

## 5. Soil and Vegetation Monitoring

### 5.1 Method

The basic survey was principally carried out for the initial objectives (namely, establishment of baseline data and early detection of possible impact) in the participating countries in accordance with the Technical Manual on Soil and Vegetation Monitoring in East Asia. General items are described in the [Table 5.1](#) but actual implementation of item sets was dependent on respective site.

**Table 5.1. Basic survey for soil and forest**

Item	Parameters
Soil	<ul style="list-style-type: none"> <li>- pH(H<sub>2</sub>O), pH(KCl), Exchangeable base cations (Na, K, Ca, and Mg), Exchangeable acidity, Effective cation exchange capacity (ECEC), Carbonate content (if pH &gt; 7)</li> <li>- Exchangeable Al and H, Total C content, Total N content (optional)</li> <li>- Available P, Sulfate (voluntary)</li> <li>- Physical properties (Fine earth bulk density, and Penetration resistance)(optional)</li> </ul>
Forest	<ul style="list-style-type: none"> <li>- General description of the forest (Description of trees, and Understory vegetation), Observation of tree decline</li> <li>- Photographic record of tree decline, Estimation of decline causes (optional)</li> </ul>

#### 1) Monitoring Sites

Since the interval of soil and vegetation monitoring was decided as 3-5 years in the Technical Manual, most sites, which were reported in 2003, were not surveyed in 2004. Forest data of three areas of two countries were submitted this year. The list of monitoring site and reported items for 2004 was shown in [Table 5.2](#).

**Table 5.2. Outline of the Monitoring Sites in 2004**

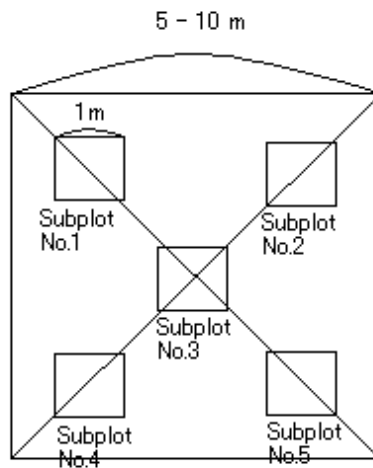
Country	Nearest deposition monitoring site	Site: Name of forest area	Soil type	Items <sup>*1</sup>
Japan	Banryu	Banryu-2	Cambisols	F <sup>*3</sup>
		Iwami “rinku” Factory Park	(Acrisols) <sup>*2</sup>	F <sup>*3</sup>
	Ijira	Lake Ijira	Dystric Cambisols	F <sup>*3</sup>
		Yamato	Andosols	F <sup>*3</sup>
Philippines	Los Banos	Mt. Maliking	Eutric Cambisols	S, F

Country	Nearest deposition monitoring site	Site: Name of forest area	Soil type	Items <sup>*1</sup>
		UP-Quezon-Laguna Land Grant	Dystric Nitosols	S, F
Republic of Korea	Imsil	Mt. Naejang	Not reported (one type)	S, F
Russia	Mondy	Mondy	<i>Calcic Gleysols</i>	F

\*1. S, Soil monitoring; F, Forest monitoring \*2. Soils have not been clearly classified in accordance with FAO/UNESCO. 3. Observation of tree decline was only carried out.

## 2) Field Operation

Basically, two forest areas, whose soils have different sensitivities to acid deposition, are recommended to be selected in an area. Several plots (at least two ones) of areas from 5m\*5m to 10m\*10m should be chosen randomly at each forest area (each soil type). Five subplots with 1m\*1m square of each are set up for soil sampling at the center and along the diagonal lines of the plot (Fig.5.1). Three coaxial round plots are established for general description of trees with areas of 1000, 400 and 200 square meters respectively (Fig. 5.2). Observation of tree decline is carried out basically for selected twenty trees with average height of around 20m.



**Figure 5.1 Plot for soil sampling**

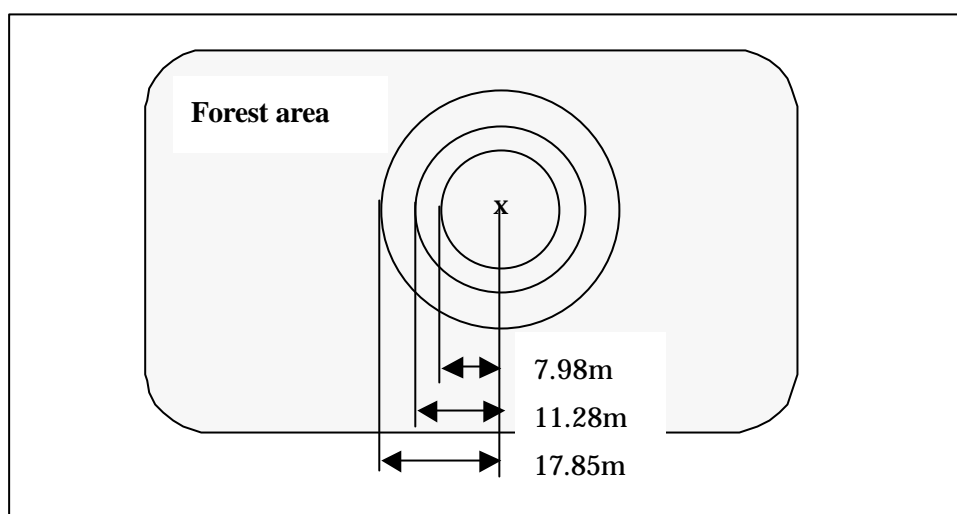


Figure 5.2. Plots for description of trees

### 3) Laboratory Operation

Analytical methods recommended in the Manual are presented in [Table 5.3](#).

Table 5.3. Analytical equipment and methods for soil monitoring

Parameters	Equipment/methods
<b>Chemical Properties of Soil</b>	
a) Moisture Content	Drying oven, Balance
b) pH (H <sub>2</sub> O) and pH (KCl)	Glass electrode
c) Exchangeable Base Cations (Ca, Mg, K and Na)	AAS, ICP-AES or ICP-MS (CH <sub>3</sub> COONH <sub>4</sub> -Extraction)
d) Exchangeable Acidity	Titration (KCl-Extraction)
e) Exchangeable Al, H	ibid.
f) Effective Cation Exchange Capacity (ECEC)	Calculation (as sum of exchangeable cations)
g) Carbonate Content (for calcareous soil)	Volumetric calcimeter
h) Total Carbon Content	Titration (Walkley-Black method) or CN-analyzer
i) Total Nitrogen Content	Titration (Kjeldahl method) or CN-analyzer
j) Available Phosphate	Spectrophotometry (Bray-1 test)
k) Sulfate	Turbidimetry, IC, ICP-AES or ICP-MS
<b>Physical Properties of Soil</b>	
a) Fine Earth Bulk Density	Metal sampling cylinder, Drying oven, Balance
b) Penetration Resistance (in the fieldwork)	Pocket penetrometer

## **5.2 Results of Monitoring**

Results of basic survey for soil and forest were reported in the following tables:

Table 5.4: Soil chemical analysis

Table 5.5: Description of trees

Table 5.6: Understory vegetation survey

Table 5.7: Observation of tree decline

Figure 5.3: Photographic record of tree decline

**Table 5.4 a-1-1) Soil chemical analysis: Los Banos-1-1**

Sampling date: 3 Mar 2005

Name of analysis laboratory: Department of Soil Science,UPLB

Sample No.	Location	Soil type	Plot No.	Subplot No.	Layer analyzed (cm)	Repeat* analysis	Moisture content (wt %)	pH		Exchangeable basecations				Ex-acidity	Ex-acid cations		ECEC	Base saturatio %
								H <sub>2</sub> O	KCl	Ca	Mg	K	Na		Al	H		
								(cmol (+)/kg)										
1	Mt. Makiling, Los Baños, Laguna	Eutric Cambisol	1	1	0 - 10	1st	1.1	5.9	4.6	15.37	12.45	5.36	2.65	0.33	0.00	0.33	36.16	99.1
				2			1.1	6.0	4.6	16.05	12.95	5.55	3.39	0.33	0.00	0.33	38.27	99.1
				3			1.1	5.7	4.3	13.17	13.22	5.07	2.91	0.33	0.00	0.33	34.70	99.0
				4			1.1	5.7	4.1	11.92	13.56	5.11	2.91	0.59	0.00	0.59	34.09	98.3
				5			1.1	5.4	4.0	11.46	13.02	4.90	2.92	0.95	0.21	0.74	33.25	97.1
2				10 - 20	1		1.1	5.8	4.4	13.52	12.99	5.32	2.43	0.40	0.00	0.40	34.66	98.8
					2		1.1	5.7	4.3	12.39	13.09	5.28	2.43	0.46	0.00	0.46	33.65	98.6
					3		1.1	5.2	3.8	9.91	13.00	4.72	2.19	1.67	0.99	0.68	31.49	94.7
					4		1.1	5.1	3.6	6.86	12.35	4.59	2.44	3.54	2.89	0.65	29.78	88.1
					5		1.1	5.3	3.8	8.57	13.68	4.93	2.67	1.37	0.69	0.68	31.22	95.6
3			2	1	1.1	6.7	5.4	23.39	10.79	6.10	3.88	0.18	0.00	0.18	44.34	99.6		
				2	1.1	6.8	5.3	23.50	10.03	5.77	4.39	0.18	0.00	0.18	43.87	99.6		
				3	1.1	6.7	5.2	21.83	10.90	5.99	5.09	0.18	0.00	0.18	43.99	99.6		
				4	1.1	6.6	5.1	21.40	12.04	6.15	5.14	0.18	0.00	0.18	44.91	99.6		
				5	1.1	6.6	5.2	21.12	11.42	6.06	5.12	0.18	0.00	0.18	43.90	99.6		
4				10 - 20	1	1.1	6.8	5.4	19.86	11.27	5.97	3.64	0.20	0.00	0.20	40.94	99.5	
					2	1.1	6.7	5.1	20.63	10.54	5.55	3.87	0.18	0.00	0.18	40.77	99.6	
					3	1.1	6.7	5.0	19.03	11.61	5.86	4.86	0.18	0.00	0.18	41.54	99.6	
					4	1.1	6.5	4.7	16.81	12.20	5.69	4.86	0.23	0.00	0.23	39.79	99.4	
					5	1.1	6.5	4.9	18.53	11.88	5.63	5.12	0.18	0.00	0.18	41.34	99.6	

**Table 5.4 a-1-2) Soil chemical analysis: Los Banos-1-2**

Sampling date: 3 Mar 2005

Name of analysis laboratory: Department of Soil Science,UPLB

Sample No.	Location	Soil type	Plot No.	Subplot No.	Layer analyzed (cm)	Repeat* analysis	Moisture content (wt %)	pH		Exchangeable base cations				Ex-acidity	Ex-acid cations		ECEC	Base saturation %
								H <sub>2</sub> O	KCl	Ca	Mg	K	Na		Al	H		
1	Mt. Makiling, Los Baños, Laguna	Eutric Cambisol	1	1	0 - 10	2nd	1.1	5.9	4.6	15.37	12.45	5.36	2.90	0.33	0.00	0.33	36.41	99.1
				2			1.1	6.0	4.6	15.35	12.95	5.48	3.15	0.33	0.00	0.33	37.26	99.1
				3			1.1	5.7	4.3	13.17	13.22	5.07	2.91	0.33	0.00	0.33	34.70	99.0
				4			1.1	5.7	4.1	11.92	13.56	5.11	2.91	0.45	0.00	0.45	33.95	98.7
				5			1.1	5.4	4.0	12.15	13.02	4.98	2.92	0.95	0.21	0.74	34.02	97.2
2				1	10 - 20	2nd	1.1	5.8	4.4	12.82	12.99	5.32	2.43	0.40	0.00	0.40	33.96	98.8
				2			1.1	5.7	4.3	12.39	13.09	5.28	2.43	0.46	0.00	0.46	33.65	98.6
				3			1.1	5.2	3.8	9.91	13.00	4.72	1.43	1.67	0.99	0.68	30.73	94.6
				4			1.1	5.1	3.6	7.56	12.35	4.70	2.44	3.54	2.89	0.65	30.59	88.4
				5			1.1	5.3	3.8	8.57	13.68	4.82	2.43	1.37	0.69	0.68	30.87	95.6
3	Mt. Makiling, Los Baños, Laguna	Eutric Cambisol	2	1	0 - 10	2nd	1.1	6.7	5.4	22.69	10.79	6.10	3.88	0.18	0.00	0.18	43.64	99.6
				2			1.1	6.8	5.3	23.50	10.03	5.77	4.39	0.18	0.00	0.18	43.87	99.6
				3			1.1	6.7	5.2	21.83	10.90	5.99	5.09	0.18	0.00	0.18	43.99	99.6
				4			1.1	6.6	5.1	21.40	12.04	6.15	5.14	0.18	0.00	0.18	44.91	99.6
				5			1.1	6.6	5.2	21.82	11.42	6.06	5.12	0.18	0.00	0.18	44.60	99.6
4				1	10 - 20	2nd	1.1	6.8	5.4	19.86	11.27	5.97	3.64	0.18	0.00	0.18	40.92	99.6
				2			1.1	6.7	5.1	19.94	10.54	5.55	3.87	0.18	0.00	0.18	40.08	99.6
				3			1.1	6.7	5.0	19.03	11.61	5.86	4.86	0.18	0.00	0.18	41.54	99.6
				4			1.1	6.5	4.7	17.51	12.20	5.69	4.86	0.18	0.00	0.18	40.44	99.6
				5			1.1	6.5	4.9	18.53	11.88	5.63	5.12	0.18	0.00	0.18	41.34	99.6

**Table 5.4 a-2-1) Soil chemical analysis: Los Banos-2-1**

Sampling date: 10 Mar 2005

Name of analysis laboratory: Department of Soil Science,UPLB

Sample No.	Location	Soil type	Plot No.	Subplot No.	Layer analyzed (cm)	Repeat* analysis	Moisture content (wt %)	pH		Exchangeable basecations				Ex-acidity	Ex-acid cations		ECEC	Base saturatio %
								H <sub>2</sub> O	KCl	Ca	Mg	K	Na		Al	H		
1	UP Quezon - Laguna Land Grant	Dystric Nitosol	1	1	0 - 10	1st	1.1	4.2	3.6	0.17	0.48	0.39	0.34	5.63	4.62	1.01	7.01	19.7
				2			1.1	4.2	3.7	0.06	0.38	0.37	0.33	5.41	4.50	0.91	6.55	17.4
				3			1.1	4.2	3.7	0.11	0.48	0.42	0.37	4.95	4.17	0.78	6.33	21.8
				4			1.1	4.3	3.7	0.15	0.51	0.34	0.34	4.56	3.77	0.79	5.90	22.7
				5			1.1	4.2	3.6	0.16	0.56	0.41	0.37	5.04	4.14	0.90	6.54	22.9
2				10 - 20	1		1.1	4.2	3.7	0.13	0.31	0.28	0.29	5.10	3.91	1.19	6.11	16.5
					2		1.1	4.2	3.7	0.10	0.31	0.30	0.33	4.53	3.85	0.68	5.57	18.7
					3		1.1	4.2	3.7	0.09	0.34	0.31	0.36	4.29	3.64	0.65	5.39	20.4
					4		1.1	4.4	3.8	0.11	0.39	0.27	0.30	4.28	3.64	0.64	5.35	20.0
					5		1.1	4.3	3.7	0.12	0.44	0.28	0.31	4.54	3.89	0.65	5.69	20.2
3			2	1	1.1	4.2	3.6	0.10	0.53	0.32	0.32	7.19	6.23	0.96	8.46	15.0		
				2	1.1	4.2	3.6	0.09	0.44	0.31	0.32	7.67	6.62	1.05	8.83	13.1		
				3	1.1	4.3	3.6	0.13	0.55	0.33	0.37	6.37	5.50	0.87	7.75	17.8		
				4	1.1	4.2	3.6	0.13	0.49	0.29	0.34	6.55	5.75	0.80	7.80	16.0		
				5	1.1	4.2	3.6	0.09	0.54	0.28	0.31	6.91	6.00	0.91	8.13	15.0		
4				10 - 20	1	1.1	4.3	3.6	0.08	0.41	0.25	0.28	6.51	5.75	0.76	7.53	13.5	
					2	1.1	4.2	3.6	0.11	0.40	0.26	0.32	6.96	6.10	0.86	8.05	13.5	
					3	1.1	4.4	3.6	0.08	0.35	0.23	0.30	5.16	4.47	0.69	6.12	15.7	
					4	1.1	4.3	3.6	0.10	0.40	0.23	0.31	6.17	5.59	0.58	7.21	14.4	
					5	1.1	4.3	3.6	0.07	0.44	0.23	0.28	6.04	5.38	0.66	7.06	14.4	

**Table 5.4 a-2-2) Soil chemical analysis: Los Banos-2-2**

Sampling date: 10 Mar 2005

Name of analysis laboratory: Department of Soil Science,UPLB

Sample No.	Location	Soil type	Plot No.	Subplot No.	Layer analyzed (cm)	Repeat* analysis	Moisture content (wt %)	pH		Exchangeable basecations				Ex-acidity	Ex-acid cations		ECEC	Base saturatio %
								H <sub>2</sub> O	KCl	Ca	Mg	K	Na		Al	H		
1	UP Quezon - Laguna Land Grant	Dystric Nitosol	1	1	0 - 10	2nd	1.1	4.2	3.6	0.17	0.48	0.39	0.35	5.63	4.62	1.01	7.02	19.8
				2			1.1	4.2	3.7	0.06	0.47	0.37	0.33	5.41	4.50	0.91	6.64	18.5
				3			1.1	4.2	3.7	0.11	0.48	0.41	0.37	4.95	4.17	0.78	6.32	21.7
				4			1.1	4.3	3.7	0.15	0.51	0.36	0.34	4.56	3.77	0.79	5.92	23.0
				5			1.1	4.2	3.6	0.16	0.47	0.41	0.36	5.04	4.14	0.90	6.44	21.7
2			10 - 20	2nd	1	1.1	4.2	3.7	0.13	0.31	0.28	0.29	5.10	3.91	1.19	6.11	16.5	
					2	1.1	4.2	3.7	0.10	0.35	0.30	0.33	4.53	3.85	0.68	5.61	19.3	
					3	1.1	4.2	3.7	0.09	0.34	0.30	0.36	4.29	3.64	0.65	5.38	20.3	
					4	1.1	4.4	3.8	0.11	0.39	0.27	0.30	4.28	3.64	0.64	5.35	20.0	
					5	1.1	4.3	3.7	0.12	0.40	0.28	0.31	4.54	3.89	0.65	5.65	19.6	
3	0 - 10	2nd	1	1.1	4.2	3.6	0.10	0.53	0.32	0.32	7.19	6.23	0.96	8.46	15.0			
			2	1.1	4.2	3.6	0.09	0.50	0.31	0.32	7.67	6.62	1.05	8.89	13.7			
			3	1.1	4.3	3.6	0.13	0.51	0.33	0.37	6.37	5.50	0.87	7.71	17.4			
			4	1.1	4.2	3.6	0.13	0.49	0.29	0.34	6.55	5.75	0.80	7.80	16.0			
			5	1.1	4.2	3.6	0.09	0.52	0.28	0.31	6.91	6.00	0.91	8.11	14.8			
4	10 - 20	2nd	1	1.1	4.3	3.6	0.08	0.41	0.25	0.28	6.51	5.75	0.76	7.53	13.5			
			2	1.1	4.2	3.6	0.11	0.38	0.26	0.32	6.96	6.10	0.86	8.03	13.3			
			3	1.1	4.4	3.6	0.08	0.40	0.23	0.30	5.16	4.47	0.69	6.17	16.4			
			4	1.1	4.3	3.6	0.10	0.39	0.23	0.31	6.17	5.59	0.58	7.20	14.3			
			5	1.1	4.3	3.6	0.07	0.42	0.23	0.28	6.04	5.38	0.66	7.04	14.2			



**Table 5.4 b) Soil chemical analysis: Mt. Naejang (Republic of Korea)**

Sampling date: 16 Dec 2004

Name of analysis laboratory: Soil Environmental Division, National Institute of Environmental Research

Sample No.	Location	Soil type	Plot No.	Sub-plot No.	Layer analyzed (cm)	Moisture content (wt%)	pH		Exchangeable base cations				Ex-acidity	Ex-acid cations		ECEC	Base saturation
							H <sub>2</sub> O	KCl	Ca	Mg	K	Na	Al	H	%		
							(cmol(+)kg <sup>-1</sup> )										
Mt. Naejang			1	1	0-10	1.74	5.0	4.2	0.25	0.08	0.18	0.02	4.39	2.75	0.38	3.66	14.5
				2		1.98	4.9	4.0	0.27	0.10	0.12	0.04	5.60	3.91	0.33	4.77	11.1
				3		2.02	4.8	4.0	0.41	0.12	0.11	0.06	5.76	4.15	0.46	5.31	13.2
				4		2.06	4.7	4.0	0.38	0.12	0.08	0.02	5.68	3.91	0.40	4.91	12.2
				5		1.87	4.8	4.0	0.28	0.08	0.08	0.03	4.61	3.16	0.54	4.17	11.3
				1	10-20	1.5	4.7	4.1	0.10	0.05	0.06	0.06	3.76	2.67	0.07	3.01	9.0
				2		1.86	4.8	4.1	0.18	0.09	0.06	0.03	4.11	2.92	0.24	3.52	10.2
				3		1.8	4.7	4.1	0.07	0.04	0.06	0.04	4.41	3.26	0.24	3.71	5.7
				4		1.75	4.9	4.1	0.23	0.11	0.08	0.04	4.45	3.25	0.20	3.91	11.8
				5		1.85	5.0	4.2	0.14	0.05	0.09	0.02	3.73	2.88	0.20	3.38	8.9
Mt. Naejang			2	1	0-10	1.7	5.0	4.1	0.27	0.11	0.06	0.03	4.21	3.02	0.34	3.83	12.3
				2		2.08	4.9	4.1	0.17	0.06	0.08	0.03	5.14	3.47	0.50	4.31	7.9
				3		1.4	5.0	4.0	0.27	0.11	0.09	0.03	4.99	3.38	0.44	4.32	11.6
				4		1.86	4.9	3.9	0.24	0.07	0.12	0.03	5.43	3.84	0.37	4.67	9.9
				5		1.77	4.7	4.1	0.53	0.14	0.06	0.03	4.69	3.29	0.40	4.45	17.1
				1	10-20	1.61	4.9	4.2	0.11	0.06	0.06	0.02	3.69	2.68	0.18	3.11	8.0
				2		1.9	5.0	4.3	0.16	0.07	0.16	0.03	3.28	2.38	0.18	2.98	14.1
				3		1.91	5.0	4.1	0.27	0.13	0.09	0.01	4.94	3.74	0.23	4.47	11.2
				4		1.75	4.6	4.1	0.05	0.03	0.07	0.01	4.75	3.43	0.30	3.89	4.1
				5		1.74	4.7	4.1	0.25	0.08	0.05	0.01	3.55	2.71	0.20	3.30	11.8

Note: Repeat analyses were not reported.

Table 5.5 a-1) Description of trees: Los Banos-1

Name of Plot: Mt. Makiling

Date : 4 Feb 2005

Survey area 1: radius 7.98 m (Height &gt; 1.3 m)

Survey area 2: radius 11.28 m (DBH &gt; 4 cm)

Survey area 3: radius 17.85 m (DBH &gt; 18cm)

Serial No.	Species Name	DBH (cm)	Height (m)	Serial No.	Species Name	DBH (cm)	Height (m)	Serial No.	Species Name	DBH (cm)	Height (m)
1	<i>Celtis luzonica</i>	7.5	7.2	081*	<i>Nephelium ramboutan-ake</i>	Cut	Cut	109	<i>Turpinia ovalifolia</i>	45.3	20.0
2	<i>Palaquium foxworthyi</i>	4.6	4.5	82	<i>Diplodiscus paniculatus</i>	7.2	6.8	110	<i>Pterocymbium tinctorium</i>	31.0	20.8
3	<i>Chisocheton pentandrus</i> ssp. <i>pentandrus</i>	12.3	11.2	83	<i>Knema glomerata</i>	8.0	7.8	111	<i>Gomphandra</i> spp.	28.0	17.5
4	<i>Diplodiscus paniculatus</i>	4.5	13.5	84	<i>Diplodiscus paniculatus</i>	9.3	8.9	112	<i>Celtis luzonica</i>	30.2	15.2
5	<i>Celtis luzonica</i>	3.4	3.8	85	<i>Psychotria luzoniensis</i>	17.2	10.6	113	<i>Pterocymbium tinctorium</i>	50.8	19.0
6	<i>Myristica philippinensis</i>	4.4	4.4	86	<i>Chisocheton pentandrus</i> ssp. <i>pentandrus</i>	24.2	12.9	114	<i>Dysoxylum arborescens</i>	24.8	15.0
7	<i>Celtis luzonica</i>	8.8	9.8	87	<i>Duguan Myristica philippinensis</i>	18.5	14.5	115	<i>Parashorea malaanonan</i>	42.0	39.3
8	<i>Parashorea malaanonan</i>	4.8	4.8	88	<i>Nephelium ramboutan-ake</i>	12.3	10.6	116	<i>Diplodiscus paniculatus</i>	53.2	21.9
9	<i>Diplodiscus paniculatus</i>	Dead	Dead	89	<i>Parashorea malaanonan</i>	7.1	6.1	117	<i>Litsea garciae</i>	81.0	26.6
10	<i>Parashorea malaanonan</i>	3.7	3.7	90	<i>Nephelium ramboutan-ake</i>	Topped	Topped	118	<i>Parashorea malaanonan</i>	22.6	13.7
11	<i>Celtis luzonica</i> Warb.	3.4	4.3	91	<i>Lagerstroemia speciosa</i>	11.4	7.2	119	<i>Turpinia ovalifolia</i>	32.2	14.9
12	<i>Dysoxylum arborescens</i>	2.2	4.0	92	<i>Palaquium foxworthyi</i>	5.1	4.7	120	<i>Parashorea malaanonan</i>	51.0	25.7
13	<i>Diospyrus philippinensis</i>	2.0	2.5	93	<i>Diplodiscus paniculatus</i>	10.5	9.0	121	<i>Solenospermum toxicum</i>	110.0	21.4
14	<i>Casearia fuliginosa</i>	15.5	14.4	94	<i>Celtis luzonica</i>	5.3	4.8	122	<i>Knema glomerata</i>	18.4	11.4
15	<i>Celtis luzonica</i>	3.2	4.1	95	<i>Alangium meyeri</i>	9.0	5.9	123	<i>Parashorea malaanonan</i>	40.0	20.7
16	<i>Drypetes maquilengensis</i>	1.6	2.8	96	<i>Pseudo pinanga</i>	14.3	15.6	124	<i>Kingiodendron alternifolium</i>	100.0	15.5
17	<i>Dracontomelon dao</i>	11.5	12.8	97	<i>Parashorea malaanonan</i>	5.1	5.2	125	<i>Diplodiscus paniculatus</i>	21.4	13.0
18	<i>Drypetes maquilengensis</i>	1.3	2.6	98	<i>Pterocymbium tinctorium</i>	7.1	4.8	126	<i>Planchonia spectabilis</i>	24.6	17.6
19	<i>Celtis luzonica</i>	3.8	2.8	99	<i>Nephelium ramboutan-ake</i>	Topped	Topped	127	<i>Celtis luzonica</i>	46.6	21.9
20	<i>Celtis luzonica</i>	7.8	6.6	100	<i>Litsea garciae</i>	50.3	17.1	128	<i>Celtis luzonica</i>	53.0	21.6
21	<i>Coffea arabica</i>	2.2	4.9	101	<i>Dendrocnide meyeniana</i>	7.9	7.2	129	<i>Diplodiscus paniculatus</i>	32.2	21.7
22	<i>Diplodiscus paniculatus</i>	37.4	15.9	102	<i>Celtis luzonica</i>	5.0	6.1	130	<i>Sterculia montana</i>	49.0	23.8
23	<i>Celtis luzonica</i>	7.7	8.2	103	<i>Cynometra ramiflora</i>	4.5	5.1	Note: Trees within the survey area 2 were omitted.			
24	<i>Celtis luzonica</i>	1.8	4.2	104	<i>Diplodiscus paniculatus</i>	22.2	14.3				
25	<i>Celtis luzonica</i>	1.7	8.0	105	<i>Leea philippinensis</i>	Dead	Dead	Note: Trees within the survey area 1 were omitted.			
26	<i>Knema glomerata</i>	11.2	7.3	106	<i>Celtis luzonica</i>	34.1	19.2				
27	<i>Drypetes maquilengensis</i>	Dead	Dead	107	<i>Celtis luzonica</i>	5.6	6.0	Survey area 1: continued			
28	<i>Neotrewia cumingii</i>	Dead	Dead	108	<i>Voacanga globosa</i>	Dead	Dead				
29	<i>Strombosia philippinensis</i>	2.4	3.1	Note: Trees within the survey area 1 were omitted.							
30	<i>Diplodiscus paniculatus</i>	2.5	2.1								
31	<i>Dimorphocalyx luzoniensis</i>	1.3	2.2	Survey area 1: continued							
32	<i>Celtis luzonica</i>	0.8	3.3								
33	<i>Radermachera pinnata</i> ssp. <i>pinnata</i>	2.0	2.5	57	<i>Coffea arabica</i>	2.6	4.3	Note: Dead/cut/overtopped trees were damaged by strong winds when a typhoon passed through the area last December 2004.			
34	<i>Micromelum compressum</i>	1.2	2.2	58	<i>Drypetes maquilengensis</i>	2.0	3.8				
35	<i>Drypetes maquilengensis</i>	1.2	2.5	59	<i>Neotrewia cumingii</i>	5.8	5.0	Note: Dead/cut/overtopped trees were damaged by strong winds when a typhoon passed through the area last December 2004.			
36	<i>Syzygium calubcob</i>	1.5	3.3	60	<i>Coffea arabica</i>	2.1	3.5				
37	<i>Strombosia philippinensis</i>	1.0	3.0	61	<i>Coffea arabica</i>	1.3	3.5	Note: Dead/cut/overtopped trees were damaged by strong winds when a typhoon passed through the area last December 2004.			
38	<i>Celtis luzonica</i>	9.2	7.8	62	<i>Drypetes maquilengensis</i>	2.2	3.5				
39	<i>Parashorea malaanonan</i>	3.4	1.65 (cut)	63	<i>Syzygium nitidum</i>	19.5	12.8	Note: Dead/cut/overtopped trees were damaged by strong winds when a typhoon passed through the area last December 2004.			
40	<i>Ficus congesta</i>	Dead	Dead	64	<i>Knema glomerata</i>	Cut	Cut				
41	<i>Aglaiia edulis</i>	2.5	3.4	65	<i>Dysoxylum arborescens</i>	4.1	4.4	Note: Dead/cut/overtopped trees were damaged by strong winds when a typhoon passed through the area last December 2004.			
42	<i>Alangium meyeri</i>	7.1	6.4	66	<i>Celtis luzonica</i>	1.8	2.8				
43	<i>Parashorea malaanonan</i>	1.2	2.9	67	<i>Diplodiscus paniculatus</i>	1.2	2.5	Note: Dead/cut/overtopped trees were damaged by strong winds when a typhoon passed through the area last December 2004.			
44	<i>Dysoxylum arborescens</i>	3.6	3.2	68	<i>Camelia lanceolata</i>	6.6	5.3				
45	<i>Celtis luzonica</i>	2.0	3.4	69	<i>Camelia lanceolata</i>	4.2	5.5	Note: Dead/cut/overtopped trees were damaged by strong winds when a typhoon passed through the area last December 2004.			
46	<i>Celtis luzonica</i>	2.6	3.6	70	<i>Neolitsea vidalii</i>	8.3	8.2				
47	<i>Dillenia philippinensis</i>	6.4	5.3	71	<i>Celtis luzonica</i>	2.7	3.8	Note: Dead/cut/overtopped trees were damaged by strong winds when a typhoon passed through the area last December 2004.			
48	<i>Celtis luzonica</i>	2.2	4.2	72	<i>Pisonia umbellifera</i>	30.7	12.3				
49	<i>Parashorea malaanonan</i>	5.5	4.6	73	<i>Celtis luzonica</i>	3.1	3.8	Note: Dead/cut/overtopped trees were damaged by strong winds when a typhoon passed through the area last December 2004.			
50	<i>Alangium meyeri</i>	5.0	4.0	74	<i>Pseudo pinanga</i>	9.0	4.6				
51	<i>Aglaiia edulis</i>	3.1	3.1	75	<i>Dysoxylum arborescens</i>	2.0	2.9	Note: Dead/cut/overtopped trees were damaged by strong winds when a typhoon passed through the area last December 2004.			
52	<i>Drypetes maquilengensis</i>	2.5	2.9	76	<i>Parashorea malaanonan</i>	3.8	4.2				
53	<i>Syzygium curranii</i>	47.0	16.9	77	<i>Diplodiscus paniculatus</i>	2.8	3.9	Note: Dead/cut/overtopped trees were damaged by strong winds when a typhoon passed through the area last December 2004.			
54	<i>Nephelium ramboutan-ake</i>	18.0	10.6	78	<i>Pseudo pinanga</i>	8.7	3.6				
55	<i>Pisonia umbellifera</i>	30.7	10.4	79	<i>Nephelium ramboutan-ake</i>	9.1	11.3	Note: Dead/cut/overtopped trees were damaged by strong winds when a typhoon passed through the area last December 2004.			
56	<i>Coffea arabica</i>	2.1	4.0	80	<i>Dysoxylum arborescens</i>	2.5	3.6				

Note: Dead/cut/overtopped trees were damaged by strong winds when a typhoon passed through the area last December 2004.

Table 5.5 a-2) Description of trees: Los Banos-2

Name of Plot: UP Quezon-Laguna Land Grant

Date : 11 Feb 2005

Survey area 1: radius 7.98 m (Height &gt; 1.3 m)

Survey area 2: radius 11.28 m (DBH &gt; 4 cm)

Survey area 3: radius 17.85 m (DBH &gt; 18cm)

Serial No.	Species Name	DBH (cm)	Height (m)	Serial No.	Species Name	DBH (cm)	Height (m)	Serial No.	Species Name	DBH (cm)	Height (m)
1	<i>Pterocarpus indicus</i>	17.2	9.4	56	<i>Macaranga bicolor</i>	11.3	5.0	90	<i>Baccaurea philippinensis</i>	28.4	13.5
2	<i>Pterocarpus indicus</i>	11.3	6.2	57	<i>Trichadenia philippinensis</i> <i>/Broussonetia papyrifera</i>	Uprooted	Uprooted	91	<i>Lüchi chinensis</i> spp. <i>philippinensis</i>	22.8	11.7
3	<i>Syzygium nitidum</i>	Cut	Cut	58	<i>Dimocarpus longan</i> ssp. <i>malesianus</i> var. <i>malesianus</i>	6.2	5.9	92	<i>Paraserianthes falcataria</i>	24.2	11.7
4	<i>Buchanania arborescens</i>	Cut	Cut	59	<i>Pterocarpus indicus</i>	6.8	5.6	Note: Trees within the survey area 2 were omitted.			
5	<i>Hopea foxworthyi</i>	7.3	5.0	60	<i>Beilschmiedia glomerata</i>	4.5	4.1				
6	<i>Sandoricum dubium</i>	6.8	6.1	61	Unidentified	Uprooted	Uprooted	Note: Trees within the survey area 1 were omitted.			
7	<i>Vitex parviflora</i>	8.2	6.2	62	<i>Baccaurea philippinensis</i>	4.1	3.6				
8	<i>Syzygium decipiens</i>	8.5	5.9	63	<i>Polyscias nodosa</i>	Cut	Cut	Note: Trees within the survey area 1 were omitted.			
9	<i>Syzygium striatulum</i>	11.5	9.0	64	<i>Polyscias nodosa</i>	Cut	Cut				
10	<i>Buchanania arborescens</i>	12.3	9.1	65	<i>Artocarpus rubrovenius</i>	8.0	5.2	Note: Trees within the survey area 1 were omitted.			
11	<i>Dimocarpus longan</i> ssp. <i>malesianus</i> var. <i>echinatus</i>	7.8	4.2	66	<i>Delonix regia</i>	22.1	11.5				
12	<i>Hopea foxworthyi</i>	4.2	5.7	67	<i>Pay-at</i>	10.1	7.8	Note: Trees within the survey area 1 were omitted.			
13	<i>Baccaurea philippinensis</i>	9.1	8.0	68	<i>Ficus callosa</i>	Uprooted	Uprooted				
14	<i>Ficus cumingii</i> var. <i>terminalifolia</i>	6.3	5.2	69	<i>Pterocarpus indicus</i>	14.0	9.1	Note: Trees within the survey area 1 were omitted.			
15	<i>Microcos stylocarpa</i>	6.4	6.2	70	<i>Artocarpus rubrovenius</i>	9.4	6.2				
16	<i>Pandanus</i> spp.	Cut	Cut	71	<i>Dipterocarpus philippinensis</i>	6.4	6.3	Note: Trees within the survey area 1 were omitted.			
17	<i>Xanthophyllum flavescens</i>	4.6	4.1	72	<i>Pandanaceae</i> spp.	9.2	4.6				
18	<i>Cryptocaria glauca</i>	7.5	5.3	73	<i>Ficus callosa</i>	Cut	Cut	Note: Trees within the survey area 1 were omitted.			
19	<i>Neonauclea puberula</i>	3.6	4.2	74	<i>Pterocarpus indicus</i>	6.4	9.9				
20	<i>Syzygium brevistylum</i>	5.3	4.3	75	<i>Ficus congesta</i> var. <i>congesta</i>	8.5	7.1	Note: Trees within the survey area 1 were omitted.			
21	<i>Macaranga bicolor</i>	9.1	6.8	76	<i>Pterocarpus indicus</i>	7.7	8.1				
22	<i>Baccaurea philippinensis</i>	5.2	4.0	77	<i>Acacia mangium</i>	Cut	Cut	Note: Trees within the survey area 1 were omitted.			
23	<i>Pterocarpus indicus</i>	Uprooted	Uprooted	78	<i>Pterocarpus indicus</i>	12.7	7.2				
24	<i>Cinnamomum mercadoi</i>	6.8	5.4	79	<i>Artocarpus blancoi</i>	6.0	7.7	Note: Trees within the survey area 1 were omitted.			
25	<i>Canarium vrieseanum</i> forma <i>stenophyllum</i>	8.7	5.0	80	<i>Pterocarpus indicus</i>	17.5	8.5				
26	<i>Ficus callosa</i>	7.2	6.1	81	<i>Calophyllum inophyllum</i>	Cut	Cut	Note: Trees within the survey area 1 were omitted.			
27	<i>Ficus callosa</i>	8.0	6.0	82	<i>Macaranga bicolor</i>	13.0	4.6				
28	<i>Baccaurea philippinensis</i>	Uprooted	Uprooted	83	<i>Antidesma catanduanense</i>	9.9	7.4	Note: Trees within the survey area 1 were omitted.			
29	<i>Cratoxylum sumatranum</i> ssp. <i>sumatranum</i>	5.0	5.4	84	<i>Palagium merrillii</i>	Uprooted	Uprooted				
30	<i>Cinnamomum mercadoi</i>	Uprooted	Uprooted	85	<i>Microcos stylocarpa</i>	Uprooted	Uprooted	Note: Trees within the survey area 1 were omitted.			
31	<i>Baccaurea philippinensis</i>	4.8	4.3	86	<i>Ficus callosa</i>	7.6	5.5				
32	<i>Mallotus korthalsii</i>	13.1	5.7	87	<i>Mallotus korthalsii</i>	11.0	8.1	Note: Trees within the survey area 1 were omitted.			
33	<i>Syzygium striatulum</i>	7.5	5.5	88	<i>Ficus ampelas</i>	Cut	Cut				
34	<i>Nauclea orientalis</i>	5.6	4.8	89	<i>Ficus ampelas</i>	Cut	Cut	Note: Trees within the survey area 1 were omitted.			
35	<i>Nauclea orientalis</i>	5.2	4.7								
36	<i>Diospyros pilosanthera</i> var. <i>philosanthera</i>	3.1	4.4					Note: Trees within the survey area 1 were omitted.			
37	<i>Ficus nota</i>	Uprooted	Uprooted								
38	<i>Baccaurea philippinensis</i>	6.8	5.3					Note: Trees within the survey area 1 were omitted.			
39	<i>Guioa myriadenia</i>	6.2	5.5								
40	<i>Aglaiia</i> spp.	Uprooted	Uprooted					Note: Trees within the survey area 1 were omitted.			
41	<i>Broussonetia papyrifera</i>	8.3	7.3								
42	<i>Hopea foxworthyi</i>	Cut	Cut					Note: Trees within the survey area 1 were omitted.			
43	<i>Hopea foxworthyi</i>	Cut	Cut								
44	Mangkunai	Uprooted	Uprooted					Note: Trees within the survey area 1 were omitted.			
45	<i>Solanum erianthum</i>	Uprooted	Uprooted								
46	<i>Dipterocarpus philippinensis</i>	9.1	6.7					Note: Trees within the survey area 1 were omitted.			
47	<i>Elaeocarpus candollei</i>	3.3	4.2								
48	<i>Cratoxylum formosum</i>	3.6	4.5					Note: Trees within the survey area 1 were omitted.			
49	<i>Ficus callosa</i>	5.1	6.7								
50	<i>Ficus callosa</i>	8.6	5.7					Note: Trees within the survey area 1 were omitted.			
51	<i>Cratoxylum formosum</i>	Uprooted	Uprooted								
52	mangkunai	5.9	4.9					Note: Trees within the survey area 1 were omitted.			
53	<i>Dipterocarpus philippinensis</i>	13.0	6.7								
54	<i>Macaranga bicolor</i>	5.0	5.7					Note: Trees within the survey area 1 were omitted.			
55	<i>Mangifera altissima</i>	10.4	6.2								

Note: The trees marked cut and/or uprooted were damaged during the heavy typhoon that visited the area last December 2004.

Table 5.5 b) Description of trees: Mt. Naejang

Name of Plot: Mt. Naejang

Date : 30 Jul - 1 Aug 2004

Survey area 2 (nested quadrat; 20 \* 20m<sup>2</sup>): DBH > 4cm

Survey area 3 (nested quadrat; 30 \* 30m<sup>2</sup>): DBH > 18cm

Serial No.	Species Name	DBH(cm)	Height(m)	Survey area 2: continued				Serial No.	Species Name	DBH(cm)	Height(m)
1	<i>Pinus densiflora</i>	20	13	70	<i>Styrax japonica</i>	5.0	8.0	1	<i>Pinus densiflora</i>	20	11
2	<i>Pinus densiflora</i>	17	11	71	<i>Styrax japonica</i>	6.0	8.0	2	<i>Pinus densiflora</i>	18	11
3	<i>Pinus densiflora</i>	34	13	72	<i>Styrax japonica</i>	10.0	9.0	3	<i>Pinus densiflora</i>	18	14
4	<i>Pinus densiflora</i>	9	11	73	<i>Styrax japonica</i>	11.0	10.0	4	<i>Pinus densiflora</i>	20	11
5	<i>Pinus densiflora</i>	21	13	74	<i>Styrax japonica</i>	5.0	8.0	5	<i>Pinus densiflora</i>	19	11
6	<i>Pinus densiflora</i>	16	13	75	<i>Styrax japonica</i>	5.0	7.0	6	<i>Pinus densiflora</i>	20	12
7	<i>Pinus densiflora</i>	28	15	76	<i>Styrax japonica</i>	5.0	8.0	7	<i>Pinus densiflora</i>	20	10
8	<i>Pinus densiflora</i>	23	14	77	<i>Styrax japonica</i>	4.0	7.0	8	<i>Pinus densiflora</i>	21	13
9	<i>Pinus densiflora</i>	27	14	78	<i>Prunus maximowiczii</i>	8.0	7.0	9	<i>Pinus densiflora</i>	20	13
10	<i>Pinus densiflora</i>	19	12	79	<i>Prunus maximowiczii</i>	5.0	10.0	10	<i>Pinus densiflora</i>	21	10
11	<i>Pinus densiflora</i>	28	12	80	<i>Prunus maximowiczii</i>	8.0	7.0	11	<i>Pinus densiflora</i>	21	11
12	<i>Pinus densiflora</i>	31	15	81	<i>Prunus maximowiczii</i>	8.0	8.0	12	<i>Pinus densiflora</i>	21	12
13	<i>Pinus densiflora</i>	19	11	82	<i>Prunus maximowiczii</i>	5.0	6.0	13	<i>Pinus densiflora</i>	20	8
14	<i>Pinus densiflora</i>	27	15	83	<i>Prunus maximowiczii</i>	5.0	4.0	14	<i>Pinus densiflora</i>	23	14
15	<i>Pinus densiflora</i>	16	11	84	<i>Prunus maximowiczii</i>	8.0	8.0	15	<i>Pinus densiflora</i>	24	11
16	<i>Pinus densiflora</i>	38	12	85	<i>Prunus maximowiczii</i>	6.0	5.0	16	<i>Pinus densiflora</i>	23	14
17	<i>Pinus densiflora</i>	30	14	86	<i>Prunus maximowiczii</i>	7.0	6.0	17	<i>Pinus densiflora</i>	25	13
18	<i>Pinus densiflora</i>	14	11	87	<i>Prunus maximowiczii</i>	9.0	8.0	18	<i>Pinus densiflora</i>	23	12
19	<i>Pinus densiflora</i>	14	11	88	<i>Prunus maximowiczii</i>	5.0	10.0	19	<i>Pinus densiflora</i>	24	13
20	<i>Pinus densiflora</i>	20	11	89	<i>Platycarya strobilacea</i>	13.0	9.0	20	<i>Pinus densiflora</i>	27	12
21	<i>Pinus densiflora</i>	27	12	90	<i>Platycarya strobilacea</i>	5.0	6.0	21	<i>Pinus densiflora</i>	25	12
22	<i>Pinus densiflora</i>	29	10	91	<i>Platycarya strobilacea</i>	6.0	4.0	22	<i>Pinus densiflora</i>	25	12
23	<i>Pinus densiflora</i>	18	11	92	<i>Albizia julibrissin</i>	11.0	8.0	23	<i>Pinus densiflora</i>	25	11
24	<i>Pinus densiflora</i>	27	11	93	<i>Albizia julibrissin</i>	11.0	9.0	24	<i>Pinus densiflora</i>	24	15
25	<i>Pinus densiflora</i>	30	9	94	<i>Albizia julibrissin</i>	13.0	8.0	25	<i>Pinus densiflora</i>	24	11
26	<i>Pinus densiflora</i>	30	11	95	<i>Carpinus tschonoskii</i>	13.0	12.0	26	<i>Pinus densiflora</i>	25	12
27	<i>Pinus densiflora</i>	28	11	96	<i>Carpinus tschonoskii</i>	7.0	8.0	27	<i>Pinus densiflora</i>	27	15
28	<i>Pinus densiflora</i>	21	11	97	<i>Juniperus rigida</i>	4.0	6.0	28	<i>Pinus densiflora</i>	27	15
29	<i>Pinus densiflora</i>	25	11	98	<i>Quercus serrata</i>	4.0	6.0	29	<i>Pinus densiflora</i>	27	11
30	<i>Pinus densiflora</i>	25	13	99	<i>Pyrus sp.</i>	7.0	6.0	30	<i>Pinus densiflora</i>	27	16
31	<i>Pinus densiflora</i>	14	12	100	<i>Sorbus alnifolia</i>	4.0	6.0	31	<i>Pinus densiflora</i>	26	11
32	<i>Pinus densiflora</i>	37	13					32	<i>Pinus densiflora</i>	27	14
33	<i>Pinus rigida</i>	16	12					33	<i>Pinus densiflora</i>	28	15
34	<i>Pinus rigida</i>	17	13					34	<i>Pinus densiflora</i>	27	14
35	<i>Pinus rigida</i>	15	11					35	<i>Pinus densiflora</i>	28	14
36	<i>Pinus rigida</i>	14	12					36	<i>Pinus densiflora</i>	28	12
37	<i>Pinus rigida</i>	9	10					37	<i>Pinus densiflora</i>	30	11
38	<i>Pinus rigida</i>	15	12					38	<i>Pinus densiflora</i>	30	13
39	<i>Pinus rigida</i>	14	10					39	<i>Pinus densiflora</i>	28	11
40	<i>Pinus rigida</i>	16	10					40	<i>Pinus densiflora</i>	30	9
41	<i>Pinus rigida</i>	13	10					41	<i>Pinus densiflora</i>	30	13
42	<i>Pinus rigida</i>	26	14					42	<i>Pinus densiflora</i>	30	13
43	<i>Pinus rigida</i>	23	15					43	<i>Pinus densiflora</i>	29	10
44	<i>Styrax japonica</i>	10	8					44	<i>Pinus densiflora</i>	31	16
45	<i>Styrax japonica</i>	4	5					45	<i>Pinus densiflora</i>	30	14
46	<i>Styrax japonica</i>	6	5					46	<i>Pinus densiflora</i>	31	14
47	<i>Styrax japonica</i>	5	7					47	<i>Pinus densiflora</i>	32	12
48	<i>Styrax japonica</i>	5	7					48	<i>Pinus densiflora</i>	31	11
49	<i>Styrax japonica</i>	5	7					49	<i>Pinus densiflora</i>	31	15
50	<i>Styrax japonica</i>	5	6					50	<i>Pinus densiflora</i>	33	14
51	<i>Styrax japonica</i>	5	8					51	<i>Pinus densiflora</i>	34	13
52	<i>Styrax japonica</i>	4	7					52	<i>Pinus densiflora</i>	35	15
53	<i>Styrax japonica</i>	5	7					53	<i>Pinus densiflora</i>	37	11
54	<i>Styrax japonica</i>	5	7					54	<i>Pinus densiflora</i>	35	11
55	<i>Styrax japonica</i>	5	7					55	<i>Pinus densiflora</i>	35	14
56	<i>Styrax japonica</i>	5	4					56	<i>Pinus densiflora</i>	34	12
57	<i>Styrax japonica</i>	7	9					57	<i>Pinus densiflora</i>	38	12
58	<i>Styrax japonica</i>	6	8					58	<i>Pinus densiflora</i>	39	14
59	<i>Styrax japonica</i>	5	8					59	<i>Pinus densiflora</i>	38	12
60	<i>Styrax japonica</i>	7	9					60	<i>Pinus densiflora</i>	37	13
61	<i>Styrax japonica</i>	8	9					61	<i>Pinus densiflora</i>	39	12
62	<i>Styrax japonica</i>	5	5					62	<i>Pinus densiflora</i>	19	12
63	<i>Styrax japonica</i>	5	10					63	<i>Pinus densiflora</i>	19	11
64	<i>Styrax japonica</i>	5	5					64	<i>Pinus rigida</i>	18	11
65	<i>Styrax japonica</i>	4	6					65	<i>Pinus rigida</i>	19	12
66	<i>Styrax japonica</i>	5	7					66	<i>Pinus rigida</i>	21	14
67	<i>Styrax japonica</i>	6	8					67	<i>Pinus rigida</i>	23	15
68	<i>Styrax japonica</i>	5	7					68	<i>Pinus rigida</i>	26	14
69	<i>Styrax japonica</i>	5	7					69	<i>Pinus rigida</i>	21	12

Note: Plot shape was modified from three coaxial circles to three quadrates. Data of the survey area 1 (10 \* 10 m<sup>2</sup>) was not reported.

**Table 5.5 c) Description of trees: Mondy**

Name of Plot: Mondy  
 Date : 20 Jul 2004

**Survey area 1: radius 7.98 m  
 (Height > 1.3 m)**

**Survey area 2: radius 11.28 m  
 (DBH > 4 cm)**

**Survey area 3: radius 17.85 m  
 (DBH > 18cm)**

Serial No.	Species Name	DBH (cm)	Height (m)	Serial No.	Species Name	DBH (cm)	Height (m)	Serial No.	Species Name	DBH (cm)	Height (m)
1	<i>Larix sibirica</i>	1.3	1.5	40	<i>Larix</i>	20.4	10.5	No tree, whose DBH is larger than 18 cm, was found.			
2	<i>Larix sibirica</i>	4.3	3.4	41	<i>Larix</i>	7.6	3.4				
3	<i>Larix sibirica</i>	3.7	2.9	42	<i>Larix</i>	4.3	3.2				
4	<i>Larix sibirica</i>	17.5	10.3	43	<i>Larix</i>	4.5	3.2				
5	<i>Larix sibirica</i>	1.6	1.9	44	<i>Larix</i>	5.9	3.5				
6	<i>Larix sibirica</i>	1.9	3.5	45	<i>Larix</i>	8.8	6.2				
7	<i>Larix sibirica</i>	2.2	3.4	46	<i>Larix</i>	4.5	3.2				
8	<i>Larix sibirica</i>	2.0	3.1	47	<i>Larix</i>	5.7	3.4				
9	<i>Larix sibirica</i>	5.4	6.3	48	<i>Larix</i>	9.2	5.5				
10	<i>Larix sibirica</i>	2.1	2.5	49	<i>Larix</i>	7.5	4.4				
11	<i>Larix sibirica</i>	2.4	2.7	50	<i>Larix</i>	11.6	6.1				
12	<i>Larix sibirica</i>	2.4	2.9	51	<i>Larix</i>	8.8	5.6				
13	<i>Larix sibirica</i>	1.4	2.8	52	<i>Larix</i>	12.1	6.1				
14	<i>Larix sibirica</i>	3.7	5.2	53	<i>Larix</i>	8.0	3.5				
15	<i>Larix sibirica</i>	1.6	1.9	54	<i>Larix</i>	4.5	3.0				
16	<i>Larix sibirica</i>	15.3	7.6	55	<i>Larix</i>	5.4	4.5				
17	<i>Larix sibirica</i>	1.9	3.2	56	<i>Larix</i>	6.1	4.2				
18	<i>Larix sibirica</i>	5.9	4.2	57	<i>Larix</i>	4.5	3.5				
19	<i>Larix sibirica</i>	3.7	4.3	58	<i>Larix</i>	6.9	4.1				
20	<i>Larix sibirica</i>	8.1	6.1	59	<i>Larix</i>	7.3	4.5				
21	<i>Larix sibirica</i>	2.2	2.1	60	<i>Larix</i>	5.9	4.0				
22	<i>Larix sibirica</i>	7.5	5.1	61	<i>Larix</i>	5.4	3.8				
23	<i>Larix sibirica</i>	3.4	3.1	62	<i>Larix</i>	4.2	2.9				
24	<i>Larix sibirica</i>	4.3	3.2	Note: Trees within the survey area 1 were omitted.							
25	<i>Larix sibirica</i>	16.2	9.3								
26	<i>Larix sibirica</i>	1.9	2.0								
27	<i>Larix sibirica</i>	5.3	5.5								
28	<i>Larix sibirica</i>	1.9	1.9								
29	<i>Larix sibirica</i>	1.3	1.8								
30	<i>Larix sibirica</i>	2.9	2.6								
31	<i>Larix sibirica</i>	1.8	2.5								
32	<i>Larix sibirica</i>	1.8	1.8								
33	<i>Larix sibirica</i>	3.5	2.9								
34	<i>Larix sibirica</i>	1.1	1.8								
35	<i>Larix sibirica</i>	1.1	2.5								
36	<i>Larix sibirica</i>	1.6	1.9								
37	<i>Larix sibirica</i>	2.1	2.3								
38	<i>Larix sibirica</i>	9.4	4.2								
39	<i>Larix sibirica</i>	29.0	12.3								

**Table 5.6 a-1) Understory vegetation survey: Los Banos-1**

Name of Plot: Mt. Makiling

Date :4 Feb 2005

Number of Species: 32

Species Name	Dom.	Species Name	Dom.
<i>Callophyllum blancoi</i>	2	<i>Planchonella nitida</i>	0
<i>Diospyrus pyrrocarpa</i>	0	<i>Drypetes maquilingsis</i>	1
<i>Celtis luzonica</i>	3	<i>Syzygium curranii</i>	0
<i>Nephelium lappaceum</i> var. <i>pallens</i>	2	<i>Chisocheton pentandrus</i> ssp. <i>pentandrus</i>	0
<i>Aphanamixis polystachya</i>	1	<i>Knema glomerata</i>	0
<i>Palaquium foxworthyii</i>	0	<i>Beilschmiedia glomerata</i>	0
<i>Neotrewia cumingii</i>	0	<i>Litsea garciae</i>	0
<i>Alseodaphne malabonga</i>	0	<i>Syzygium xanthophyllum</i>	0
<i>Garcinia dulcis</i>	0	<i>Sterculia oblongata</i>	0
<i>Pterocymbium tinctorium</i>	0	<i>Pisonia umbellifera</i>	0
<i>Diplodiscus paniculatus</i>	0	<i>Planchonia spectabilis</i>	1
<i>Alangium javanicum</i> var. <i>jaheri</i>	0	<i>Parashorea malaanonan</i>	0
<i>Palaquium philippense</i>	0	<i>Dimorphocalyx luzoniensis</i>	0
<i>Coffea</i> spp.	0	<i>Diospyrus diepenhorstii</i>	0
<i>Aglaia edulis</i>	0	<i>Canarium luzonicum</i>	0
<i>Strombosia philippinensis</i>	0	<i>Swietenia macrophylla</i>	0

**Table 5.6 a-2) Understory vegetation survey: Los Banos-2**

Name of Plot: UP-Quezon-Laguna Land Grant

Date :11 Feb 2005

Number of Species: 18

Species Name	Dom.	Species Name	Dom.
<i>Diospyrus phylosanthera</i> var. <i>philosanthera</i>	1	<i>Elaeocarpus calomala</i>	+
<i>Neonauclea puberola</i>	0	<i>Microcos stylocarpa</i>	0
<i>Gnetum gnemon</i> var. <i>gnemon</i>	0	<i>Ardisia clementis</i>	0
<i>Callophyllum blancoi</i>	+	<i>Elaeocarpus candollei</i>	+
<i>Nauclea undulata</i>	+	<i>Lithocarpus budii</i>	+
<i>Syzygium subcaudatum</i>	0	<i>Antidesma angustifolium</i>	+
<i>Cryptocaria glauca</i>	+	<i>Mangkunai</i>	+
<i>Xanthophyllum flavescens</i>	0	<i>Glochidion album</i>	+
<i>Dimocarpus longan</i> ssp. <i>malesianus</i> var. <i>echinatus</i>	0	<i>Wikstroemia lanceolata</i>	+

**Table 5.6 b) Understory vegetation survey: Mt. Naejang**

Name of Plot: Mt. Naejang

Date :30 Jul - 1 Aug 2004

Number of Species:42

Species Name	Dom.	Species Name	Dom.
<i>Fraxinus sieboldiana</i>	3	<i>Acer pseudosieboldianum</i>	+
<i>Oplismenus undulatifolius</i>	3	<i>Vitis thunbergii</i> var. <i>sinuata</i>	+
<i>Lindera erythrocarpa</i>	1	<i>Parthenocissus tricuspidata</i>	+
<i>Rubus corchorifolius</i>	1	<i>Viola chaerophylloides</i>	+
<i>Pyrola japonica</i>	1	<i>Viola keiskei</i>	+
<i>Syneilesis palmata</i>	1	<i>Viola rossii</i>	+
<i>Artemisia keiskeana</i>	1	<i>Prunus maximowiczii</i>	+
<i>Disporum smilacinum</i>	2	<i>Symplocos chinensis</i> var. <i>leucocarpa</i> for. <i>pilos</i>	+
<i>Pteridium aquilinum</i> var. <i>latiusculum</i>	+	<i>Styrax japonica</i>	+
<i>Platycarya strobilacea</i>	+	<i>Isodon inflexus</i>	+
<i>Quercus variabilis</i> Bl.	+	<i>Paederia scandens</i>	+
<i>Quercus mongolica</i>	+	<i>Viburnum wrightii</i>	+
<i>Hepatica asiatica</i>	+	<i>Viburnum erosum</i>	+
<i>Thalictrum actaeifolium</i>	+	<i>Aster scaber</i>	+
<i>Akebia quinata</i>	+	<i>Carex humilis</i>	+
<i>Lindera obtusiloba</i>	+	<i>Carex lanceolata</i>	+
<i>Stephanandra incisa</i>	+	<i>Arisaema amurense</i> var. <i>serratum</i>	+
<i>Sorbus alnifolia</i>	+	<i>Polygonatum odoratum</i> var. <i>pluriflorum</i>	+
<i>Albizzia julibrissin</i>	+	<i>Smilax china</i>	+
<i>Zanthoxylum schinifolium</i> var. <i>inermis</i>	+	<i>Dioscorea nipponica</i>	+
<i>Rhus trichocarpa</i>	+	<i>Cymbidium goeringii</i>	+

**Table 5.6 c) Understory vegetation survey: Mondy**

Name of Plot: Mondy

Date 20 July 2004

Number of Species:46

Species Name	Dominance	Species Name	Dominance
<i>Aulacomnium palustre</i>	4	<i>Equisetum scirpoides</i>	+
<i>Rhododendron lapponicum subsp.</i>	3	<i>Equisetum pratense</i>	+
<i>Rhytidium rugosum</i>	2	<i>Delphinium crassifolium</i>	+
<i>Betula fruticosa</i>	2	<i>Dianthus superbus</i>	+
<i>Betula nana subsp. Exilis</i>	2	<i>Pedicularis verticillata</i>	+
<i>Pentaphylloides fruticosa</i>	2	<i>Saxifraga bronchialis</i>	+
<i>Arctous alpina subsp. Erythrocarpa</i>	2	<i>Orthilia obtusata</i>	+
<i>Salix rhamnifolia</i>	1	<i>Trollius kytmanovii</i>	+
<i>Salix rosmarinifolia</i>	1	<i>Saussurea denticulate</i>	+
<i>Salix Lanata</i>	1	<i>Saussurea stubendorffii</i>	+
<i>Salix pseudopentandra</i>	1	<i>Saussurea parviflora</i>	+
<i>Vaccinium uliginosum</i>	1	<i>Hansenia mongolica</i>	+
<i>Dryas oxydonta</i>	1	<i>Seseli condensatum</i>	+
<i>Carex cespitosa</i>	1	<i>Claytonia joanneana</i>	+
<i>Trisetum sibiricum</i>	1	<i>Mertensia ochroleuca</i>	+
<i>Festuca ovina</i>	1	<i>Spiraea alpina</i>	+
<i>Poa sibirica</i>	1	<i>Dasystephana algida</i>	+
<i>Dicranum elongatum</i>	1	<i>Angelica tenuifolia</i>	+
<i>Cladonia alpestris</i>	1	<i>Pinguicula alpina</i>	+
<i>Cladonia sylvatica</i>	1	<i>Sanguisorba officinalis</i>	+
<i>Cetraria islandica</i>	1	<i>Eriophorum polystachyon</i>	+
		<i>Astragalus frigidus</i>	+
		<i>Bistorta viripara</i>	+
		<i>Parnasia palustris</i>	+
		<i>Campanula dasyantha</i>	+



**Table 5.7 a-1-1). Results of observation of tree decline: Lake Banryu-1**

Name of Plot: Banryu-2

Nearest deposition monitoring site: Banryu

Date: 30 September 2004

Individual No.	72	82	76	63	64	65	54	83	34	35	37			
Direction	N	N	N	E	E	E	S	S	W	W	W			
Plant Name	<i>Castanopsis cuspidata</i> var. <i>sieboldii</i>	<i>Machilus thunbergii</i>	<i>Symplocos lucida</i>	<i>Machilus thunbergii</i>	<i>Syrax japonica</i>	<i>Machilus thunbergii</i>	<i>Clerba borviniensis</i>	<i>Quercus serrata</i>	<i>Machilus thunbergii</i>	<i>Machilus thunbergii</i>	<i>Acanthopanax sciadaphylloides</i>			
Relative height	+	+	+	+	+	+	+	+	+	+	+			
Vitality of tree														
Form of tree														
Branch growth														
Dieback of stem														
Density of foliage														
Deformation of leaves														
Size of leaves														
Color of leaves														
Injury of leaves														

Estimated cause of decline: No.46 recorded in 2003 was cutdown due to the management and not included in this table.

**Table 5.7 a-1-2). Results of observation of tree decline: Lake Banryu-2**

Name of Plot: Iwami "rinku" Factory Park

Nearest deposition monitoring site: Banryu

Date: 1 October 2004

Individual No.	92	93	122	100	104	108	127	128	63	137	138	140	112	113	114	142	141
Direction	N	N	N	E	E	E	E	E	S	S	S	S	W	W	W	W	W
Plant Name	<i>Machilus thunbergii</i>	<i>Machilus thunbergii</i>	<i>Ilex micrococca</i>	<i>Quercus serrata</i>	<i>Castanopsis cuspidata</i> var. <i>sieboldii</i>	<i>Castanopsis cuspidata</i> var. <i>sieboldii</i>	<i>Castanopsis cuspidata</i> var. <i>sieboldii</i>	<i>Castanopsis cuspidata</i> var. <i>sieboldii</i>	<i>Castanopsis cuspidata</i> var. <i>sieboldii</i>	<i>Quercus serrata</i>	<i>Castanopsis cuspidata</i> var. <i>sieboldii</i>	<i>Quercus serrata</i>	<i>Machilus thunbergii</i>	<i>Machilus thunbergii</i>	<i>Machilus thunbergii</i>	<i>Quercus serrata</i>	<i>Machilus thunbergii</i>
Relative height			+		+						-						-
Vitality of tree																	
Form of tree																	
Branch growth																	
Dieback of stem																2	
Density of foliage																	
Deformation of leaves																	
Size of leaves																1	
Color of leaves																1	
Injury of leaves																	

Estimated cause of decline: Insect attack and/or fungal infection (No. 142)

**Table 5.7 a-2-1). Results of observation of tree decline: Lake Ijira-1**

Name of Plot: Lake Ijira

Nearest deposition monitoring site: Ijira

Date: 21 October 2004

Individual No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Direction	N	N	N	N	N	E	E	E	E	E	S	S	S	S	S	W	W	W	W	W
Plant Name	<i>Chamaecyparis obtusa</i>																			
Relative height					-														-	-
Vitality of tree					3			1				1	1						1	1
Form of tree								1				1	1						1	1
Branch growth																				
Dieback of stem					4															
Density of foliage					3															
Deformation of leaves																				
Size of leaves																				
Color of leaves																				
Injury of leaves																				

Estimated cause of decline: Suppression by other trees (No. 5, 8, 18 and 19); broken stems/branches (No. 5, 12 and 13)

**Table 5.7 a-2-2). Results of observation of tree decline: Lake Ijira-2**

Name of Plot: Yamato

Nearest deposition monitoring site: Ijira

Date: 4 November 2004

Individual No.	22	21	9	10	23	46	47	45	42	5	36	33	14	15	37	30	29	11	12	31
Direction	N	N	N	N	N	E	E	E	E	E	S	S	S	S	S	W	W	W	W	W
Plant Name	<i>Chamaecyparis obtusa</i>																			
Relative height													-	-						
Vitality of tree																				
Form of tree				1									1	1						
Branch growth																				
Dieback of stem				1																
Density of foliage													1	1						
Deformation of leaves																				
Size of leaves																				
Color of leaves																				
Injury of leaves																				

Estimated cause of decline: broken stems/branches (No.10); suppression by other trees in past (No. 14 and 15).

**Table 5.7 b-1) Results of observation of tree decline: Los Banos-1**

Name of Plot: Mt. Makiling

Nearest deposition monitoring site: Los Banos

Date: 4 Feb 2005

Tree No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Plant Name	<i>Nephelium ramboutan-dke</i>	<i>Aleurites moluccana</i>	<i>Diplodiscus paniculatus</i>	<i>Shorea contorta</i>	<i>Diplodiscus paniculatus</i>	<i>Planchonia spectabilis</i>	<i>Ardisia pyramidalis</i>	<i>Shorea contorta</i>	<i>Shorea contorta</i>	<i>Litsea garciae</i>	<i>Myrsine philippinensis</i>	<i>Myrsine philippinensis</i>	<i>Parashorea malanonan</i>	<i>Calophyllum blancoi</i>	<i>Parashorea malanonan</i>	<i>Krueia glomerata</i>	<i>Litsea garciae</i>	<i>Pisonia umbilifera</i>	<i>Shorea contorta</i>	<i>Diplodiscus paniculatus</i>
Relative height																				
Vitality of tree	1	1										1								
Form of tree																				
Branch growth																				
Dieback of stem																				
Density of foliage	1	1																		
Deformation of leaves																				
Size of leaves																				
Color of leaves																				
Injury of leaves																				

Estimated cause of decline :

**Table 5.7 b-2) Results of observation of tree decline: Los Banos-2**

Name of Plot: UP Quezon-Laguna Land Grant

Nearest deposition monitoring site: Los Banos

Date: 11 Feb 2005

Individual No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Plant Name	<i>Paraserianthes falcataria</i>	<i>Pteris tripartita</i>	Unidentified	<i>Astoria macrophylla</i>	<i>Astoria macrophylla</i>	<i>Trichadenia philippinensis</i>	<i>Macaranga bicolor</i>	<i>Macaranga bicolor</i>	<i>Macaranga bicolor</i>	<i>Ficus callosa</i>	<i>Pterocarpus indicus</i>	<i>Randia stenophylla</i>	<i>Syzygium nitidum</i>	<i>Pteris tripartita</i>	<i>Ficus callosa</i>	<i>Paraserianthes falcataria</i>	<i>Trichadenia philippinensis</i>	<i>Vaccanga globosa</i>	<i>Syzygium calubecob</i>	<i>Ceiba pentandra</i>
Relative height																				
Vitality of tree																				
Form of tree																				
Branch growth																				
Dieback of stem																				
Density of foliage																				
Deformation of leaves																				
Size of leaves																				
Color of leaves																				
Injury of leaves																				

Estimated cause of decline : No decline symptom

**Table 5.7 c) Results of observation of tree decline: Mt. Naejang**

Name of Plot: Mt. Naejang

Nearest deposition monitoring site: Imsil

Date: 30 Jul - 1 Aug 2004

Individual No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Plant Name	<i>Pinus densiflora</i>																			
Relative height																				
Vitality of tree																				
Form of tree																				
Branch growth																				
Dieback of stem																				
Density of foliage																				
Deformation of leaves																				
Size of leaves																				
Color of leaves																				
Injury of leaves																				

Estimated cause of decline : No decline symptom

**Table 5.7 d) Results of observation of tree decline: Mondy**

Name of Plot: Mondy

Nearest deposition monitoring site: Mondy

Date: 20 July 2004

Individual No	4	6	7	12	13	14	20	22	23	24	25	38	39	40	44	50	51
Plant Name	<i>Larix sibirica</i>																
Vitality of tree																	
Form of tree												1					
Branch growth				1													
Dieback of stem																	
Density of foliage																	
Deformation of																	
Size of leaves																	
Color of leaves				1	1	1	1		1								
Injury of leaves				1	1	1											

Estimated cause of decline: Light diseases of leaves caused by insects and micromycetes.

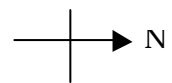


Figure 5.3. a-1-1) Photographic record of tree decline: Banryu-2

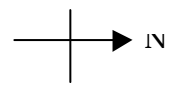
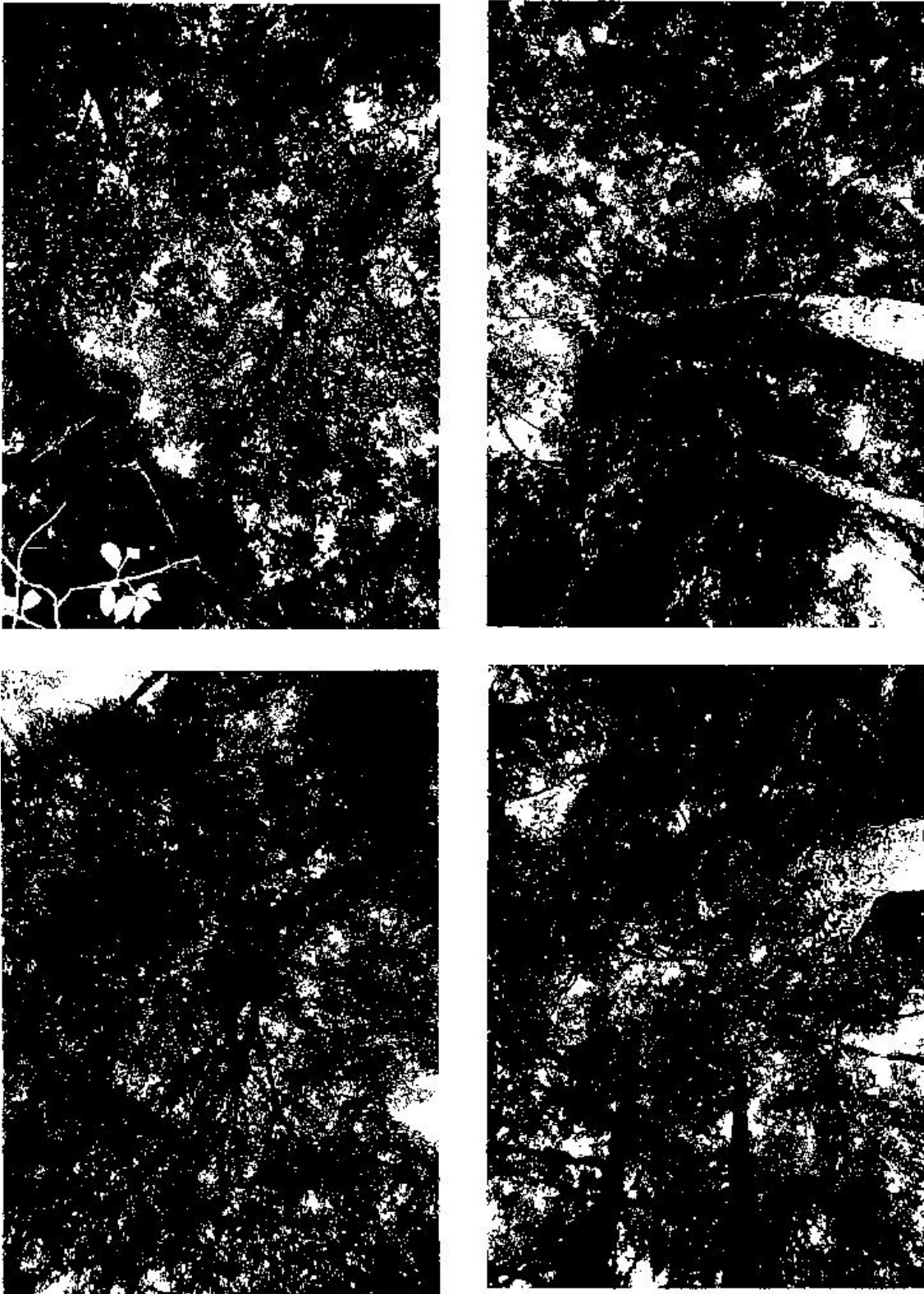
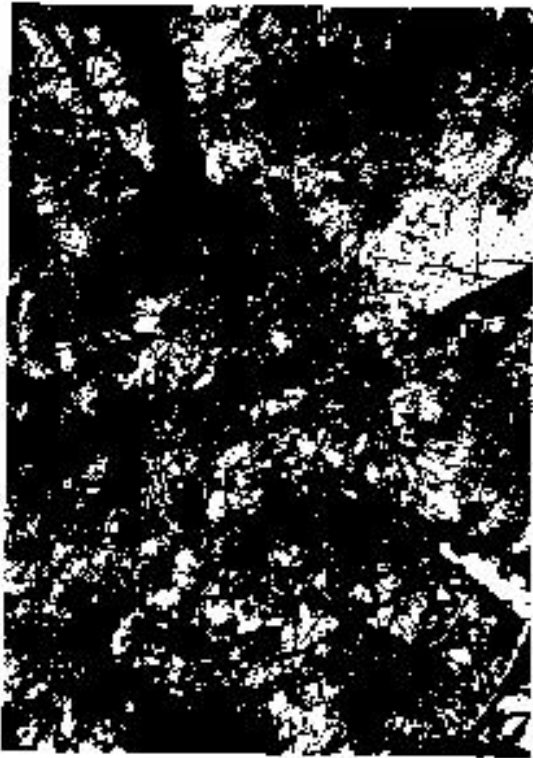


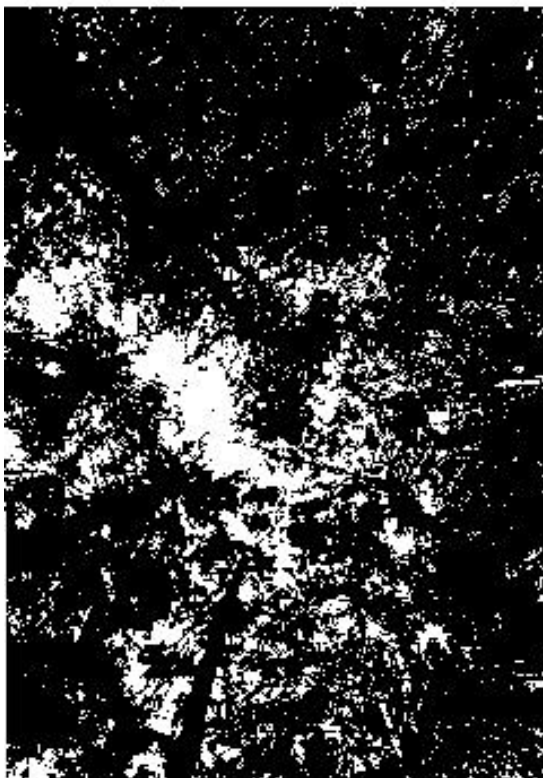
Figure 5.3. a-1-2) Photographic record of tree decline: Iwami “rinku” FP



N



W



S



E

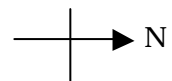


Figure 5.3. a-2-1) Photographic record of tree decline: Lake Ijira





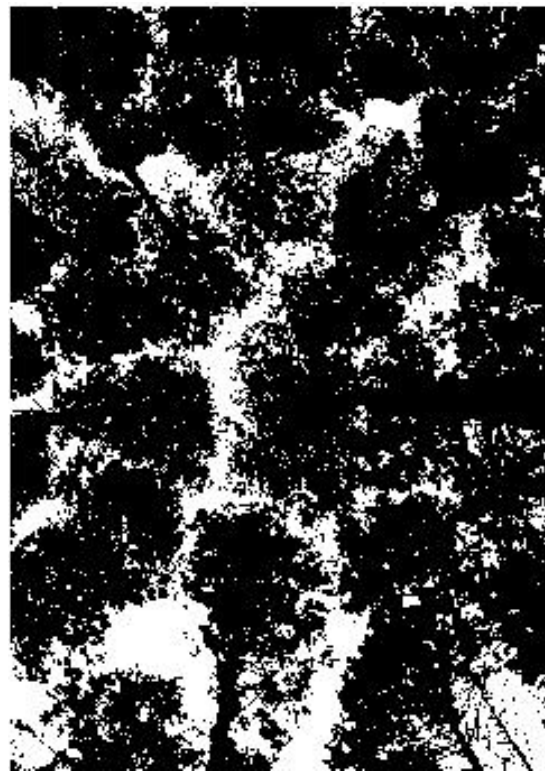
N



W



S



E

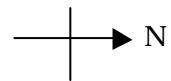


Figure 5.3. a-2-2) Photographic record of tree decline: Yamato



N



W

Figure 5.3. b) Photographic record of tree decline: Mondy



S



E

Figure 5.3. b) continued

Corrections of Data Report 2003

**Corrections: Table 5.7 b-1-1) of Data Report 2003**

Name of Plot: Banryu-2

Nearest deposition monitoring site: Banryu

Date: October 10, 2003

	72	82	76	84	85	63	64	65	46	54	81	83	34	35	37	38
	N	N	N	N	N	E	E	E	S	S	S	S	W	W	W	W
Plant Name	<i>Castanopsis cuspidata</i> var. <i>sieboldii</i>	<i>Machilus thunbergii</i>	<i>Symplocos lucida</i>	<i>Symplocos lucida</i>	<i>Symplocos lucida</i>	<i>Machilus thunbergii</i>	<i>Styrax japonica</i>	<i>Machilus thunbergii</i>	<i>Quercus serrata</i>	<i>Clethra barbinervis</i>	<i>Pinus densiflora</i>	<i>Quercus serrata</i>	<i>Machilus thunbergii</i>	<i>Machilus thunbergii</i>	<i>Acanthopanax sciadophylloides</i>	<i>Pinus densiflora</i>
Relative height	+	+		/	/	+	+	+			+		+	+		/
Vitality of tree				/	/						4					/
Form of tree				/	/						4					/
Branch growth				/	/											/
Dieback of stem				/	/											/
Density of foliage				/	/											/
Deformation of leaves				/	/											/
Size of leaves				/	/											/
Color of leaves				/	/											/
Injury of leaves				/	/											/
Notes	New			*	*				New	New			New	New		*

**Estimated cause of decline: Trees of No. 38, 84, and 85 were cutdown due to the management for the pine wilting disease.**

**Corrections: Figure 5.3 a) and b) of Data Report 2003**

Direction of the photographs in the west and south was upside-down; the top was south in these photographs.