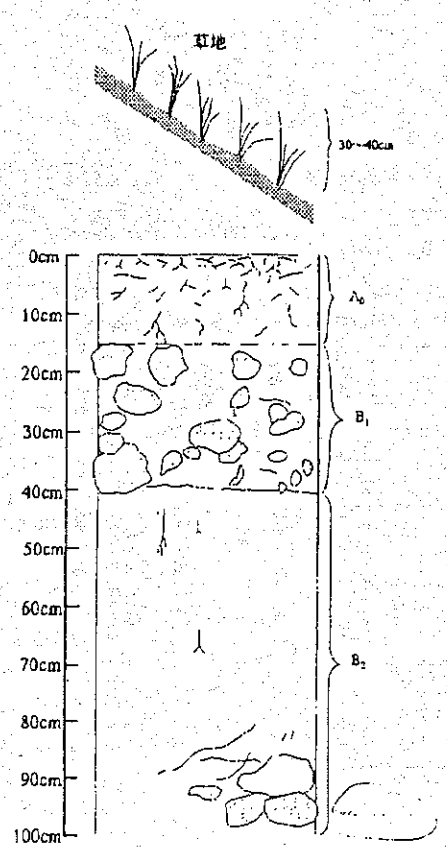
Data on locations of the pedological study

N°	Plot No.	Items of the study					Locations of the study		
		Zone	Pedological profile	Penetration	Infiltration	Discharge	Site	Area	Coordinates
Tsiazompaniry									
1	1	D	○	○	○		Southern Anaramifoatra	Lower part of the hill	S 19°22´536″
									E 47°49´124″
2	2	D		○	○		Southern Anaramifoatra	Middle part of the hill	
3	3	D	○	○	○		Southern Anaramifoatra	Upper part of the hill	
4	4	D		○	○		Southern Anaramifoatra	Line of peaks	
5	5	A	○	○	○		Ambohitrandriana	Fallow land for farming away from home	S 19°11´304″
									E 47°53´042″
6	6	A	○	○	○		Ambohitrandriana	Philippia shrub area	S 19°11´303″
									E 47°52´993″
7	7	A			○		Ambohitrandriana	Grass land (grazing)	
8	8	E	○	○	○		Andongoa	Natural forest east of the dam	S 19°23´619″
									E 47°51´665″
9	13	E		○	○	○	Hisalamarendrina	Natural forest east of the dam	S 19°22´845″
									E 47°51´700″
10	14	D		○	○		Soakintana	Landslide area west of the dam (peak)	S 19°22´585″
									E 47°51´015″
11	15	D		○			Soakintana	Landslide area (peak)	〃
12	16	D		○			Soakintana	Landslide area (central part)	〃
13	17	D		○			Soakintana	Landslide area (base)	〃
14	18	D		○			Soakintana	Landslide area (sediments)	〃
15	19	A		○	○		Ambolibe	North-east of the dam, grass land (peak)	S 19°12´766″
									E 47°52´313″
16	20	A	○	○	○		Ambolibe	North-east part of the dam, grass land (lower/middle part of plot 19)	
17	21	A		○			Ambolibe	North-east part, grass land (opposite bank/peak in plot 20)	
18	24	C		○			Ambatoarananke1y	South of the dam, eastern side, grass land (hill summit)	S 19°18´490″
									E 47°49´717″
19	25	C		○	○		Ambatoarananke1y	South of the dam, eastern side, grass land (hill summit) beside plot 24	S 19°20´376″
									E 47°49´576″
20	26-A	C		○			Ambatoarananke1y	South of the dam, eastern side, grass land (mid-hillside) below plot 25	
21	26-B	C		○			Ambatoarananke1y	South of the dam, eastern side, grass land (mid-hillside) eucalyptus forest	
22	26-C	C		○			Ambatoarananke1y	South of the dam, eastern side, grass land (mid-hillside) grass land	
23	26-D	C		○			Ambatoarananke1y	South of the dam, eastern side, grass land (mid-hillside) grass land	
24	26-E	C		○			Ambatoarananke1y	South of the dam, eastern side, grass land (mid-hillside) eucalyptus forest	
25	27-A	C	○				Soavinandriana	South of the dam, western side, grass land (mid-hillside)	S 19°20´376″
									E 47°49´576″
26	27-B	C		○			Soavinandriana	South of the dam, western side, grass land (mid-hillside) eucalyptus forest	
27	27-C	C		○			Soavinandriana	South of the dam, western side, grass land (mid-hillside) above 27-B, grass land	
28	27-D	C		○			Soavinandriana	South of the dam, western side, grass land, peak	
29	27-E	C		○			Soavinandriana	South of the dam, western side, grass land, northern slope opposite 27-D	
30	29-A	E		○	○		Ambohimandroso	South of the dam, eastern side, grass land, (peak)	
31	29-B	E		○			Ambohimandroso	South of the dam, eastern side, grass land, (eastern part)	
32	29-C	E		○	○		Ambohimandroso	South of the dam, eastern side, grass land, (southern part)	
33	29-D	E		○			Ambohimandroso	South of the dam, eastern side, grass land, (western part)	
34	29-E	E		○	○		Ambohimandroso	South of the dam, eastern side, grass land, (northern part)	
35	30	D	○	○	○		Soakintana	South of the dam, western side, natural forest	
36	32	C	○	○	○		Antanimenakely	South of Tsiazompaniry, pine forest	
37	59	D	○	○	○		Marotaolana	Extreme south of the target area, grass land	S 19°26´357″
									E 47°45´711″
38	60	D	○	○	○		Ambatolampikely	South-east of the target area, grass land	S 19°24´663″
									E 47°46´331″
39	61	D	○				Ambatolampikely	South-east of the target area, grass land near plot 60	S 19°24´663″
									E 47°46´331″
40	62	D	○	○	○		Ambatomitsanoana	South-east of the target area, grass land	S 19°23´348″
									E 47°44´238″

Data on locations of the pedological study

	Items of the study						Locations of the study		
N°	Plot No.	Zone	Pedological profile	Penetration	Infiltration	Discharge	Site	Area	Coordinates
41	65 (A,B,C)	E	○	○	○		Marohery	North-east of the dam, hill part, pine afforestation A = summit, B = middle part, C = foot	S 19°14´373″ E 47°54´062″
42	66 (A,B,C)	A	○	○	○		Marohery	North-east of the dam, hill part, grass land A = summit, B = middle part, C = foot	S 19°13´693″ E 47°53´129″
43	67	A	○	○	○		Ambala	North-west of the dam, upper part of grass land	S 19°13´014″ E 47°53´935″
Mantasoa									
44	33	E	○	○	○		Analavory	East of the dam, north of the weir of the dam, Philippia afforestation	S 19°00´640″ E 47°54´075″
45	34	E	○	○	○		Marorangotra	East of the dam, shrub area throughout the road at the border with the target area	S 18°58´856″ E 47°53´790″
46	35	C	○	○	○		Andavabato	Southern part, lower part of the rocky mountain, eucalyptus forest	S 19°04´959″ E 47°51´343″
47	36	D	○	○	○		Andrenirano	Southern part, shrub area, eucalyptus forest	S 19°06´333″ E 47°53´111″
48	37	C	○	○	○		Ambohivadiantany	Southern part, eucalyptus forest (4 years)	S 19°02´129″ E 47°51´024″
49	39	C	○	○	○		Andrefanivorona	Eucalyptus forest (40 years/24-28 cm)	S 19°02´400″ E 47°50´978″
50	46	D	○	○	○		Andakana	Shrub area immediately downstream of plot 45	S 19°03´856″ E 47°52´803″
51	49-A	E	○	○	○		Desokina	LAVUDEN V shrub area, southern slope, surrounding Philippia forest	S 19°04´407″ E 47°53´174″
52	49-B	E		○	○		Besokina	LAVUDEN V, Philippia (shrubs, grass land) northern slope, around plot 49-A	S 19°00´490″ E 47°53´135″
53	50	E	○	○	○		Ampasika	LAVUDEN V, only Philippia shrubs, 4 m, dense, eastern slope	S 19°00´778″ E 47°54´082″
54	51	C		○			Ambolobota	South-west of the dam, north of the village, only Philippia shrubs	S 19°02´765″ E 47°51´041″
55	52-A	C	○	○	○		Sovorona	South-west of the dam, north of the village, eucalyptus forest	S 19°02´791″ E 47°50´952″
56	52-B	C		○			Sovorona	South-west of the dam, north of the village, eucalyptus forest near plot 52-A	
57	53-A	B		○	○		Ampasiotsy	Northern part of the northern slope of the dam, Philippia area	S 18°57´082″ E 47°53´194″
58	53-B	B	○	○	○		Ampasiotsy	Northern part of the northern weir of the dam, eucalyptus forest (around 20 years)	S 18°57´082″ E 47°53´194″
59	54	C		○	○		Fanongoavana	South-east of the target area, eucalyptus forest	S 19°04´053″ E 47°51´271″
60	55	C	○		○		Anehano-kely	South-west of the target area, eucalyptus forest	S 19°04´736″ E 47°50´080″
61	55-A	C		○			Anehano-kely	South-west of the target area, eucalyptus forest, peak	
62	55-B	C		○			Anehano-kely	South-west of the target area, eucalyptus forest, slope	
63	55-C	C		○			Anehano-kely	South-west of the target area, eucalyptus forest, lower part	
64	55-D	C		○			Anehano-kely	South-west of the target area, eucalyptus forest, base part	
65	56	D	○	○	○		Ambohibe	Southern end of the target area, natural forest	S 19°06´468″ E 47°53´054″
66	57	D	○		○		Ambonilahitsara	Southern end of the target area, natural forest, grass land, north of plot 56	S 19°06´423″ E 47°52´497″
67	58	D		○			Ambohimarina	Southern end of the target area, natural forest, grass land, north of plot 57	S 19°06´256″ E 47°52´195″

(Soavinandriana)

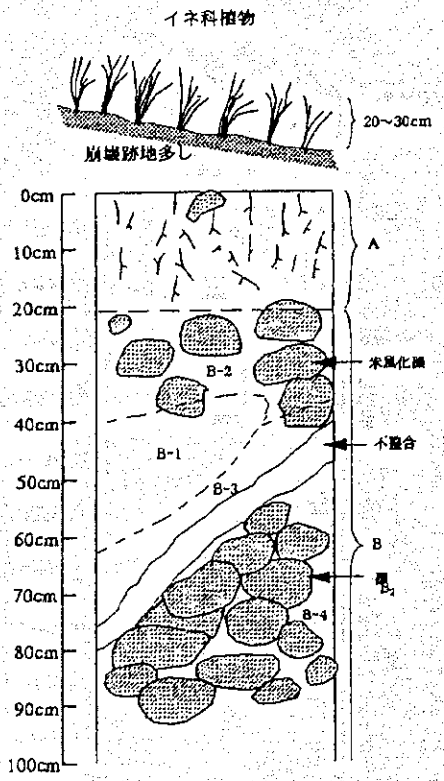


Site				
Plot No.		27	Study date	1999/6/17
	Zone	Tsiazompaniry	Elevation	m
	Name	Soavinandriana	Relief/slope	NETWORK-SE 3-4m/average slope 8m
	Division	C	Vegetation	Grass land

Layer	Soil color	Humus	Conglomerate	Humidity	pH	Soil	System of roots	Structure	Others
A	5YR 5/4	A little	None	Slightly humid	6,18	Fine sand	Yes	Grains	
B_1	2.5YR 4/5	None	Many stones 5-10 cm	Slightly humid	6,12	Fine sand/average and coarse sand	Little	Wall	
B_2	10R 5/6	None	No stone of 40-80 cm	Slightly humid	5,93	Sandy clay including gravel	No	Wall	Altered conglomerate below 90 cm

Pedological profile of the grass land (1)

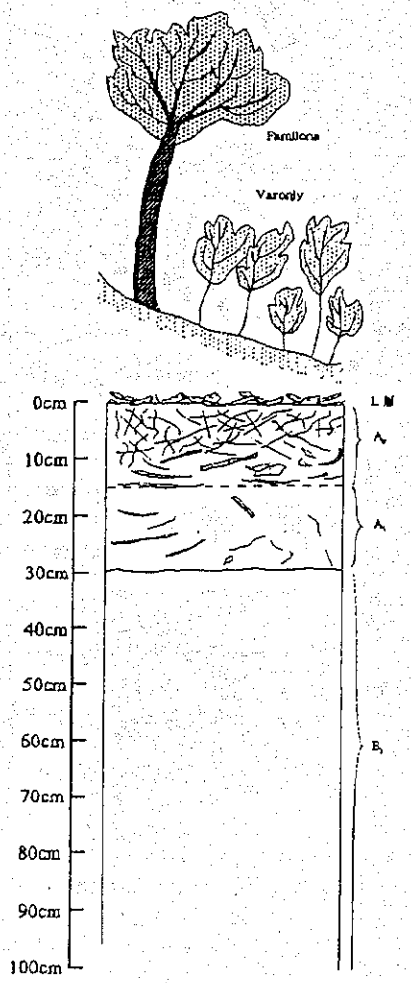
Plot 59
(Marotaolana)



Site				
Plot No.		59	Study date	1999/7/13
	Zone	Tsiazompaniry	Elevation	1689 m
	Name	Marotaolana	Relief/slope	SW-NE 22/ many sliding sites
	Division	D	Vegetation	Grass land

Layer	Soil color	Humus	Conglomerate	Humidity	pH	Soil	System of roots	Structure	Others
A	10YR 3/3	Low content	Includes big stones	Ordinary - slightly humid	5,32	Sandy clay	Many fine roots	Slightly spherical	
B_1	2.5YR 5/6	None	Big gravel in the entire layer	Slightly humid	5,92	Sandy clay	Fine roots	Wall	
B_2	2.5YR 6/8	None	Big gravel in the entire layer	Slightly humid	5,91	Sand including gravel	Fine roots	Wall	Non-altered conglomerate
B_3	10R 4/6	None	Big gravel in the entire layer	Slightly humid	5,67	Clay	None	Wall	
B_4	7.5YR 7/8	None	Big gravel in the entire layer	Slightly humid	5,69	Sandy clay	None	Wall	

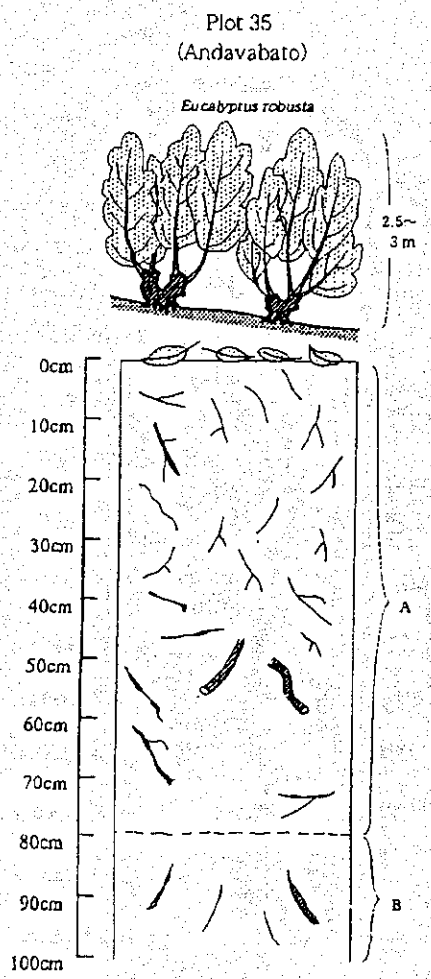
Pedological profile of the grass land (2)



Site	Plot No.	8	Study date	1999/6/14
	Zone	Tsiazompaniry	Elevation	m
	Name	Andongoa	Relief/slope	N-S 17/lower part of the slope
	Division	E	Vegetation	Philippia spp.

Layer	Soil color	Humus	Conglomerate	Humidity	pH	Soil	System of roots	Structure	Others
A_0	2,5YR 3/6	A lot as well as L.H.F	None	Quite humid	5.00		Quite a few	Form of dumpling	Indistinguishable stony layer
A_1	7,5YR 5/8	Yes	None	Quite humid	5.00	Clay	Many	Slightly spherical	System of roots up to 50 cm
B	2,5YR 5/8	None	None	Humide	5.30	Sandy clay	None	Wall	Flat sedimentary layer up to 50 cm deep

Pedological profile of the natural forest zone

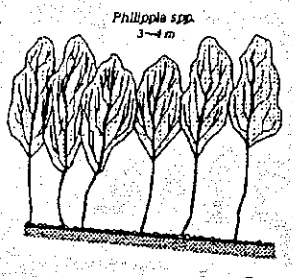


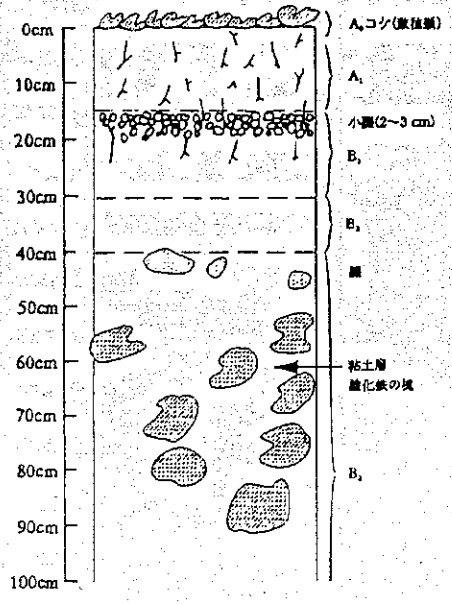
Plot No.		35	Study date	1999/6/23
Site	Zone	Mantasoa	Elevation	1480 m
	Name	Andavabato	Relief/slope	N-S 100K/Sur la crête
	Division	C	Vegetation	Forêt d'eucalyptus

Layer	Soil color	Humus	Conglomerate	Humidity	pH	Soil	System of roots	Structure	Others
A	10YR 3/3	Little	None	Dry	5,73	Sand	Many fine and medium size roots, eucalyptus roots	Wall	Big roots at 50 cm
B	5YR 5/8	None	None	Slightly dry	5,72	Sand	Many	Wall	Many interstices

Pedological profile of the eucalyptus afforestation area

(Ampasika)

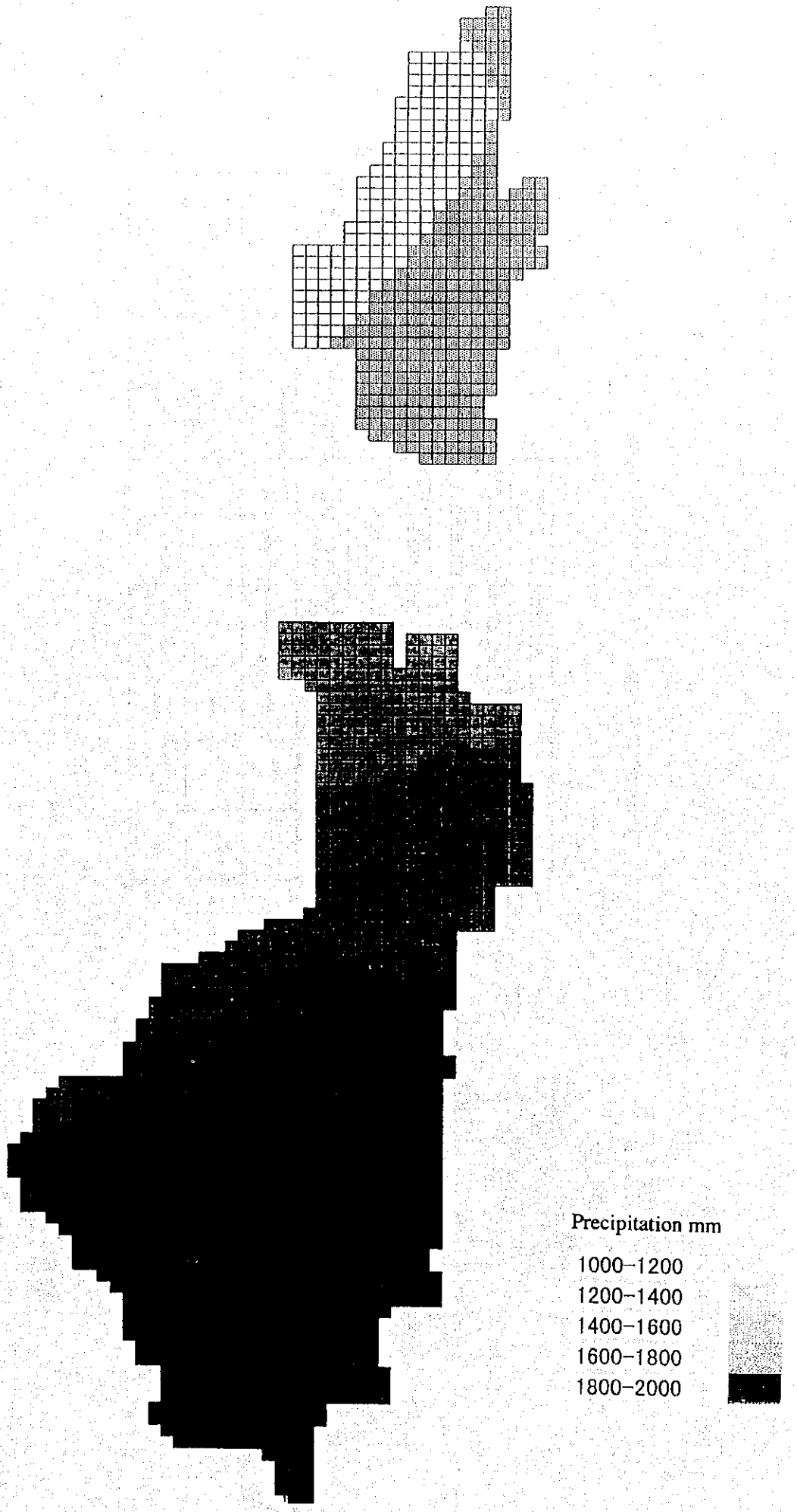




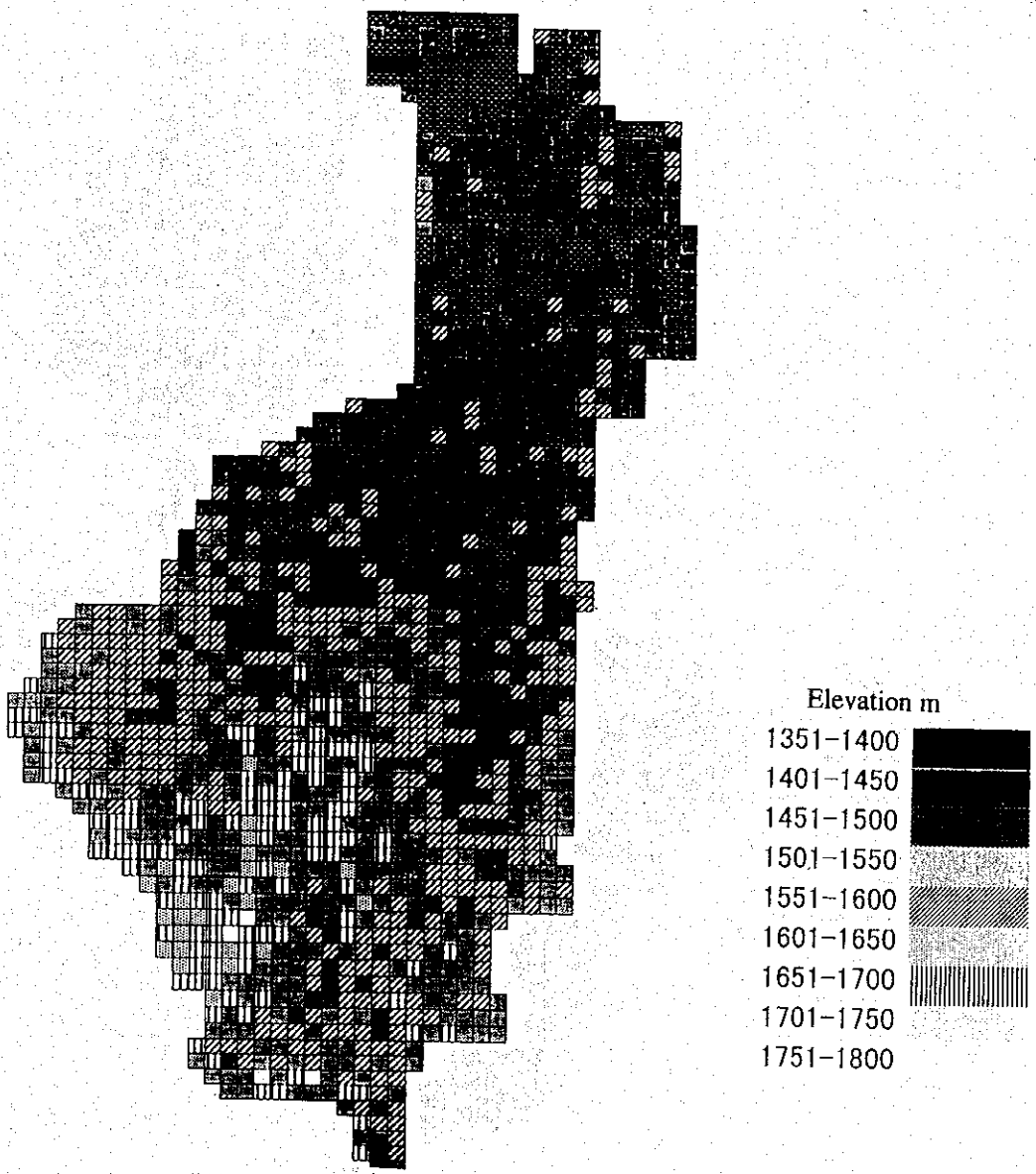
Site				
Plot No.	50	Study date	1999/6/29	
Zone	Mantasoa	Elevation	1390 m	
Name	Ampasika	Relief/slope	N-S 12/lower part of the slope	
Division	E	Vegetation	Philippia ssp. only/ dense summits at 3 m	

Layer	Soil color	Humus	Conglomerate	Humidity	pH	Soil	System of roots	Structure	Others
A_0		Proliferation of moss	Much gravel	Slightly dry			Many fine roots		Many moss species covering the surface
A	7.5YR 2/3	Proliferation	Much gravel	Slighily dry	5.75	Sable	Many fine roots	Dumpling form	
B_1	7.5YR 5/8	None	Much	Normal	6,01	Sandy/clayey soil, much sand	Up to 20 cm	Wall	
B_2	7,5YR 7/8	None	Little	Normal	5,97	Clay, including sand	None	Wall	Clay layer
B_3	2,5YR 5/8	None	Much iron oxide crystals	Normal~ slighily dry	6,06	Sandy clay, much sand	None	Wall	

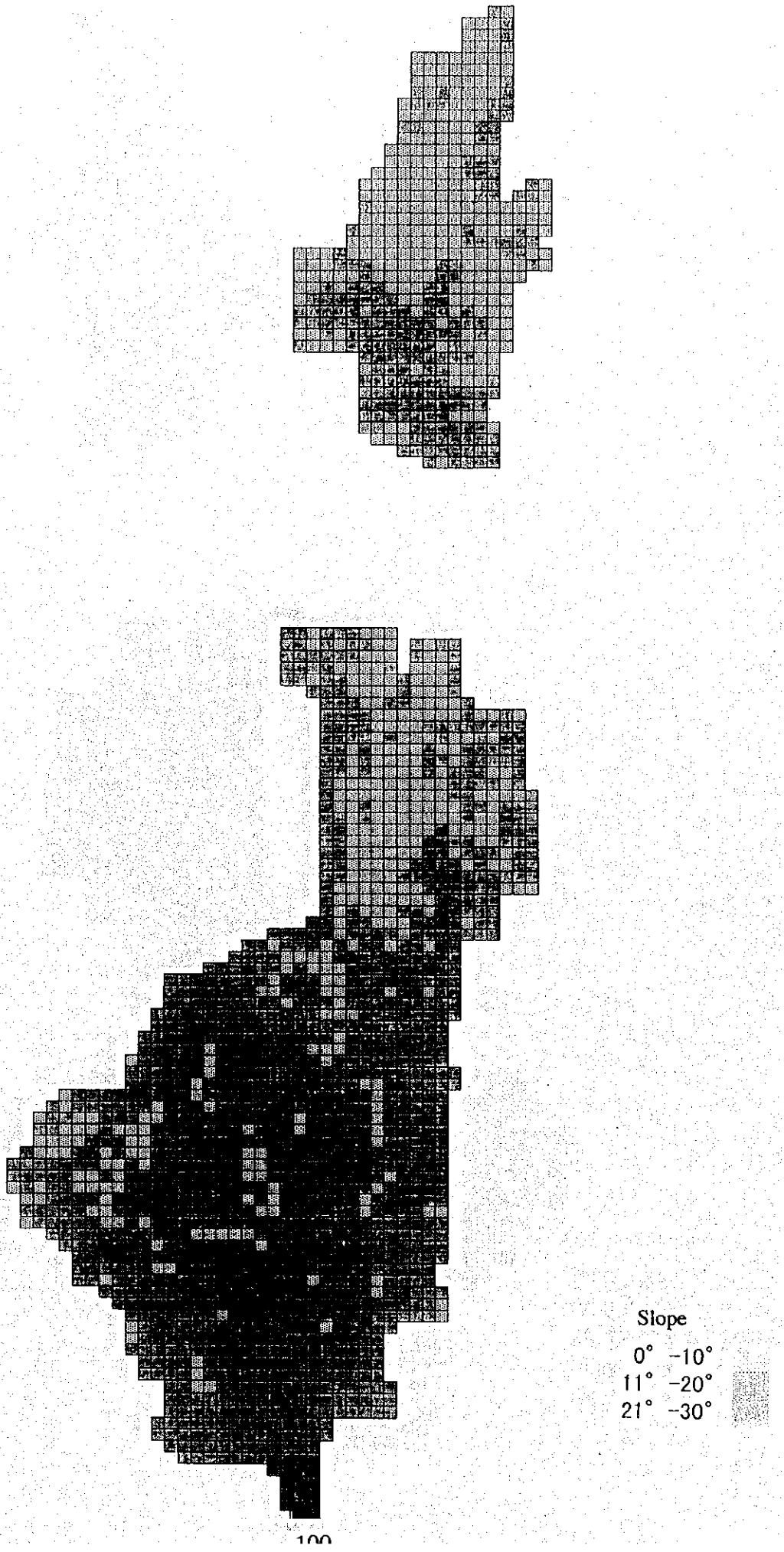
Pedological profile of the Philippia area


Precipitation mm
1000–1200
1200–1400
1400–1600
1600–1800
1800–2000

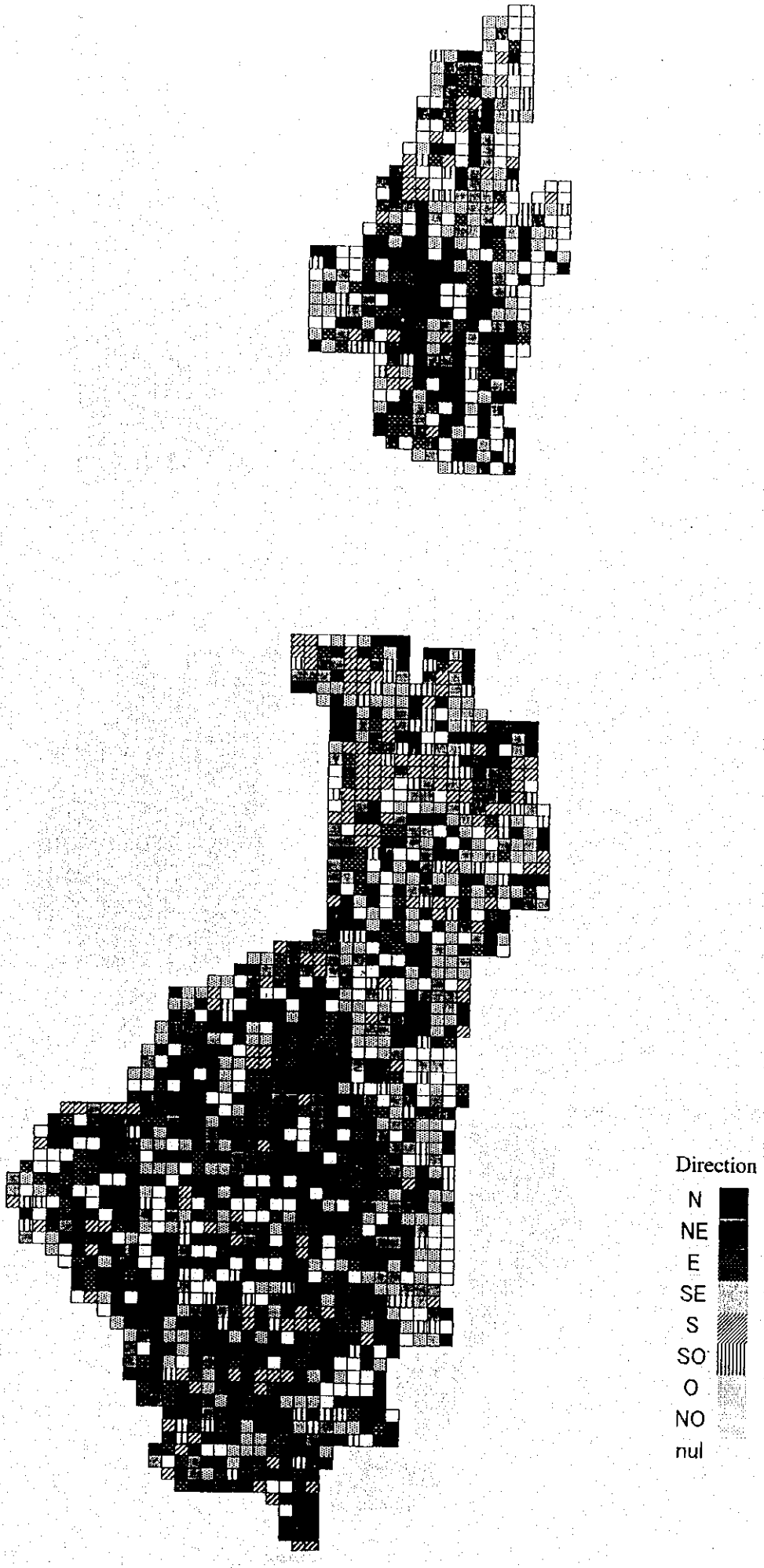
(2) Elevation


Elevation m
1351–1400
1401–1450
1451–1500
1501–1550
1551–1600
1601–1650
1651–1700
1701–1750
1751–1800

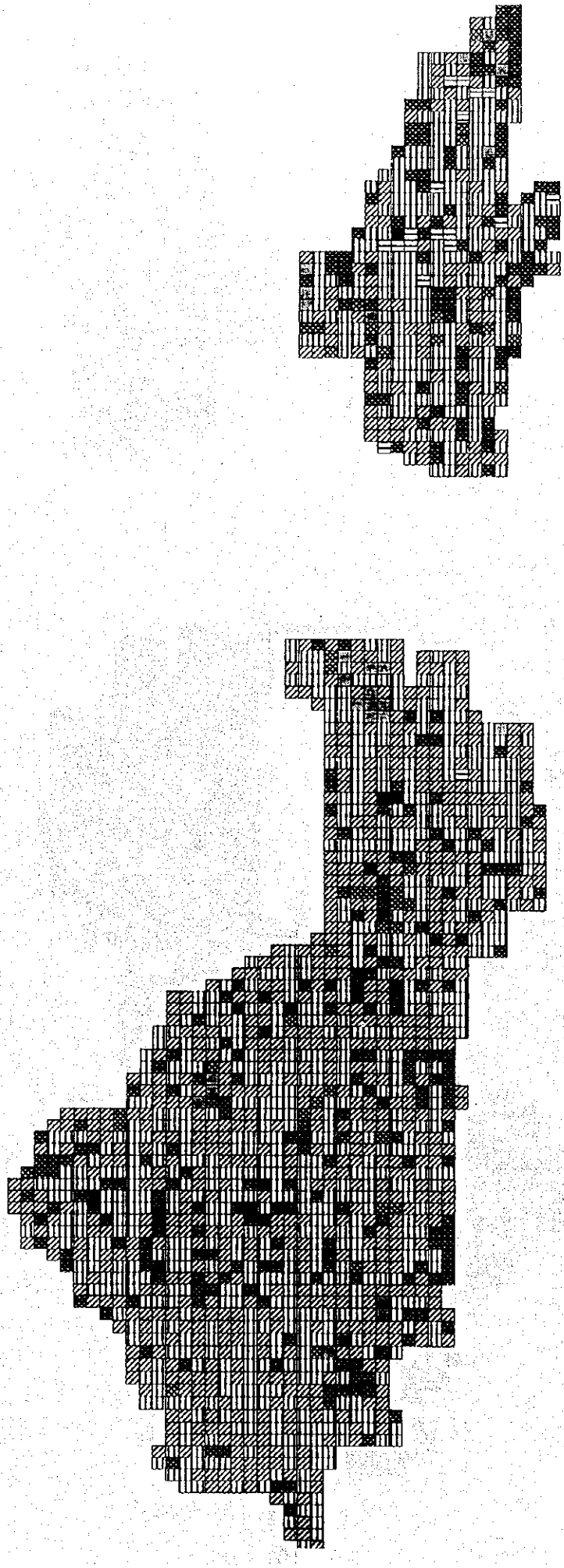
(3) Slope



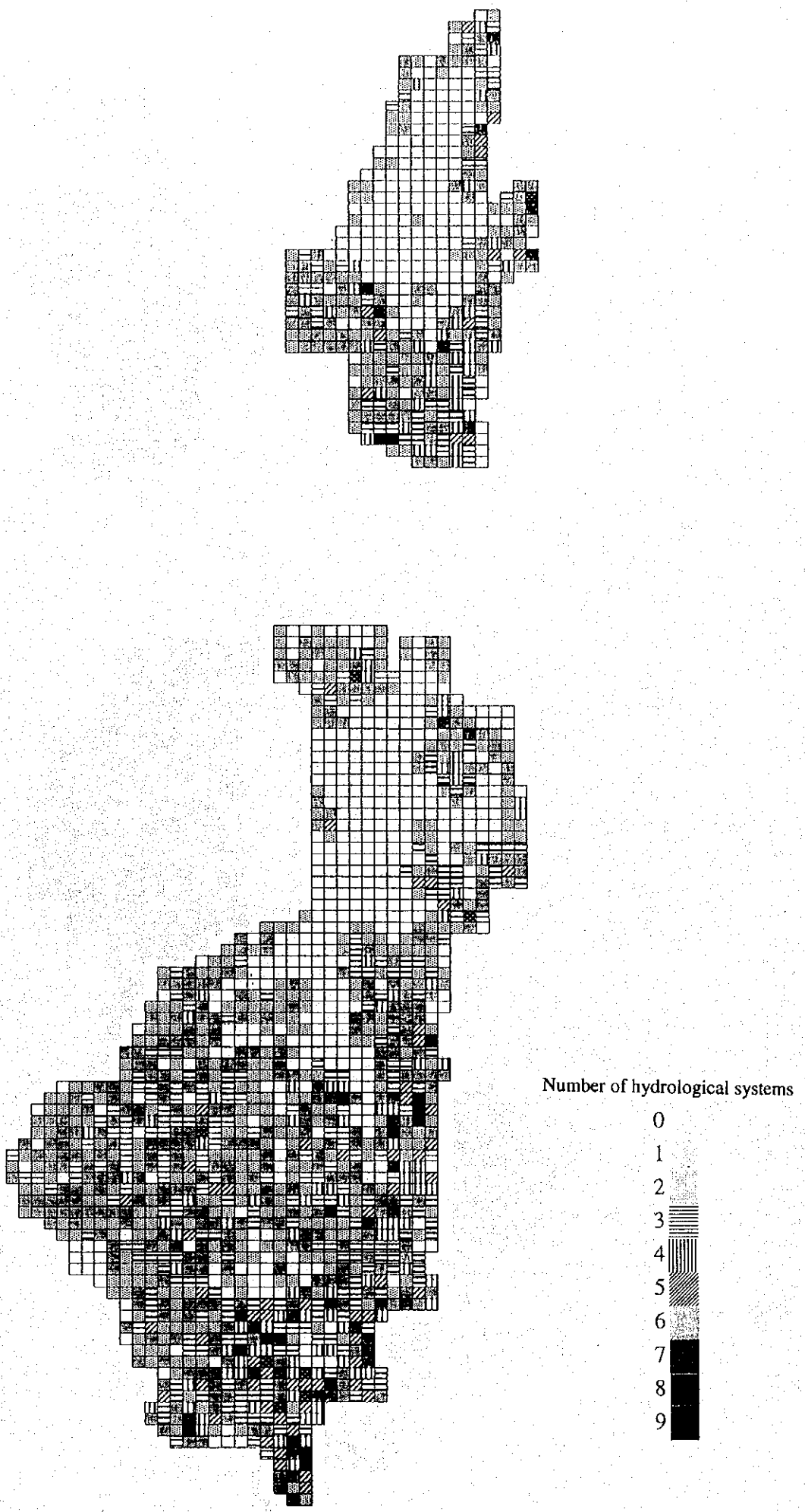
(4) Direction



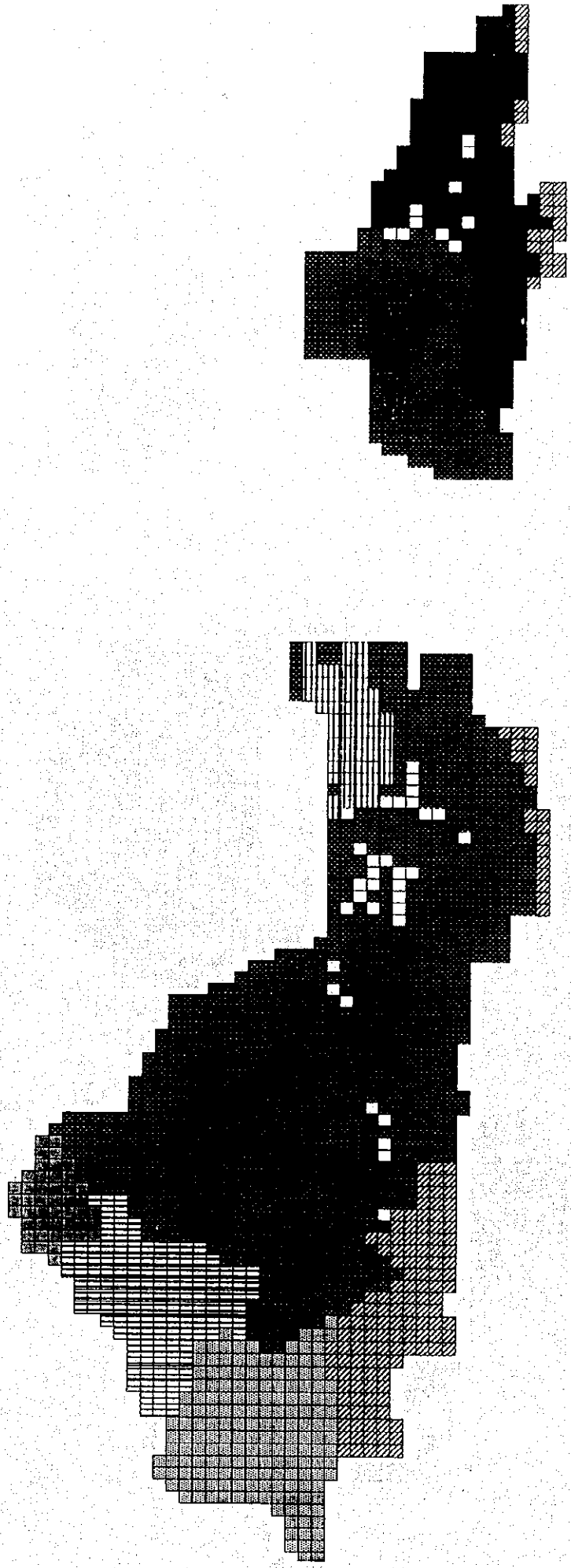
(5) Microtopography



(6) Hydrological system



(7) Soil


Soil
Alluvium
Medium desaturated ferrallitic
Medium desaturated ferrallitic in "grunitoicle" migmatite
Lithosol
Highly desaturated ferrallitic in migmatite
Low desaturated ferrallitic, beige
Highly desaturated ferrallitic and handling
Medium desaturated ferrallitic in migmatite
Highly desaturated ferrallitic, brown-yellow
Water surface

(8) Use of land/vegetation

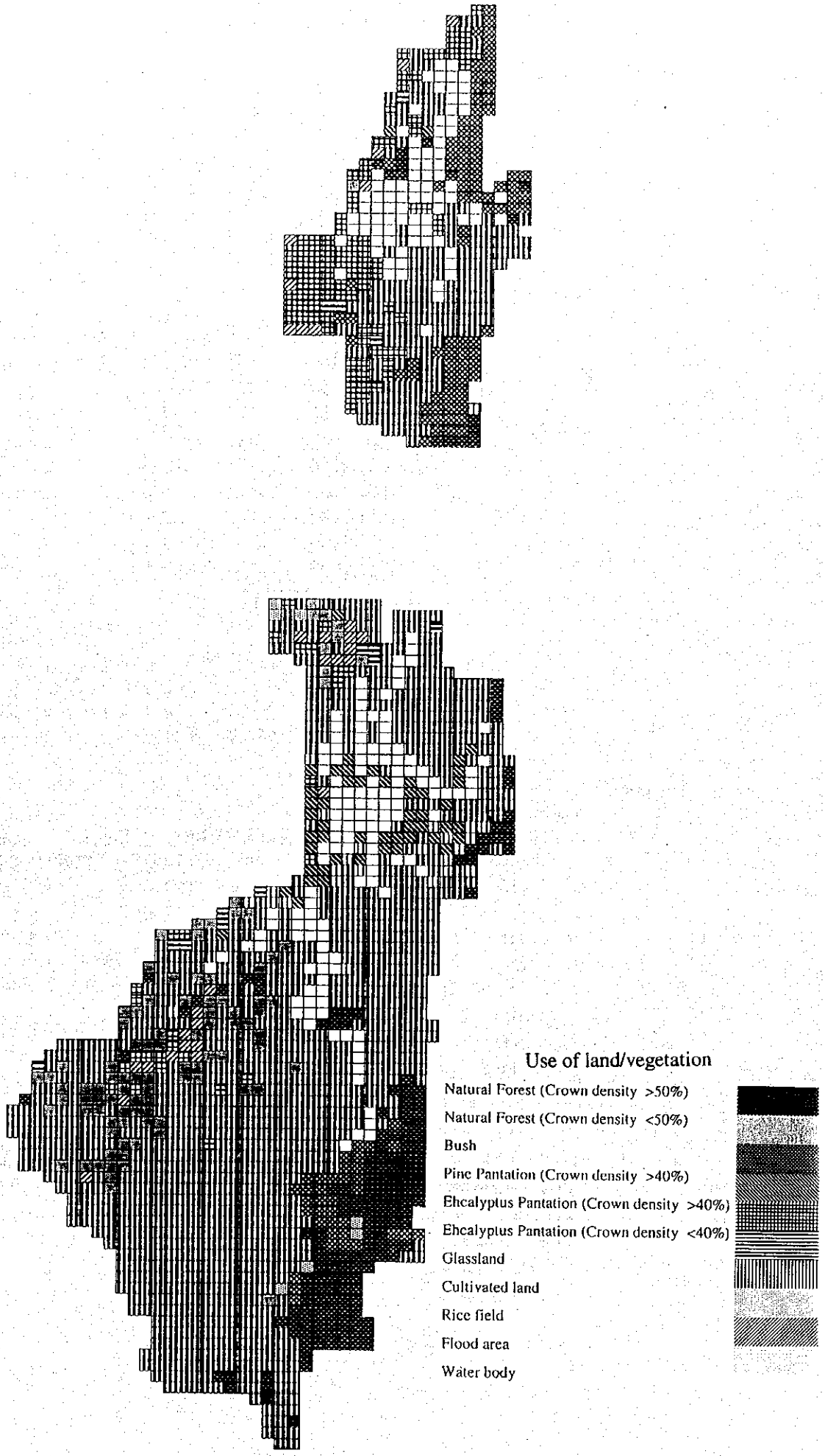


Table of notes on natural environment elements

Precipitation

	Number	Note	Range	Partial correlation coefficient
1000-1200	178	-1.6332	4.0599	0.2159
1200-1400	277	-0.8868		
1400-1600	176	-2.3621		
1600-1800	428	-1.4964		
1800-2000	938	1.6978		

Elevation

	Number	Note	Range	Partial correlation coefficient
1351-1400	107	-0.3858	2.5013	0.1252
1401-1450	274	0.5095		
1451-1500	187	0.0989		
1501-1550	611	0.6157		
1551-1600	377	0.4234		
1601-1650	292	-1.6844		
1651-1700	121	-1.2303		
1701-1750	24	-0.1821		
1751-1800	4	-1.8856		

Slope

	Number	Note	Range	Partial correlation coefficient
0°-10°	593	-1.8232	7.2384	0.1808
11°-20°	1395	0.7401		
21°-30°	9	5.4152		

Direction

	Number	Note	Range	Partial correlation coefficient
No	383	-0.7852	2.1148	0.1071
NE	266	-0.2714		
E	173	0.5250		
SE	155	1.3296		
S	165	-0.1199		
SW	110	0.3911		
W	160	0.3743		
NW	262	0.6606		
None	323	-0.5579		

Microtopography

		Number	Note	Range	Partial correlation coefficient
Summit surface		312	0.3426	2.4123	0.0806
Plateau		18	-0.0413		
Level hillside		38	-1.1930		
Convex hillside		716	-0.5692		
Concave hillside		882	0.3506		
	mountain	26	1.2193		
Water surface		5	1.1474		

Hydrological system

	Number	Note	Range	Partial correlation coefficient
0	593	-1.6594	9.4998	0.2467
1	426	-0.7275		
2	426	0.3020		
3	290	1.0630		
4	134	2.2709		
5	70	3.6265		
6	34	4.1073		
7	9	5.6734		
8	12	7.8404		
9	3	4.7021		

Soil

	Number	Note	Range	Partial correlation coefficient
Alluvium	18	0.6308	15.5417	0.4802
Medium desaturated ferrallitic	197	-1.0972		
migmatite	1108	0.1784		
Lithosol	38	-0.8294		
Highly desaturated ferrallitic in migmatite	173	-4.3741		
Low desaturated ferrallitic, beige	65	-2.2182		
Highly desaturated ferrallitic and handling	136	-3.0811		
Medium desaturated ferrallitic in migmatite	46	-5.9844		
Highly desaturated ferrallitic, brown-yellow	173	9.5574		
Water surface	43	-0.4566		

Use of land/vegetation

	Number	Note	Range	Partial correlation coefficient
Natural Forest (Crown density >50%)	177	-3.5681	6.3902	0.3486
Natural Forest (Crown density <50%)	25	0.0045		
Bush	125	0.7826		
Pine afforestation (Crown density >40%)	51	-2.5923		
Ehcalyptus Afforestation (Crown density >40%)	124	-3.3306		
Ehcalyptus afforestation (Crown density <40%)	14	-3.5249		
Glassland	1122	1.7006		
Cultivated land	98	-4.4639		
Rice field	31	-4.6896		
Flood area	7	-3.5768		
Water body	223	-0.7712		

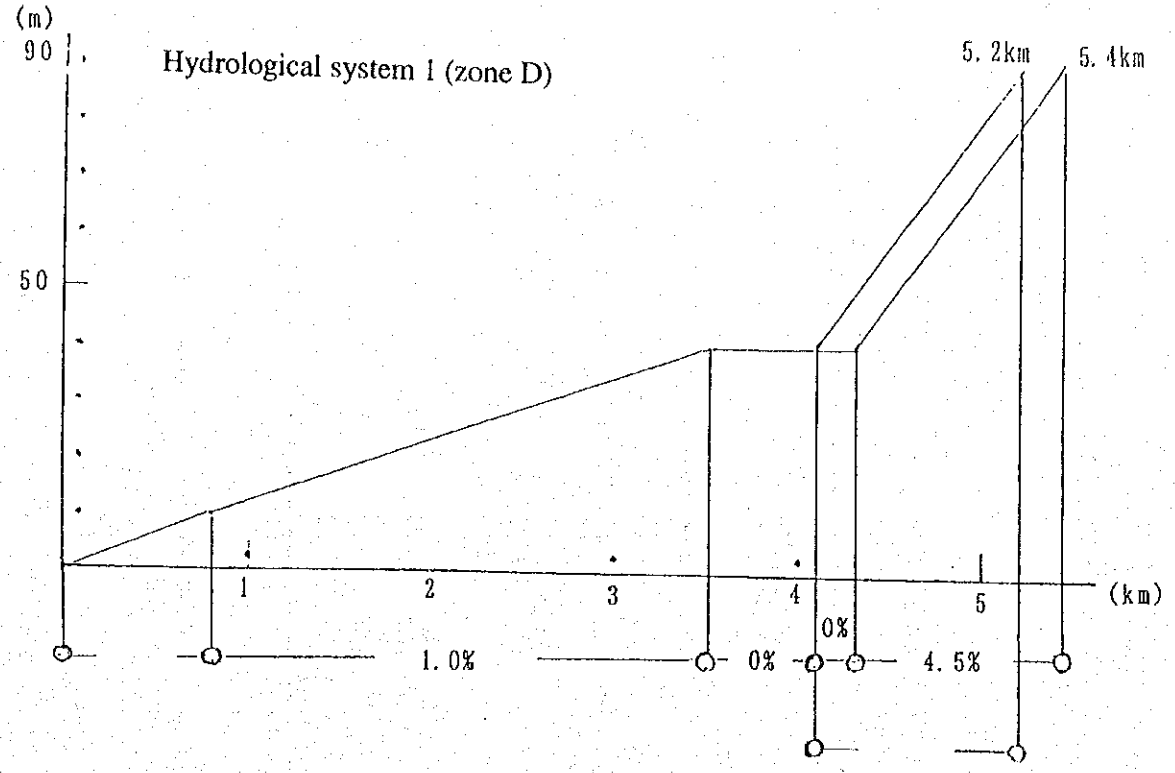
Constant	5.98898
Multiple correlation coefficient	0.71153
Fixed coefficient	0.50627

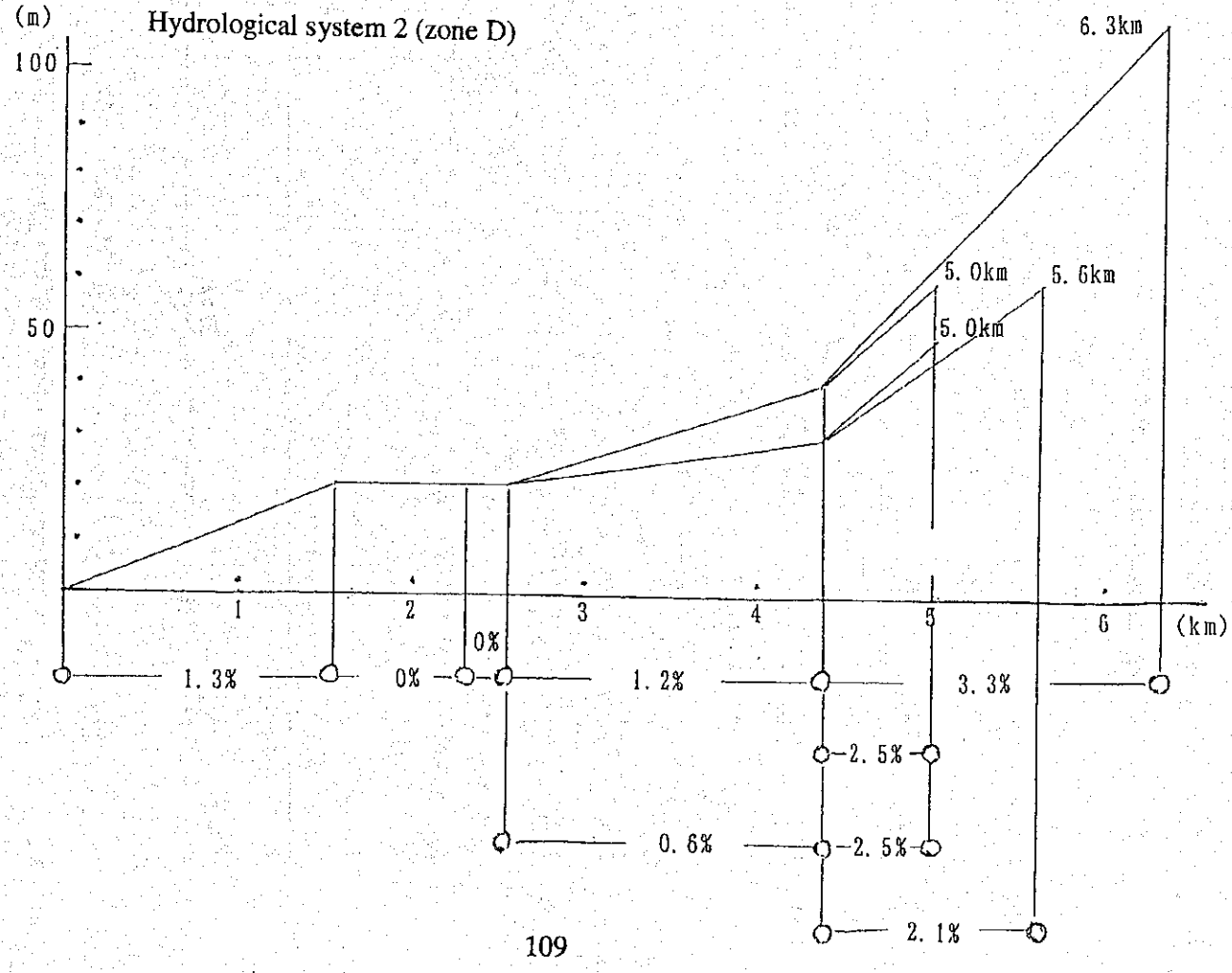
Multiple correlation coefficient	0.71153
Fixed coefficient	0.50627

Correlation coefficient between external standards and the numbered articles

	Y	X(1)	X(2)	X(3)	X(4)	X(5)	X(6)	X(7)	X(8)
Y: Site de glissement(1)	1								
X(1): Precipitation	0.3591	1							
X(2): Elevation	-0.0853	-0.4427	1						
X(3): Slope	0.3587	0.3880	-0.1192	1					
X(4): Direction	0.1126	-0.0120	-0.0105	0.0397	1				
X(5): Microtopography	-0.0087	-0.0559	0.0234	-0.1309	-0.1326	1			
X(6): Hydrological system	0.3763	0.3360	-0.0663	0.3004	0.0069	0.0345	1		
X(7): Soil	0.5274	0.1476	-0.0783	0.1356	0.0961	-0.0512	0.1815	1	
X(8): Use of land/vegetation	0.3668	0.1159	-0.1407	0.1501	0.0046	-0.0566	0.0051	0.1704	1

(1) Mantasoa zone

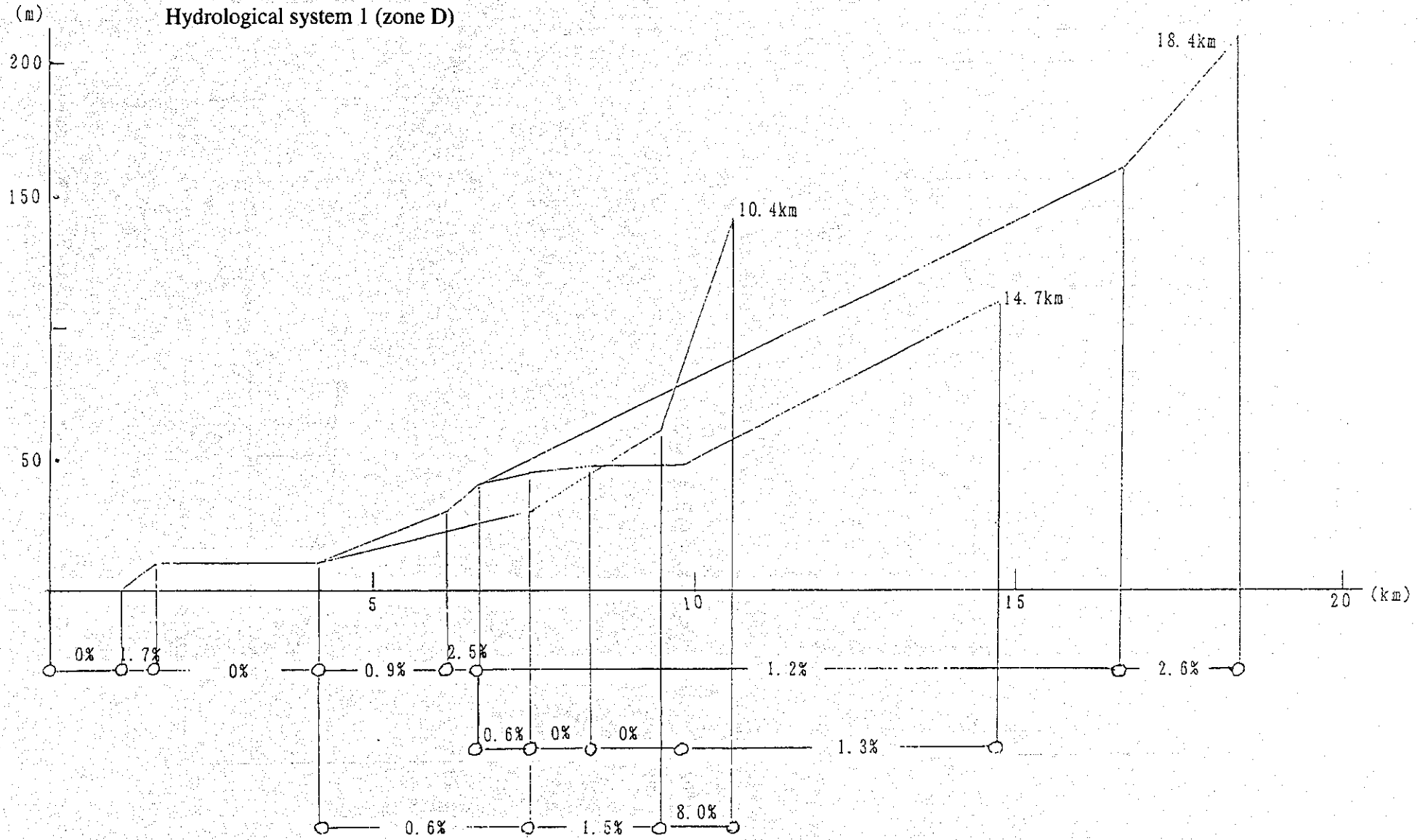




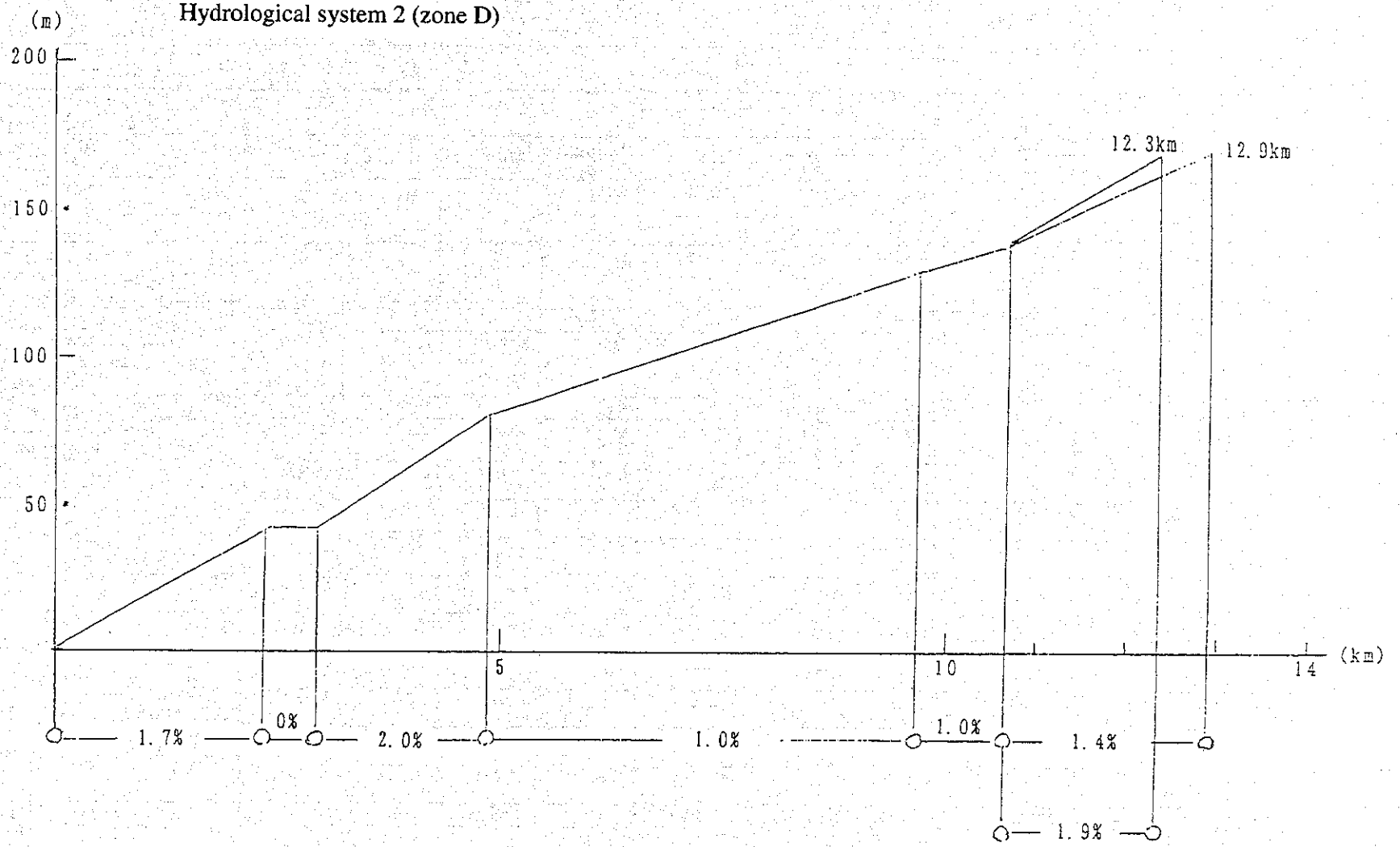
Cross section of the valley

(2) Tsiazompaniry zone

Hydrological system 1 (zone D)



Hydrological system 2 (zone D)



Hydrological system 3 (zone D)