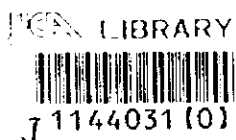


JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
MINISTRY OF AGRICULTURE (MoA)
FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

**THE FOREST RESOURCES MANAGEMENT STUDY
IN THE SOUTHWESTERN PART OF ETHIOPIA**

**VOLUME 2
APPENDIX**

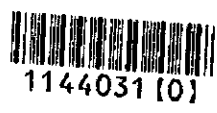
MARCH, 1998



**JAPAN FOREST CIVIL ENGINEERING CONSULTANTS FOUNDATION
KOKUSAI KOGYO CO., LTD.**

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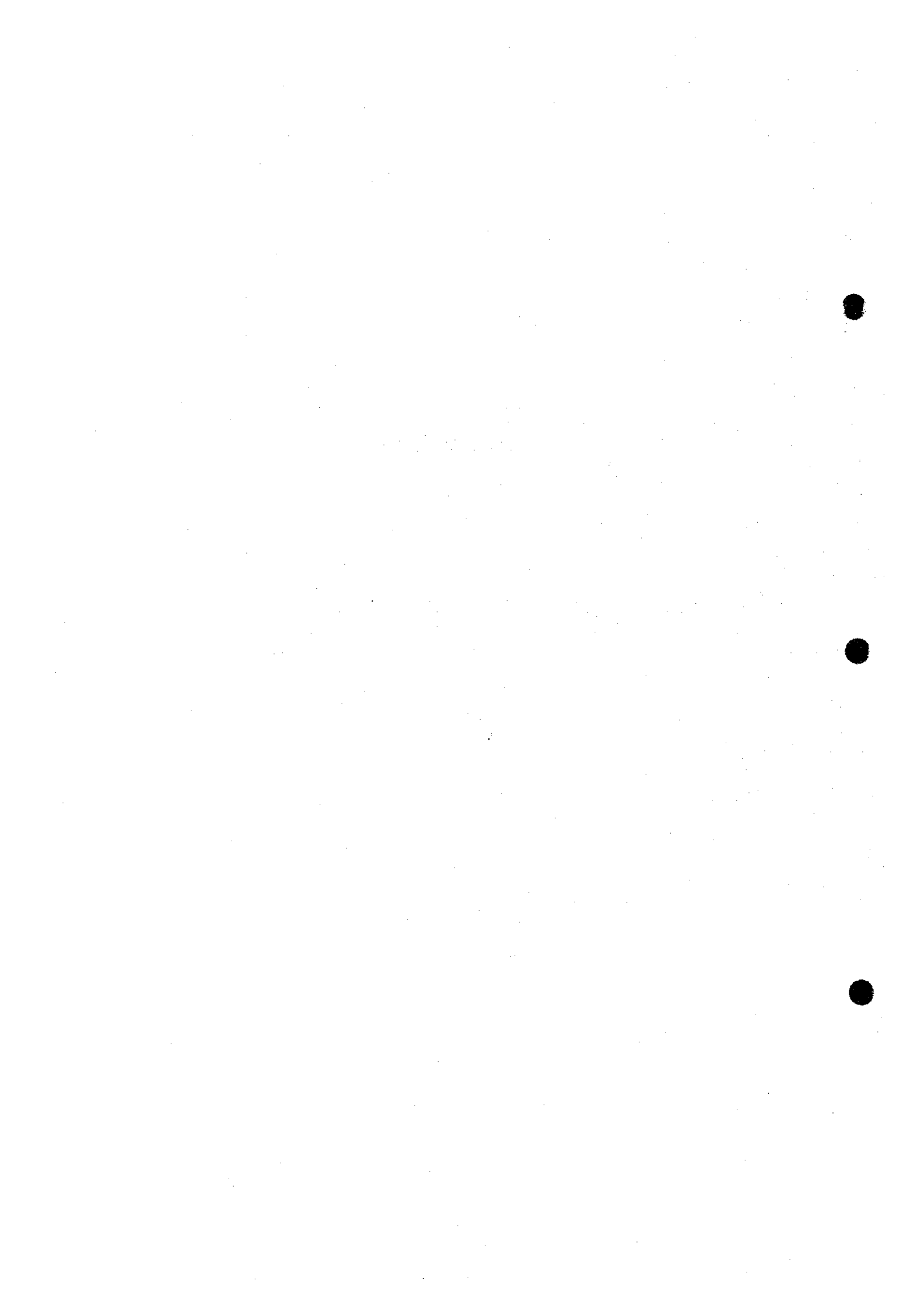
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APPENDIX



Appendix Tab. 1 Outline of villages in Belete Area

Name of Villages Surveyed	Male	Female Population (1994 Census)	Number of Household	% of FHHs*	Religion (%)		Ethnic			Composition (%)	
					Christians	Muslims	Oromo	Amhara	Others		
Atro Gafero (Sonbo)	2,046	2,074	932	4%	2	98	98.0	2.0	0.0	0.0	
Atro Sufa	1,773	1,738	802	14%	5	95	95.0	3.0	2.0	2.0	
Elke Togobe	3,567	3,544	1,534	8%	5	95	95.0	0.0	0.0	5.0	
Kishe	2,534	2,297	1,033	2%	55	45	10.0	40.0	40.0	40.0	
Komo Hari	3,104	3,044	1,352	7%	0	100	99.0	0.0	0.0	1.0	
Mirgano Baso	2,770	2,776	1,223	11%	21	79	49.0	0.0	0.0	51.0	
Sabaka Debiye	1,370	1,392	635	7%	10	90	60.0	0.0	0.0	40.0	
Shebe Mofa	1,972	1,925	936	8%	0	100	100.0	0.0	0.0	0.0	
Sonbo Daru	3,283	3,213	1,495	2%	1	99	96.0	0.0	0.0	4.0	
Yanga Deo	2,191	2,159	1,070	7%	33	67	63.0	17.0	20.0	20.0	
Total or Average	24,610	24,162	11,012	6%	10	90	77.1	4.6	18.3	18.3	

* FHHs: Female-headed households

Source:

(1) 1994 Census

(2) 1996 Local Community Survey, JICA

Appendix Tab. 2 Outline of villages in Gera Area

Name of Villages Surveyed	New Village Name	Male	Female (1994 Census)	Population (1994 Census)	Number of Household	% of FHHs*	Religion (%)		Ethnic		Composition (%)	
							Christians	Muslims	Oromo	Amhara	Others	
Gada Kashimairi	Gute Gada	701	733	1,434	373	0%	20	80	80.0	0.0	0.0	20.0
Guba Korro	Gute Gada	629	631	1,260	308	0%	15	85	85.0	0.0	0.0	15.0
Gutte	Gute Gada	358	337	695	150	11%	80	20	100.0	0.0	0.0	0.0
Dusta	Dusta	1,774	1,763	3,537	784	0%	3	97	95.5	3.0	0.5	0.0
Komboicha	Komboicha	1,155	1,228	2,383	572	0%	0	100	100.0	0.0	0.0	0.0
Gamina	Gamina Dacho	292	300	592	148	17%	28	72	80.0	15.0	5.0	5.0
Dacholaki	Gamina Dacho	115	111	226	56	2%	0	100	92.0	0.0	8.0	8.0
Wala	Wala	304	273	577	122	11%	75	25	12.5	75.0	12.5	12.5
Oba	Oba Toli	445	466	911	224	12%	5	95	75.0	20.0	5.0	5.0
Gura	Gura Afalo	170	153	323	80	2%	0	100	100.0	0.0	0.0	0.0
Afalo	Gura Afalo	76	65	141	38	4%	50	50	100.0	0.0	0.0	0.0
Kelaherere	Keia Kacho	613	637	1,250	260	6%	0	100	100.0	0.0	0.0	0.0
Anderacha	Kacho Anderacha	95	83	178	44	0%	75	25	95.0	5.0	0.0	0.0
Chala	Chira	415	362	777	187	0%	18	82	95.0	5.0	0.0	0.0
Selaja	Kobo Selaja	864	825	1,689	396	8%	0	100	100.0	0.0	0.0	0.0
Kobokocho	Kobo Selaja	1,093	1,134	2,227	523	6%	0	100	99.7	0.3	0.0	0.0
Kola Sulaja	Kobo Selaja	897	885	1,782	406	24%	1	99	99.0	1.0	0.0	0.0
Gera	Naso Gera	373	312	685	150	0%	3	97	100.0	0.0	0.0	0.0
Nasawabo	Naso Gera	143	155	298	72	0%	0	100	100.0	0.0	0.0	0.0
Gure Kesso	Kaso Dako	560	529	1,089	225	0%	7	93	100.0	0.0	0.0	0.0
Muje	Muje	1,790	1,714	3,504	778	4%	0	100	100.0	0.0	0.0	0.0
Sadi	Sadi Loya	1,096	1,145	2,241	475	4%	20	80	80.0	20.0	0.0	0.0
Total or Average		13,958	13,841	27,799	6,371	5%	20	80				

* FHHs: Female-headed households

Source:

(1) 1994 Census

(2) 1996 Local Community Survey, JICA

Appendix Tab. 3 Daily workload of women in Belote Area

Unit: hour												
Village Name	Family Code	Water Collection	Animal Watering	Firewood Collection	Washing Clothes	Meals preparation	House-keeping	Grinding	Pounding	Marketing	Child-care	Total
ATRO GEFERE	03-1-1	2.0	0.0	1.0	0.5	4.0	1.0	2.0	0.5	2.0	4.0	17.0
	03-1-2	1.5	0.0	1.0	1.0	4.0	1.0	3.0	1.0	1.0	2.0	15.5
	03-1-3	2.0	1.0	1.0	1.0	4.0	1.0	0.0	1.5	2.0	2.0	15.5
	03-1-4	1.0	0.0	1.0	2.5	4.0	2.0	0.0	0.5	1.0	1.0	13.0
	03-1-5	0.5	0.0	2.0	2.0	4.0	1.0	0.0	0.0	1.0	4.0	14.5
	03-1-6	2.0	0.0	1.0	1.0	4.0	1.0	2.0	3.0	2.0	1.0	17.0
	03-1-7	1.5	1.5	1.0	0.5	4.0	1.0	3.0	2.0	3.0	0.0	17.5
SAMBO DERU	03-2-1	1.0	0.5	1.0	1.0	4.0	0.0	1.5	1.0	3.0	3.5	16.5
	03-2-2	1.0	0.5	1.0	2.0	4.0	1.5	0.0	0.5	1.0	0.0	11.5
	03-2-3	1.0	0.0	2.0	1.0	4.0	0.0	0.0	1.0	2.0	1.0	12.0
	03-2-4	1.5	0.5	2.0	1.0	4.0	0.0	0.0	0.5	2.0	0.0	11.5
	03-2-5	1.5	1.0	0.5	1.0	5.0	0.0	0.0	0.5	2.0	0.0	11.5
	03-2-6	2.0	0.0	1.5	2.0	4.0	0.0	0.0	2.0	2.0	1.0	14.5
	03-2-7	2.0	0.0	1.5	1.0	4.0	0.0	3.0	1.0	2.0	3.0	17.5
KOMO HARI	03-3-1	1.0	0.5	2.0	1.0	4.0	0.0	1.0	1.0	2.0	1.0	13.5
	03-3-2	1.0	1.0	2.5	1.0	4.0	0.0	1.0	0.5	2.0	1.0	14.0
	03-3-3	0.5	0.0	2.0	1.0	4.0	0.0	1.0	1.0	4.0	1.0	14.5
	03-3-4	2.0	1.0	5.0	1.0	4.0	0.0	0.5	0.0	4.0	2.0	19.5
	03-3-5	1.0	1.0	4.0	1.0	4.0	0.0	0.5	0.5	2.0	1.0	15.0
	03-3-6	1.0	0.5	4.0	1.0	4.0	0.0	1.0	0.5	2.0	1.0	15.0
	03-3-7	1.0	1.0	5.0	1.0	4.0	0.0	1.0	1.0	2.0	1.0	17.0
ATRO SUFA	01-2-1	1.0	0.5	4.0	1.0	4.0	1.0	2.0	2.0	3.0	1.0	19.5
	01-2-2	0.5	1.0	2.0	2.0	4.0	1.0	0.0	1.0	4.0	1.5	17.0
	01-2-3	0.5	0.5	2.0	2.0	4.0	1.0	0.0	2.0	3.0	1.0	16.0
	01-2-4	0.8	0.5	5.0	2.0	5.0	1.0	0.0	0.5	4.0	1.0	19.8
	01-2-5	0.8	0.5	0.8	1.5	4.0	1.0	0.0	1.0	3.0	1.5	14.0
	01-2-6	0.5	0.0	3.0	0.0	4.0	1.0	0.0	0.0	3.0	0.0	11.5
	01-2-7	0.5	0.5	4.0	0.5	4.0	1.0	0.0	0.0	0.0	1.0	11.5
MIRGANO BOSO	01-4-1	0.5	0.0	4.0	2.0	4.0	0.5	1.0	1.0	3.0	0.5	16.5
	01-4-2	1.0	0.5	3.0	2.0	4.0	1.0	0.0	2.0	2.0	0.0	15.5
	01-4-3	0.5	0.5	1.5	2.0	4.0	0.5	0.0	2.0	3.0	1.0	15.0
	01-4-4	0.5	0.0	4.0	2.0	4.0	1.0	0.0	2.0	3.0	1.0	17.5
	01-4-5	0.5	1.0	5.0	2.0	4.0	1.0	0.0	1.5	3.0	0.0	18.0
	01-4-6	0.5	0.5	4.0	2.0	4.0	0.5	0.5	2.0	3.0	0.0	17.0
	01-4-7	1.0	0.0	4.0	1.5	4.0	1.0	0.0	2.0	3.0	1.0	17.5
KISIE	02-1-1	3.0	0.0	3.0	1.0	1.0	1.0	3.0	1.0	2.0	3.0	18.0
	02-1-2	1.0	1.0	3.0	2.0	2.0	2.0	0.0	1.5	2.0	2.0	16.5
	02-1-3	3.0	1.0	0.5	0.5	0.5	1.0	0.5	0.5	4.0	1.0	12.5
	02-1-4	0.5	0.5	1.5	2.0	2.0	1.5	0.0	2.0	1.0	2.0	13.0
	02-1-5	1.0	0.0	1.5	1.0	3.0	1.0	0.0	0.5	3.0	2.0	13.0
	02-1-6	0.5	0.0	1.0	1.0	2.0	1.5	0.5	1.0	3.0	2.0	12.5
	02-1-7	0.5	0.0	2.0	1.5	2.0	1.0	2.0	0.5	3.0	0.5	13.0
YANGA DEAO	02-2-1	0.5	0.5	2.0	1.0	3.0	1.0	0.0	1.0	4.0	1.0	14.0
	02-2-2	0.5	0.5	1.0	1.5	3.0	1.0	1.0	1.0	3.0	1.0	13.5
	02-2-3	0.5	0.5	1.0	1.5	3.0	1.0	1.0	1.0	5.0	0.0	14.5
	02-2-4	3.0	1.0	2.0	1.0	2.0	0.5	2.0	2.0	3.0	1.0	17.5
	02-2-5	2.0	1.0	1.5	2.0	2.0	0.5	1.0	2.0	3.0	1.0	16.0
	02-2-6	0.5	0.0	1.5	1.0	4.0	0.5	2.0	2.0	3.0	1.0	15.5
	02-2-7	0.5	0.5	3.0	3.0	4.0	0.5	2.0	1.0	2.0	0.5	17.0
SEREKA DEBIVE	02-3-1	0.5	0.0	1.0	0.5	2.0	0.5	2.0	1.0	2.0	0.0	9.5
	02-3-2	1.0	0.0	1.0	2.0	2.0	0.5	0.0	2.0	3.0	2.0	13.5
	02-3-3	0.5	0.0	1.0	1.0	3.0	1.0	0.0	1.0	3.0	2.0	12.5
	02-3-4	1.0	1.0	1.0	1.0	3.0	1.0	0.0	1.0	3.0	1.0	13.0
	02-3-5	1.0	0.0	0.5	2.0	1.0	0.5	0.0	1.0	5.0	3.0	14.0
	02-3-6	0.5	0.0	0.5	0.5	2.0	1.0	0.0	1.0	3.0	2.0	10.5
	02-3-7	1.0	0.0	1.0	0.5	1.0	1.0	0.0	0.0	4.0	2.0	10.5
SREBE MOFTA	04-1-1	2.0	0.0	1.5	0.5	4.0	0.5	0.5	1.0	2.0	2.0	14.0
	04-1-2	2.0	1.0	1.5	0.0	4.0	0.5	2.0	1.0	2.0	2.0	16.0
	04-1-3	2.0	0.5	1.5	0.5	4.0	0.5	0.5	1.0	2.0	2.0	14.5
	04-1-4	2.0	0.0	1.5	0.0	4.0	1.0	2.0	0.5	2.0	2.0	15.0
	04-1-5	2.0	1.0	2.5	0.5	4.0	0.5	0.5	1.0	2.0	2.0	16.0
	04-1-6	2.0	0.0	1.5	0.0	4.0	0.5	1.0	2.0	2.0	2.0	15.0
	04-1-7	0.5	0.5	1.5	1.0	4.0	0.5	0.5	1.0	2.0	1.0	12.5
ELKE TOGOSE	01-1-1	1.5	1.0	3.0	3.5	4.5	0.5	0.0	1.0	3.0	0.5	18.5
	01-1-2	0.8	0.5	3.0	2.0	4.0	1.0	0.0	1.0	3.0	1.0	16.3
	01-1-3	1.5	1.0	1.0	0.5	3.5	0.3	0.5	1.5	2.8	2.0	14.5
	01-1-4	0.5	0.5	4.0	2.0	3.0	0.5	1.0	2.0	3.0	1.0	17.5
	01-1-5	2.0	0.0	2.0	1.5	4.0	0.5	1.5	1.5	2.0	2.0	17.0
	01-1-6	1.0	0.0	0.8	0.0	4.0	2.0	2.0	1.5	4.0	1.0	16.3
	01-1-7	1.0	0.0	1.5	0.0	4.0	2.0	2.0	1.5	4.0	1.0	17.0
Total	70 Households	80.3	29.5	145.5	85.5	241.5	52.3	55.0	80.0	183.8	92.5	1,049.8
Average		1.1	0.4	2.1	1.2	3.5	0.7	0.8	1.1	2.6	1.3	15.0
%		7.6%	2.8%	13.9%	8.2%	23.3%	5.0%	5.2%	7.6%	17.5%	8.8%	100.0%

Source: Local Community Survey, JICA, 1996

Appendix Tab. 4 (1) Daily workload of women in Gera Area

Unit: hour

Village Name	Family Code	Water Collectio	Animal Watering	Fireswood Collectio	Washing Clothes	Meals preparation	House-keeping	Grinding	Pounding	Marketing	Child-care	Total
1 G. KASHIMARI	10-21	2.0	1.0	1.0	2.0	4.0	1.0	0.0	3.0	0.5	2.0	16.5
2	10-22	1.0	1.0	1.0	2.0	4.0	1.0	3.0	2.0	0.5	0.0	32.0
3	10-23	1.0	0.0	2.0	1.0	5.0	0.4	2.0	1.0	0.5	3.0	31.4
4	10-24	1.0	1.0	1.0	2.0	5.0	0.0	1.0	1.0	0.5	1.0	29.4
5	10-25	1.0	1.0	1.0	2.0	5.0	1.0	1.0	2.0	0.5	2.0	30.0
6	10-26	0.5	0.3	1.5	3.0	5.0	0.3	3.0	2.0	0.5	1.0	33.6
7 GARA KORRO	10-15	1.0	1.0	2.5	2.0	5.0	1.0	2.0	1.0	1.0	0.0	33.6
8	10-16	1.0	1.0	1.0	2.0	4.0	1.0	2.0	1.0	0.5	1.0	31.0
9	10-17	1.0	1.0	1.0	2.0	5.0	0.4	2.0	1.0	0.5	2.0	30.4
10	10-18	1.0	1.0	1.0	2.0	5.0	0.3	2.0	1.0	0.5	1.0	30.7
11	10-19	1.0	1.0	1.0	2.0	4.0	0.3	1.0	1.0	0.5	1.0	27.6
12	10-20	1.0	1.0	1.0	3.0	5.0	0.2	1.0	1.0	0.5	1.0	27.5
13 GUTTE	10-09	1.0	0.0	1.0	3.0	6.0	1.0	2.0	1.0	0.5	1.0	31.2
14	10-10	1.0	1.0	1.0	2.0	5.0	1.0	0.0	2.0	0.5	2.0	32.0
15	10-11	1.0	1.0	1.0	2.0	5.0	0.3	2.0	1.0	0.5	2.0	31.3
16	10-12	2.0	1.0	1.5	3.0	5.0	0.0	2.0	1.0	0.5	1.0	32.8
17	10-13	1.0	1.0	1.5	3.0	3.0	1.0	2.0	1.0	0.5	1.0	32.0
18	10-14	1.0	1.0	1.0	3.0	5.0	1.0	1.0	1.0	0.5	1.0	30.5
19 GAWINA	08-1	1.3	1.3	1.5	3.3	1.0	0.3	0.3	0.5	0.0	1.3	26.3
20	08-2	1.0	0.0	1.0	2.0	3.3	1.0	2.0	1.0	0.5	1.0	23.6
21	08-3	1.0	0.0	0.5	3.0	6.0	0.3	1.0	1.3	0.5	1.0	27.4
22	08-4	1.0	0.0	1.5	1.0	3.0	2.0	1.0	0.3	0.5	1.0	25.9
23	08-5	1.0	0.0	1.0	2.0	3.0	2.0	4.0	2.0	0.5	2.0	28.9
24	08-6	1.0	0.0	1.0	1.0	3.0	1.0	1.0	1.0	1.0	1.0	28.5
25 ORA	08-8	1.0	0.0	1.5	1.3	2.3	0.3	1.0	1.0	6.0	0.0	25.4
26	08-9	1.3	0.0	1.5	2.0	3.0	1.0	1.3	2.0	0.5	2.0	29.0
27	08-10	1.3	1.0	1.5	2.3	3.0	0.3	2.0	3.0	0.5	2.0	31.5
28	08-11	1.3	0.0	2.0	2.0	3.0	1.0	1.0	1.0	0.5	2.0	30.7
29	08-12	2.0	0.0	3.0	2.0	3.0	1.0	1.0	1.0	0.3	1.0	28.1
30	08-13	1.0	0.0	2.0	2.0	3.0	0.3	1.0	2.0	0.3	1.3	27.2
31 DACTOLAKI	08-21	1.0	1.0	2.0	2.0	4.0	0.3	2.0	1.0	0.5	1.0	27.8
32	08-22	1.0	0.0	2.0	1.0	3.0	0.3	2.0	2.0	0.5	0.0	26.6
33	08-23	1.0	0.0	2.0	2.0	3.0	0.3	2.0	1.0	0.5	0.0	23.6
34	08-24	0.3	0.0	1.0	2.0	3.0	0.3	3.0	1.0	7.0	0.0	29.4
35	08-25	1.3	0.0	1.0	2.0	3.0	0.3	2.3	1.0	0.5	1.3	30.3
36	08-26	0.3	0.0	1.5	2.0	3.0	1.0	3.0	1.0	0.5	2.0	27.0
37 WAJLA	08-15	0.3	0.0	1.0	1.0	6.0	0.3	5.0	4.0	0.5	0.0	32.4
38	08-16	0.3	0.0	0.5	1.3	3.0	0.3	3.0	1.0	0.5	1.0	29.0
39	08-17	1.0	0.0	1.0	2.0	3.0	0.4	6.0	2.0	0.5	1.0	27.8
40	08-18	1.0	0.0	2.0	2.0	6.0	0.1	8.0	2.0	0.5	1.0	39.5
41	08-19	2.0	0.0	1.0	1.0	3.0	0.3	3.0	2.0	0.0	0.0	34.9
42	08-20	0.3	0.0	2.0	2.0	4.0	0.3	4.0	1.0	0.0	0.0	25.9
43 CURA	09-13	1.0	0.4	2.0	2.0	4.3	0.3	1.0	1.0	0.5	0.0	26.1
44	09-14	0.3	1.0	1.5	2.0	4.0	0.3	2.0	1.0	0.5	0.0	25.1
45	09-15	1.0	0.4	2.0	2.0	4.3	0.3	2.0	1.0	0.5	0.0	26.1
46	09-16	0.3	0.0	1.0	1.0	4.0	0.3	2.0	1.0	0.3	1.0	24.5
47	09-17	1.0	0.4	2.0	2.0	4.0	0.3	1.0	1.0	0.5	1.0	24.2
48	09-18	0.4	0.3	1.5	2.0	4.0	0.3	2.0	1.0	0.5	0.0	25.2
49 KFLAUARENE	09-1	1.3	1.3	1.5	2.0	0.4	0.3	2.3	2.0	0.0	0.0	23.1
50	09-2	0.2	1.0	2.0	4.0	4.0	0.1	2.0	2.0	0.5	0.0	26.9
51	09-3	0.3	1.0	2.0	4.0	4.0	0.3	3.0	2.0	0.5	0.0	32.9
52	09-4	2.0	2.0	0.7	1.0	4.0	0.3	1.3	2.0	0.5	1.0	31.9
53	09-5	0.3	1.0	1.0	4.0	4.0	1.0	2.0	0.0	3.0	2.0	33.1
54	09-6	1.0	1.3	3.0	4.0	4.0	0.3	2.0	2.0	0.5	0.0	36.4
55 AFALO	09-7	1.0	0.0	1.0	1.3	4.0	0.3	2.3	1.0	0.5	0.0	29.5
56	09-8	0.5	0.4	1.0	2.0	4.0	0.2	2.0	2.0	0.5	1.0	25.0
57	09-9	1.0	1.0	1.0	4.0	4.0	1.0	2.0	2.0	0.5	0.0	30.1
58	09-10	1.0	0.3	1.0	4.0	4.0	0.3	3.0	1.3	0.5	0.0	31.9
59 CHAIJA	06-11	1.0	0.0	1.0	1.5	2.0	0.0	0.0	1.0	0.5	2.0	24.4
60	06-12	0.5	0.0	1.5	3.0	4.0	0.4	3.0	3.0	0.0	0.0	24.4
61	06-13	0.5	1.0	1.0	1.3	4.3	1.0	0.0	3.0	0.3	2.0	29.7
62	06-14	0.5	0.0	1.5	1.0	3.0	0.3	0.0	1.5	1.0	0.0	23.2
63	06-15	0.3	0.5	2.0	2.0	4.3	0.3	3.0	2.3	1.0	1.0	25.5
64	06-16	0.5	0.2	1.5	1.3	3.3	0.3	0.0	2.0	0.5	0.0	26.3
Sub-total:		59.2	32.1	89.7	136.6	247.5	34.0	126.8	94.2	45.7	56.9	932.3

(continued to the following page)

Appendix Tab. 5 Household income in Belete Area

Unit: Birr

Village Name	Family Code	Food Crops			Livestock			Forestry /1	Others /2	Total	
		For Sale	Own Use	Total	Cattle	Products	Others				Total
ATRO CEPERE	03-1-1	270	760	1,030	800	0	21	821	0	0	1,851
	03-1-2	0	450	450	400	0	0	400	0	0	850
	03-1-3	240	1,200	1,440	430	0	115	545	0	2,556	4,541
	03-1-4	540	900	1,440	0	0	30	30	0	0	1,470
	03-1-5	0	390	390	0	0	0	0	0	1,000	1,390
	03-1-6	200	360	560	0	0	0	0	0	0	560
	03-1-7	135	540	675	250	0	0	250	0	0	925
SAMBO DERU	03-2-1	0	360	360	0	0	0	0	0	0	360
	03-2-2	480	3,180	3,660	0	0	0	0	100	0	3,760
	03-2-3	0	600	600	0	0	0	0	0	0	600
	03-2-4	150	1,260	1,410	0	40	0	40	0	0	1,450
	03-2-5	0	540	540	0	0	0	0	0	0	540
	03-2-6	180	780	960	0	0	0	0	0	200	1,160
	03-2-7	180	1,110	1,290	300	0	0	300	0	0	1,590
KOMO HARI	03-3-1	660	1,422	2,082	400	0	0	400	0	0	2,482
	03-3-2	264	336	600	0	0	60	50	110	0	710
	03-3-3	254	252	506	0	104	80	184	0	0	690
	03-3-4	0	358	358	150	0	0	150	0	0	508
	03-3-5	600	530	1,130	0	0	35	35	0	0	1,165
	03-3-6	0	360	360	100	0	0	100	0	0	460
	03-3-7	420	580	1,000	0	0	30	30	0	0	1,030
ATRO SUFA	01-2-1	12	598	610	0	0	128	128	0	0	738
	01-2-2	410	482	892	0	0	0	0	0	300	1,192
	01-2-3	285	3,919	4,234	0	0	300	300	50	0	4,584
	01-2-4	0	650	650	0	0	950	950	0	512	2,112
	01-2-5	340	850	1,190	0	0	900	900	0	0	2,090
	01-2-6	0	338	338	0	0	0	0	0	52	390
	01-2-7	14	205	219	0	0	50	50	0	0	269
MIRGANO BOSO	01-4-1	100	1,352	1,452	0	0	807	807	0	100	2,359
	01-4-2	0	220	220	0	0	260	260	0	0	480
	01-4-3	18	696	714	24	0	187	211	0	0	925
	01-4-4	120	1,690	1,810	0	0	1,095	1,095	0	0	2,905
	01-4-5	40	350	390	0	0	0	0	0	156	546
	01-4-6	0	423	423	0	0	0	0	0	0	423
	01-4-7	70	1,892	1,962	0	0	0	0	0	0	1,962
KISHE	02-1-1	80	2,966	3,046	0	0	0	0	0	350	3,426
	02-1-2	100	400	500	40	0	40	80	0	0	580
	02-1-3	438	1,091	1,529	0	0	700	700	0	0	2,229
	02-1-4	534	532	1,066	0	0	0	0	85	0	1,151
	02-1-5	100	840	940	0	0	0	0	0	0	940
	02-1-6	125	270	395	0	0	0	0	0	0	395
	02-1-7	320	312	632	0	0	0	0	0	0	632
YANGA DEAO	02-2-1	750	360	1,110	0	0	0	0	0	0	1,110
	02-2-2	300	264	564	0	0	0	0	0	0	564
	02-2-3	500	348	848	0	0	0	0	120	0	968
	02-2-4	200	75	275	0	0	0	0	0	0	275
	02-2-5	117	244	361	0	0	0	0	0	0	361
	02-2-6	0	164	164	0	0	27	27	0	0	191
	02-2-7	0	128	128	0	0	0	0	225	0	353
SEBEKA IEBIYE	02-3-1	40	234	274	0	0	72	72	110	0	456
	02-3-2	550	240	790	0	0	0	0	0	0	790
	02-3-3	300	284	584	0	0	16	16	60	0	660
	02-3-4	480	72	552	0	0	0	0	0	0	552
	02-3-5	0	140	140	0	0	0	0	0	0	140
	02-3-6	990	326	1,316	0	0	0	0	0	0	1,316
	02-3-7	1,230	0	1,230	0	0	0	0	500	200	1,930
SIBBE MOFFA	04-1-1	3,080	620	3,700	0	0	0	0	0	0	3,700
	04-1-2	5,020	580	5,600	0	0	0	0	0	0	5,600
	04-1-3	5,020	580	5,600	0	0	0	0	50	0	5,650
	04-1-4	2,330	1,200	3,530	0	0	0	0	0	0	3,530
	04-1-5	4,220	700	4,920	0	0	0	0	0	0	4,920
	04-1-6	5,020	580	5,600	0	0	0	0	0	0	5,600
	04-1-7	3,920	580	4,500	0	0	0	0	0	0	4,500
ELKE TOGOBE	01-1-1	66	392	458	0	0	0	0	0	0	458
	01-1-2	560	1,313	1,873	0	0	0	0	0	0	1,873
	01-1-3	3,170	130	3,300	0	0	0	0	0	0	3,300
	01-1-4	0	218	218	0	0	290	290	0	80	588
	01-1-5	6,810	530	7,370	0	0	0	0	0	0	7,370
	01-1-6	600	420	1,020	600	0	0	600	0	0	1,620
	01-1-7	600	420	1,020	600	0	0	600	0	0	1,620
Total		53,582	47,513	101,095	4,094	204	6,186	10,484	1,300	5,536	118,415
Average per HH				1,444			150		19	79	1,692
Ratio (%)				85.4%			8.9%		1.1%	4.7%	100.0%

Note: 1/ mainly honey 2/ mostly from wage labor

Source: Local Community Survey, JICA, 1996

Appendix Tab. 6 (1) Household income in Gera Area

Unit: Birr

Village Name	Family Code	Food Crops			Livestock				Forestry /1	Others /2	Total
		For Sale	Own Use	Total	Cattle	Products	Others	Total			
G. KASHIMARI	10-21	300	880	1,180	0	0	370	370	0	0	1,550
	10-22	540	490	1,030	600	160	200	960	0	0	1,990
	10-23	1,000	1030	2,030	1,000	200	650	1,850	0	0	3,880
	10-24	0	720	720	700	55	100	855	0	0	1,575
	10-25	440	420	860	600	130	200	930	0	0	1,790
GABA KORRO	10-26	570	865	1,435	500	150	300	950	0	0	2,385
	10-15	410	990	1,400	600	0	0	600	0	0	2,000
	10-16	500	720	1,220	500	150	500	1,150	0	0	2,370
	10-17	1,090	1070	2,160	500	200	0	700	0	0	2,860
	10-18	420	620	1,040	0	0	425	425	0	0	1,465
GUTTE	10-19	480	780	1,260	500	125	300	925	0	0	2,185
	10-20	800	1000	1,800	0	150	500	650	0	0	2,450
	10-09	1,240	1040	2,280	800	250	300	1,350	0	0	3,630
	10-10	360	1020	1,380	600	100	100	800	0	0	2,180
	10-11	510	1200	1,710	800	300	150	1,250	0	0	2,960
GAMINA	10-12	0	1180	1,180	600	160	635	1,395	0	0	2,575
	10-13	600	700	1,300	700	120	280	1,100	0	0	2,400
	10-14	820	820	1,640	0	0	560	560	0	0	2,200
	08-1	670	300	970	500	0	0	500	0	0	1,470
	08-2	1,040	360	1,400	0	0	0	0	0	0	1,400
ORA	08-3	2,850	300	3,150	0	0	70	70	100	0	3,320
	08-4	1,100	300	1,400	0	0	0	0	0	0	1,400
	08-5	1,500	480	1,980	500	0	80	580	0	0	2,560
	08-6	1,030	180	1,210	0	0	0	0	0	0	1,210
	08-8	1,535	600	2,135	0	0	70	70	0	0	2,205
DACHOLAKE	08-9	2,030	830	2,860	0	0	0	0	0	0	2,860
	08-10	1,380	360	1,740	0	0	10	10	0	0	1,750
	08-11	1,296	480	1,776	500	0	0	500	0	0	2,276
	08-12	4,730	480	5,210	1,000	0	120	1,120	0	0	6,330
	08-13	1,510	660	2,170	0	0	0	0	0	600	2,770
WALLA	08-21	2,130	600	2,730	0	0	0	0	0	0	2,730
	08-22	1,660	0	1,660	0	0	0	0	0	0	1,660
	08-23	2,240	0	2,240	0	0	0	0	0	0	2,240
	08-24	1,840	320	2,160	0	0	0	0	0	0	2,160
	08-25	850	660	1,510	500	0	0	500	0	0	2,010
GURA	08-26	1,275	490	1,765	0	0	0	0	0	0	1,765
	08-15	0	95	95	0	0	0	0	30	170	295
	08-16	900	950	1,850	0	0	0	0	0	0	1,850
	08-17	2,672	700	3,372	0	0	0	0	0	0	3,372
	08-18	2,100	1600	3,700	0	0	6	6	0	0	3,706
KELAHARERE	08-19	510	300	810	0	0	0	0	0	0	810
	08-20	1,500	790	2,290	0	0	0	0	0	0	2,290
	09-13	500	1020	1,520	0	0	0	0	102	0	1,622
	09-14	600	430	1,030	450	0	0	450	350	0	1,830
	09-15	1,530	570	2,100	0	0	0	0	204	0	2,304
AFALO	09-16	510	290	800	0	0	0	0	200	0	1,000
	09-17	1,530	1150	2,680	0	0	0	0	306	0	2,986
	09-18	510	580	1,090	0	0	0	0	400	0	1,490
	09-1	192	192	384	400	0	100	500	255	0	1,139
	09-2	0	365	365	0	0	200	200	500	0	1,065
GHALLA	09-3	0	264	264	0	0	150	150	470	0	884
	09-4	0	474	474	0	0	80	80	595	0	1,149
	09-5	0	638	638	300	0	110	410	306	0	1,354
	09-6	0	808	808	600	0	440	1,040	680	0	2,528
	09-7	140	370	510	0	0	0	0	1,200	0	1,710
Sub-total:	09-8	0	1150	1,150	0	0	230	230	1,010	0	2,390
	09-9	0	290	290	200	0	130	330	1,300	0	1,920
	09-10	0	500	500	400	0	230	630	1,000	0	2,130
	06-11	0	672	672	0	0	0	0	600	0	1,272
	06-12	1,400	1152	2,552	0	100	30	130	750	0	3,432
06-13	828	1,188	2,016	0	0	0	0	0	0	2,016	
06-14	420	852	1,272	0	0	0	0	0	0	1,272	
06-15	1,500	708	2,208	0	0	110	110	300	0	2,618	
06-16	840	204	1,044	0	0	0	0	100	0	1,144	
Sub-total:		58,958	41,247	100,175	14,350	2,350	7,736	24,436	10,758	770	136,139

(continued to the following page)

Appendix Tab. 6 (2) Household income in Gera Area

Unit: Birr

Village Nam	Family Code	Food Crops			Livestock				Forestry	Others	Total
		For Sale	Own Use	Total	Cattle	Products	Others	Total	/1	/2	
From previous page:		58,958	41,247	100,175	14,350	2,350	7,735	24,436	10,758	770	136,139
SHAJA	06-1	0	708	708	0	91	30	121	0	0	829
	06-2	132	272	404	0	0	70	70	0	200	674
	06-3	0	390	390	500	80	42	622	0	0	1,012
	06-4	0	1,108	1,108	200	84	60	344	0	0	1,452
	06-5	0	618	618	0	160	240	400	0	0	1,018
	06-6	0	672	672	0	0	0	0	0	360	1,032
GERA	06-17	0	1,165	1,165	0	0	0	0	920	0	2,085
	06-18	400	752	1,152	0	0	0	0	153	0	1,305
	06-19	0	240	240	0	0	0	0	900	0	1,140
	06-20	0	272	272	0	0	0	0	850	0	1,122
	06-21	0	548	548	0	0	0	0	750	0	1,298
	06-22	0	384	384	0	0	0	0	1,000	0	1,384
GUREKESO	07-19	166	444	610	500	30	75	605	100	0	1,315
	07-20	240	280	520	0	0	100	100	130	0	750
	07-21	881	1,010	1,891	2,000	50	70	2,120	0	0	4,011
	07-22	280	280	560	400	40	70	510	150	0	1,220
	07-23	886	844	1,730	500	70	0	570	0	0	2,300
	07-24	524	524	1,048	350	40	78	468	0	0	1,516
NASAW ABO	07-13	144	494	638	0	0	60	60	950	0	1,648
	07-14	0	688	688	0	0	0	0	1,280	0	1,968
	07-15	0	688	688	0	0	0	0	460	0	1,148
	07-16	0	808	808	460	50	0	510	550	0	1,868
	07-17	60	624	684	0	70	68	138	800	0	1,622
	07-18	0	888	888	0	50	180	230	560	0	1,678
EGLIASULAJA	05-2-2	780	1,820	2,600	350	300	0	650	300	0	3,550
	05-2-3	760	920	1,680	350	80	114	544	200	0	2,424
	05-2-4	620	1,340	1,960	350	50	35	435	90	0	2,485
	05-2-5	500	856	1,356	350	120	114	584	200	0	2,140
	05-2-6	970	1,380	2,350	350	80	110	540	250	0	3,140
	05-2-7	1,200	1,560	2,760	350	120	100	570	100	0	3,430
KOROKOCHO	07-01	430	688	1,118	383	12	100	495	0	0	1,613
	07-02	1,118	828	1,946	0	100	70	170	0	0	2,116
	07-03	678	556	1,234	0	0	50	80	0	0	1,314
	07-04	384	554	938	0	80	15	95	0	0	1,033
	07-05	404	678	1,082	0	0	60	60	0	0	1,142
	07-06	550	700	1,250	0	0	90	90	0	0	1,340
MUJE	07-07	410	564	974	0	0	102	102	0	0	1,076
	07-08	412	778	1,190	0	60	48	108	0	0	1,298
	07-09	464	548	1,012	300	50	480	830	0	0	1,842
	07-10	684	510	1,194	550	0	0	550	200	0	1,944
	07-11	210	358	568	0	0	0	0	300	0	868
	07-12	674	628	1,302	390	40	30	460	0	0	1,762
HUSTA	10-07-1	100	800	900	500	120	100	720	0	0	1,620
	10-07-2	200	550	750	500	200	150	850	0	0	1,600
	10-07-3	740	760	1,500	0	0	600	600	500	0	2,600
	10-07-4	0	720	720	500	250	150	900	0	0	1,620
	10-07-5	0	520	520	1,000	244	100	1,344	0	0	1,864
	10-07-6	560	580	1,140	700	0	0	700	0	0	1,840
KOMBOUCHA	10-03-1	370	1,100	1,470	600	200	450	1,250	0	0	2,720
	10-03-2	340	680	1,020	700	0	150	850	0	0	1,870
	10-03-3	180	960	1,140	0	0	15	15	0	700	1,855
	10-03-4	690	430	1,120	0	0	80	80	0	0	1,200
	10-03-5	680	360	1,040	0	0	0	0	0	0	1,040
	10-03-6	180	610	790	300	0	130	430	300	0	1,520
ANDERACHA	06-9-1	180	396	576	0	0	240	240	0	0	816
	06-9-2	0	808	808	500	30	50	580	0	0	1,388
	06-9-3	344	822	1,166	0	72	0	72	0	0	1,238
	06-9-4	344	414	758	430	35	16	481	0	0	1,239
	06-9-5	1,620	1,740	3,360	350	80	70	500	0	0	3,860
	06-9-6	1,260	1,380	2,640	350	105	110	565	0	77	3,282
SADI	05-1-1	1,920	1,080	3,000	450	75	25	550	0	0	3,550
	05-1-2	1,800	1,200	3,000	350	80	95	525	0	0	3,525
	05-1-3	881	1,817	2,698	350	120	390	860	0	0	3,558
	05-1-4	1,537	1,510	3,047	350	120	80	550	0	0	3,597
	05-1-5	904	1,816	2,720	350	150	104	604	0	0	3,324
	05-1-6	1,102	1,658	2,760	350	150	150	650	0	0	3,410
Total		89,851	93,925	183,746	31,613	6,288	13,682	51,583	22,751	2,107	260,187
Average per household				1,413				397	175	16	2,001
Percentage				70.6%				19.8%	8.7%	0.8%	100%

Note: 1/ mainly honey 2/ mostly from wage labor

Source: Local Community Survey, JICA, 1996

Appendix Tab. 7 (1) Firewood collection in Belete Area

Village Name	Family Code	Family Size	Average Distance			Collection Time		Difficulty or Easiness			
			less 1 km	1-4km	5 km over	per Households	per Village	Difficult	Fairly Easy	Easy	Very Easy
AIRO GEFEKE	03-1-1	3	1			1.0					1
	03-1-2	4	1			1.0					1
	03-1-3	4	1			1.0					1
	03-1-4	4	1			1.0					1
	03-1-5	8	1			2.0				1	
	03-1-6	9	1			1.0					1
	03-1-7	4	1			1.0	1.1				1
SAMBO DERU	03-2-1	5		1		1.0				1	
	03-2-2	3		1		1.0				1	
	03-2-3	3		1		2.0				1	
	03-2-4	3		1		2.0				1	
	03-2-5	5			1	0.5					1
	03-2-6	5		1		1.5				1	
	03-2-7	3		1		1.5	1.4			1	
KOMO HARI	03-3-1	5		1		2.0				1	
	03-3-2	5	1			2.5			1		
	03-3-3	3	1			2.0				1	
	03-3-4	8			1	5.0		1			
	03-3-5	5		1		4.0		1			
	03-3-6	6	1			4.0				1	
	03-3-7	8			1	5.0	3.5	1			
AIRO SUFA	01-2-1	5			1	4.0		1			
	01-2-2	2		1		2.0				1	
	01-2-3	5		1		2.0				1	
	01-2-4	9			1	5.0		1			
	01-2-5	4		1		0.8					1
	01-2-6	8	1			3.0			1		
	01-2-7	4			1	4.0	3.0	1			
MIRGANO BOSO	01-4-1	10			1	4.0		1			
	01-4-2	4			1	3.0			1		
	01-4-3	6	1			1.5				1	
	01-4-4	11		1		4.0		1			
	01-4-5	5		1		5.0		1			
	01-4-6	7	1			4.0		1			
	01-4-7	5	1			4.0	3.6	1			
KISHE	02-1-1	6			1	3.0			1		
	02-1-2	6		1		3.0			1		
	02-1-3	16		1		0.5					1
	02-1-4	5		1		1.5				1	
	02-1-5	6	1			1.5				1	
	02-1-6	3	1			1.0					1
	02-1-7	5	1			2.0	1.8				1
YANGA DEAO	02-2-1	6		1		2.0				1	
	02-2-2	8	1			1.0					1
	02-2-3	10	1			1.0					1
	02-2-4	10		1		2.0				1	
	02-2-5	13		1		1.5				1	
	02-2-6	7		1		1.5				1	
	02-2-7	7		1		3.0	1.7		1		
SEBEKA DEBIVE	02-3-1	4	1			1.0					1
	02-3-2	8	1			1.0					1
	02-3-3	7	1			1.0					1
	02-3-4	8	1			1.0					1
	02-3-5	5	1			0.5					1
	02-3-6	8	1			0.5					1
	02-3-7	5	1			1.0	0.9				1
SHEBE MOFFA	04-1-1	5		1		1.5				1	
	04-1-2	8		1		1.5				1	
	04-1-3	7		1		1.5					1
	04-1-4	6		1		1.5					1
	04-1-5	5			1	2.5			1		
	04-1-6	6		1		1.5					1
	04-1-7	4		1		1.5	1.6				1
ELKE TOGORE	01-1-1	4		1		3.0		1			
	01-1-2	4	1			3.0				1	
	01-1-3	6	1			1.0				1	
	01-1-4	10			1	4.0		1			
	01-1-5	5			1	2.0			1		
	01-1-6	6	1			0.8				1	
	01-1-7	6			1	1.5	2.2	1			
Total	70 Households	423	29	28	13	145.5		14	8	24	24
Average		6.0				2.1					

Source: Local Community Survey, JICA, 1996

Appendix Tab. 7 (2) Firewood collection in Gara Area

Village Name	Family Code	Family Size	Average Distance			Collection Time		Difficulty or Easiness				
			less 1 km	1-4km	5 km over	per Households	per Village	Diffi- cult	Fairly Easy	Easy	Very Easy	
1 G. KASHIMARI	10-21	8		1		1.0				1		
2	10-22	7		1		1.0				1		
3	10-23	14	1			2.0				1		
4	10-24	6	1			1.0				1		
5	10-25	6		1		1.0				1		
6	10-26	8	1			1.5	1.3			1		
7 GABA KORRO	10-15	4		1		2.5				1		
8	10-16	5	1			1.0				1		
9	10-17	10		1		1.0				1		
10	10-18	3	1			1.0				1		
11	10-19	4		1		1.0				1		
12	10-20	5	1			1.0	1.3			1		
13 GUTTE	10-09	10		1		1.0				1		
14	10-10	5	1			1.0				1		
15	10-11	7		1		1.0			1			
16	10-12	5		1		1.5				1		
17	10-13	4	1			1.5			1			
18	10-14	3		1		1.0	1.2			1		
19 GAMINA	08-1	6		1		1.5			1			
20	08-2	5	1			1.0			1			
21	08-3	10	1			0.5				1		
22	08-4	5	1			1.5				1		
23	08-5	8		1		1.0			1			
24	08-6	3	1			1.0	1.1			1		
25 OBA	08-8	4	1			1.5				1		
26	08-9	6	1			1.5					1	
27	08-10	5	1			1.5			1			
28	08-11	4	1			2.0				1		
29	08-12	10	1			3.0				1		
30	08-13	8	1			2.0	1.9			1		
31 DACHOLAKI	08-21	7	1			2.0					1	
32	08-22	2	1			2.0				1		
33	08-23	9	1			2.0				1		
34	08-24	4	1			1.0					1	
35	08-25	8	1			1.0				1		
36	08-26	6	1			1.5	1.6				1	
37 WALLA	08-15	5	1			1.0				1		
38	08-16	6	1			0.5				1		
39	08-17	6	1			1.0				1		
40	08-18	10	1			2.0				1		
41	08-19	8	1			1.0				1		
42	08-20	7	1			2.0	1.3			1		
43 GURA	09-13	4	1			2.0				1		
44	09-14	6	1			1.5				1		
45	09-15	6	1			2.0				1		
46	09-16	3	1			1.0				1		
47	09-17	7	1			2.0				1		
48	09-18	5	1			1.5	1.7			1		
49 KELAARERE	09-1	3		1		1.5			1			
50	09-2	5		1		2.0			1			
51	09-3	5		1		2.0			1			
52	09-4	6		1		0.7				1		
53	09-5	5	1			1.0				1		
54	09-6	10	1			3.0	1.7			1		
55 AFALO	09-7	2	1			1.0					1	
56	09-8	5	1			1.0					1	
57	09-9	11	1			1.0				1		
58	09-10	5	1			1.0	1.3			1		
59 CHALLA	06-11	8		1		1.0			1			
60	06-12	14	1			1.5				1		
61	06-13	12		1		1.0			1			
62	06-14	4	1			1.5			1			
63	06-15	7		1		2.0				1		
64	06-16	9		1		1.5	1.4			1		
Sub-total:		408	45	19	0	89.7			0	13	45	6

(continued to the following page)

Appendix Tab. 7 (3) Firewood collection in Gera Area

Village Name	Family Code	Family Size	Average Distance			Collection Time per Household	Difficulty or Easiness				
			less 1 km	1-4km	5 km over		per Village	Difficult	Fairly Easy	Easy	Very Easy
From previous page :		408	45	19	0	89.7	0	13	45	6	
65 SELAJA	06-1	7		1		3.0		1			
66	06-2	5		1		2.0			1		
67	06-3	5	1			1.0			1		
68	06-4	7		1		3.0		1			
69	06-5	7	1			1.5			1		
70	06-6	3	1			1.5	2.0		1		
71 CERA	06-17	5	1			2.0			1		
72	06-18	5		1		2.0		1			
73	06-19	6		1		2.0			1		
74	06-20	4	1			2.0			1		
75	06-21	4	1			2.0			1		
76	06-22	5	1			2.0	2.0		1		
77 GUREKESKO	07-19	5	1			2.0			1		
78	07-20	5		1		2.0			1		
79	07-21	10	1			2.0				1	
80	07-22	3	1			2.0		1			
81	07-23	11		1		2.0		1			
82	07-24	7	1			2.0	2.0		1		
83 NASAW ABO	07-13	5	1			2.0				1	
84	07-14	10	1			2.0				1	
85	07-15	4	1			2.0				1	
86	07-16	6	1			2.0			1		
87	07-17	6	1			2.0			1		
88	07-18	6	1			1.0	1.8			1	
89 KOLLASULAJA	05-2-2	4	1			1.5			1		
90	05-2-3	4	1			1.0			1		
91	05-2-4	4	1			2.0			1		
92	05-2-5	4	1			3.0			1		
93	05-2-6	4	1			1.5			1		
94	05-2-7	4	1			1.0	1.7		1		
95 KOBOKOCHO	07-01	10		1		2.0			1		
96	07-02	10		1		2.0			1		
97	07-03	7		1		2.0			1		
98	07-04	6		1		2.0			1		
99	07-05	9		1		2.0			1		
100	07-06	7		1		2.0	2.0		1		
101 MUJE	07-07	7		1		1.5		1			
102	07-08	9	1			1.0			1		
103	07-09	6		1		2.0			1		
104	07-10	10	1			2.0			1		
105	07-11	4	1			2.0			1		
106	07-12	4	1			2.0	1.8		1		
107 DUSTA	10-07-1	5	1			1.0			1		
108	10-07-2	3		1		1.5			1		
109	10-07-3	5	1			0.5			1		
110	10-07-4	5		1		1.5		1			
111	10-07-5	3		1		2.0		1			
112	10-07-6	6			1	3.0	1.6	1			
113 KOMBOLCIA	10-03-1	8		1		3.0		1			
114	10-03-2	7	1			1.0			1		
115	10-03-3	9		1		2.0			1		
116	10-03-4	7	1			1.0			1		
117	10-03-5	7		1		2.0		1			
118	10-03-6	8		1		3.0	2.0		1		
119 ANDERACHA	06-9-1	4	1			1.5			1		
120	06-9-2	11	1			3.0				1	
121	06-9-3	5	1			2.5			1		
122	06-9-4	6		1		3.0		1			
123	06-9-5	4		1		1.5	1				
124	06-9-6	4	1			1.0	2.1	1			
125 SADI	05-1-1	4	1			2.0		1			
126	05-1-2	4	1			1.0			1		
127	05-1-3	4		1		2.5		1			
128	05-1-4	4		1		2.5		1			
129	05-1-5	4	1			1.3		1			
130	05-1-6	4		1		3.0	2.0	1			
Total		793	83	46	1	215.5		2	30	86	12
Average		6.1				1.7					

Source: Local Community Survey, JICA, 1996

Appendix Tab. 8 (1) Perceived needs ranking in Belete Area

NAME OF PA	FAMILY CODE	IMPROVEMEN OF YOUR HOUSE	WATER SUPPLY FOR DOMESTIC USE	LIGHTING FOR YOUR HOUSE	EASIER ACCESS TO FUEL WOOD	EASIER ACCESS TO HONEY	EASIER ACCESS TO FOREST	BETTER ACCESS TO ROAD CONDITION	PURCHASE OF FARMING TOOLS	EASIER ACCESS TO FARM LAND	EASIER ACCESS TO AGRICUL. CREDIT
1	ATRO GEFERE 03-1-1	3	0	0	0	0	0	0	2	2	2
2	03-1-2	3	1	3	0	0	0	0	0	0	0
3	03-1-3	3	0	2	3	0	0	0	3	3	0
4	03-1-4	3	0	3	3	0	0	2	3	0	2
5	03-1-5	2	0	2	0	0	0	0	2	3	0
6	03-1-6	3	3	3	0	0	0	0	2	2	0
7	03-1-7	3	0	2	0	0	0	0	3	2	0
8	SAMBO DERU 03-2-1	3	0	0	0	0	1	0	0	3	3
9	03-2-2	3	3	0	3	0	0	2	2	2	1
10	03-2-3	0	3	0	3	0	0	0	3	2	2
11	03-2-4	3	3	0	3	0	0	2	2	2	1
12	03-2-5	3	3	0	3	0	0	0	2	2	1
13	03-2-6	3	2	0	3	0	0	0	3	0	2
14	03-2-7	3	0	0	3	0	0	0	2	3	2
15	KOMO HARI 03-3-1	0	3	0	0	0	0	3	0	1	6
16	03-3-2	2	3	0	2	0	0	2	0	1	1
17	03-3-3	2	3	0	2	0	0	2	0	1	1
18	03-3-4	3	3	0	2	0	0	0	0	1	6
19	03-3-5	2	3	0	3	0	0	2	2	1	3
20	03-3-6	2	2	0	3	0	0	3	2	0	1
21	03-3-7	2	2	0	2	0	0	3	0	0	1
22	ATRO SUFA 01-2-1	3	3	3	0	1	2	0	2	1	0
23	01-2-2	3	2	2	0	0	2	3	1	1	0
24	01-2-3	3	2	1	2	0	0	1	0	3	3
25	01-2-4	3	2	2	0	1	0	1	3	3	1
26	01-2-5	2	3	0	0	0	0	2	2	3	0
27	01-2-6	3	3	2	0	1	0	2	1	0	0
28	01-2-7	3	3	0	1	0	0	0	1	2	0
29	MIRGANO BOSO 01-4-1	3	1	2	0	0	0	3	1	1	0
30	01-4-2	3	2	2	0	0	1	3	3	1	0
31	01-4-3	3	3	0	0	0	0	3	1	2	1
32	01-4-4	3	1	3	0	0	1	2	0	2	0
33	01-4-5	3	3	0	1	0	0	2	2	2	0
34	01-4-6	3	1	3	0	0	0	2	2	2	0
35	01-4-7	2	1	2	0	0	0	3	0	1	0
36	KISHE 02-1-1	3	2	0	0	0	0	0	0	0	0
37	02-1-2	2	0	0	0	0	0	3	1	0	0
38	02-1-3	3	0	2	0	0	0	3	3	0	2
39	02-1-4	0	0	0	1	0	0	0	2	0	0
40	02-1-5	3	0	0	0	0	0	0	2	0	0
41	02-1-6	0	0	1	0	0	0	2	0	0	0
42	02-1-7	0	0	1	0	0	0	2	0	0	3
43	ELKE TOGOBE 01-1-1	2	2	1	0	1	0	2	0	1	0
44	01-1-2	2	2	2	1	0	0	3	3	3	0
45	01-1-3	0	1	0	0	0	0	3	2	0	2
46	01-1-4	3	3	0	1	0	0	3	0	2	0
47	01-1-5	1	0	1	0	2	0	3	0	0	3
48	01-1-6	2	3	0	2	2	0	3	0	1	0
49	01-1-7	2	3	0	2	2	0	3	0	1	0
50	YANBA DEAO 02-2-1	0	0	0	0	0	0	0	0	0	0
51	02-2-2	1	0	0	0	0	0	0	2	0	0
52	02-2-3	0	0	0	0	0	0	0	0	0	0
53	02-2-4	3	0	3	0	0	0	1	2	0	0
54	02-2-5	0	0	0	0	0	0	1	0	0	0
55	02-2-6	0	0	0	0	0	0	1	0	0	0
56	02-2-7	0	0	0	0	0	0	1	0	0	0
57	SERKA DEBYE 02-3-1	0	0	0	0	0	0	2	0	0	0
58	02-3-2	0	0	0	0	0	0	1	0	3	0
59	02-3-3	2	3	2	0	0	0	1	3	0	1
60	02-3-4	3	0	2	0	0	0	1	1	0	0
61	02-3-5	0	0	1	0	0	0	0	0	0	0
62	02-3-6	3	0	0	0	0	0	0	0	0	1
63	02-3-7	0	0	1	0	2	0	0	0	3	0
64	SHEBE MOFFA 04-2-1	2	0	1	0	0	0	2	0	0	3
65	04-2-2	1	0	1	0	0	0	2	2	0	3
66	04-2-3	1	0	0	0	0	0	1	3	0	3
67	04-2-4	1	0	0	0	0	0	2	2	0	3
68	04-2-5	1	0	2	0	0	0	3	2	0	3
69	04-2-6	1	1	0	0	0	0	0	3	0	2
70	04-2-7	1	1	0	0	0	0	3	1	0	3
TOTAL POINTS		134	88	58	49	12	7	103	87	71	71
RANKING		1	4	10	11	16	18	2	5	7	7

Source: Local Community Survey, JICA, 1996

(to be continued)

Appendix Tab. 8 (2) Perceived needs ranking in Belete Area

NAME OF PA	FAMILY CODE	BETTER ACCESS TO SCHOOL	BETTER ACCESS TO CLINIC	FORMULATION OF FARMER ORGANIZATIONS	FORMULATION OF WOMEN ORGANIZATIONS	INCREASE IN PRODUCTION	INCREASE IN INCOME	BETTER HEALTH CONDITIONS	BETTER TELECOMMUNICATIONS	EMPLOYMENT OPPORTUNITIES	AQUACULTURE TECHNOLOGY	BETTER FARMING TECHNOLOGY
1	ATRO GEFERE 03-1-1	1	0	0	0	0	3	1	0	1	0	3
2	03-1-2	2	2	0	0	0	2	1	0	3	1	0
3	03-1-3	2	2	0	0	0	1	0	0	1	1	0
4	03-1-4	1	1	0	0	0	0	0	0	1	0	0
5	03-1-5	1	0	0	0	0	0	1	0	0	1	3
6	03-1-6	1	2	0	0	1	0	0	0	1	0	0
7	03-1-7	2	1	0	0	3	0	0	0	2	1	0
8	SAMDO DERU 03-2-1	2	0	0	0	2	0	2	0	1	0	1
9	03-2-2	1	1	0	0	0	0	0	0	0	0	0
10	03-2-3	0	2	0	0	1	1	0	0	1	0	0
11	03-2-4	0	1	0	0	0	1	0	0	0	0	0
12	03-2-5	0	1	0	0	0	0	0	0	0	0	1
13	03-2-8	1	2	0	0	1	0	0	0	0	0	1
14	03-2-7	0	1	0	0	1	2	0	0	1	0	0
15	KOMO HARI 03-3-1	2	0	0	0	0	1	1	0	2	2	0
16	03-3-2	2	0	0	0	1	1	0	0	0	0	0
17	03-3-3	2	0	0	0	0	0	0	0	0	0	1
18	03-3-4	3	0	3	0	1	1	0	0	1	0	0
19	03-3-5	2	0	0	0	0	0	0	0	0	0	0
20	03-3-6	2	0	0	0	0	0	0	0	0	0	0
21	03-3-7	2	0	0	0	0	1	0	0	0	0	0
22	ATRO SUFA 01-2-1	1	2	0	0	0	0	0	0	0	0	0
23	01-2-2	0	1	0	0	0	0	0	0	0	0	0
24	01-2-3	0	2	1	0	0	0	0	0	0	0	0
25	01-2-4	0	2	0	0	0	0	0	0	0	0	0
26	01-2-5	3	1	0	1	0	0	0	0	1	0	0
27	01-2-8	0	2	0	0	1	0	0	0	0	1	0
28	01-2-7	0	3	0	0	2	0	3	0	0	0	0
29	MIRGANO BOSO 01-4-1	2	3	0	0	0	0	2	0	0	0	0
30	01-4-2	1	2	0	0	0	0	0	0	0	0	0
31	01-4-3	2	2	0	0	1	0	0	0	0	0	0
32	01-4-4	3	2	0	0	0	0	0	0	0	0	0
33	01-4-5	1	3	0	0	0	0	0	0	0	0	0
34	01-4-6	1	3	0	0	0	0	1	0	0	1	0
35	01-4-7	3	3	0	0	0	0	0	0	0	0	0
36	KISHE 02-1-1	1	0	0	0	0	0	1	0	0	0	0
37	02-1-2	0	0	0	0	0	0	0	0	0	0	0
38	02-1-3	0	1	0	0	1	0	0	0	0	0	0
39	02-1-4	0	3	0	0	0	0	0	0	0	0	0
40	02-1-5	0	0	0	0	0	0	0	0	0	0	0
41	02-1-8	0	3	0	0	0	1	0	0	0	0	0
42	02-1-7	0	0	0	0	0	0	0	0	0	0	0
43	ELKE TOGOBE 01-1-1	0	0	0	0	0	3	3	0	0	0	3
44	01-1-2	0	2	0	0	1	0	0	0	0	0	1
45	01-1-3	0	2	0	0	3	1	3	0	0	0	1
46	01-1-4	0	2	0	0	2	0	1	0	0	0	1
47	01-1-5	2	3	0	0	3	1	0	0	0	0	0
48	01-1-8	1	1	0	0	0	0	0	0	0	0	0
49	01-1-7	1	1	0	0	0	0	0	0	0	0	0
50	YANGA DEAO 02-2-1	1	3	0	0	2	0	1	0	0	0	0
51	02-2-2	0	3	0	0	0	0	0	0	0	0	0
52	02-2-3	3	1	0	0	1	0	0	0	0	0	0
53	02-2-4	0	0	2	0	2	0	0	0	0	0	2
54	02-2-5	3	0	0	0	0	0	1	0	0	0	0
55	02-2-6	3	2	0	0	0	0	0	0	0	0	0
56	02-2-7	3	2	0	0	3	0	0	0	0	0	0
57	SEBEKA DEBYE 02-3-1	0	0	0	0	3	0	0	0	0	0	0
58	02-3-2	0	0	0	0	2	0	0	0	0	0	3
59	02-3-3	0	2	0	0	3	0	0	0	0	1	0
60	02-3-4	1	0	0	0	0	0	3	0	0	1	0
61	02-3-5	0	0	0	0	2	0	0	0	0	0	0
62	02-3-6	0	0	0	0	2	0	0	0	0	0	0
63	02-3-7	0	0	0	0	0	0	0	0	0	0	0
64	SHEBE MOFFA 04-2-1	3	3	0	0	2	1	1	0	0	0	0
65	04-2-2	3	3	0	0	0	0	2	0	0	0	1
66	04-2-3	2	3	0	0	2	1	2	0	0	0	0
67	04-2-4	3	3	0	0	2	1	1	0	0	0	0
68	04-2-5	3	2	0	0	1	1	0	0	0	0	0
69	04-2-6	3	3	0	0	2	1	2	0	0	0	0
70	04-2-7	2	2	0	0	2	3	0	0	0	0	0
TOTAL POINTS		84	97	6	1	59	25	33	0	16	10	22
RANKING		6	3	19	20	8	13	12	24	15	17	14

Source: Local Community Survey, JICA, 1996

Scoring system: priority 1=3, priority 2=2, priority 3=1, no priority=0

Appendix Tab. 8 (3) Perceived needs ranking in Gera Area

NAME OF PA	CODE NO.	IMPROVEMENT OF YOUR HOUSE	WATER SUPPLY FOR DOMESTIC USE	LIGHTING IN YOUR HOUSE	EASIER ACCESS TO FUEL	EASIER ACCESS TO WOOD	EASIER ACCESS TO HONEY	EASIER ACCESS TO FOREST	BETTER ROAD CONDITION	PURCHASE OF FARMING TOOLS	EASIER ACCESS TO FARM LAND	EASIER ACCESS TO AGRICULTURAL CREDIT
1 G. KASHIMARI	10-21	2	2	2	0	0	0	0	3	1	0	1
2	10-22	2	2	2	0	0	0	0	3	1	0	1
3	10-23	2	2	2	0	0	0	0	3	1	0	0
4	10-24	3	2	2	0	0	0	0	3	2	0	0
5	10-25	2	2	1	0	0	0	0	3	2	0	1
6	10-26	2	0	0	0	0	0	0	3	0	0	1
7 GABA KORRO	10-15	2	2	1	0	0	0	0	3	2	0	0
8	10-16	3	0	0	0	0	0	0	3	2	0	1
9	10-17	3	0	0	0	0	0	0	3	1	0	0
10	10-18	3	1	0	0	0	0	0	3	0	0	0
11	10-19	2	0	0	0	0	0	0	3	2	2	1
12	10-20	2	0	0	0	0	0	0	3	1	0	0
13 GUTIE	10-09	1	1	0	0	0	0	0	3	0	0	0
14	10-10	3	2	0	0	0	0	0	3	2	0	1
15	10-11	2	2	0	0	0	0	0	3	1	0	0
16	10-12	2	2	1	0	0	0	0	3	2	0	1
17	10-13	1	1	0	0	0	0	0	3	1	0	2
18	10-14	3	1	0	0	0	0	0	3	2	0	0
19 CAMINA	08-1	3	0	1	1	0	0	0	3	2	0	2
20	08-2	3	0	1	1	0	0	0	3	0	0	3
21	08-3	3	0	1	1	0	0	0	3	2	0	2
22	08-4	3	0	0	3	0	0	0	3	0	2	1
23	08-5	3	0	2	0	0	0	0	3	2	0	2
24	08-6	3	0	2	0	0	0	0	3	1	2	2
25 OBA	08-8	3	0	2	0	0	0	0	3	2	0	3
26	08-9	3	0	1	2	1	0	0	3	0	2	0
27	08-10	3	0	3	0	0	0	0	3	2	0	2
28	08-11	3	0	0	2	0	0	0	3	0	2	3
29	08-12	3	0	1	0	0	0	0	3	2	0	3
30	08-13	3	0	3	0	0	0	0	3	2	0	3
31 DACHOLAKI	08-21	2	0	2	0	0	0	0	3	1	0	0
32	08-22	3	0	0	0	3	0	0	3	0	0	2
33	08-23	3	0	0	0	0	0	0	3	1	2	2
34	08-24	2	0	0	0	0	0	0	3	1	0	1
35	08-25	3	0	0	0	0	0	0	3	1	1	3
36	08-26	3	0	1	0	0	0	0	3	0	0	2
37 WAILA	08-15	2	0	1	0	0	0	0	3	2	0	2
38	08-16	3	0	0	0	0	0	0	3	2	0	2
39	08-17	3	0	0	0	0	0	0	3	0	1	0
40	08-18	3	0	1	0	0	0	0	3	2	0	2
41	08-19	2	0	2	0	0	0	0	3	1	0	2
42	08-20	3	0	1	0	0	0	0	3	2	0	1
43 GURA	09-13	3	0	2	0	0	0	0	3	0	0	1
44	09-14	3	0	0	0	2	0	0	3	0	0	2
45	09-15	3	0	2	0	0	0	0	3	0	1	1
46	09-16	3	0	0	0	1	0	0	3	0	0	1
47	09-17	3	0	1	0	0	0	0	3	2	0	1
48	09-18	3	0	0	0	2	0	0	3	0	0	1
49 KELANARERE	09-1	3	0	1	2	0	0	0	3	0	2	3
50	09-2	3	0	2	0	0	0	0	3	2	0	2
51	09-3	3	0	2	0	0	0	0	2	1	0	1
52	09-4	3	0	0	0	0	0	0	1	3	0	1
53	09-5	3	0	0	0	0	0	0	1	0	1	3
54	09-6	3	0	2	0	0	0	0	3	1	0	1
55 AFALO	09-7	2	0	0	0	0	0	0	3	1	1	1
56	09-8	3	0	0	0	0	0	0	1	0	1	3
57	09-9	3	0	2	0	2	0	0	3	1	0	3
58	09-10	3	0	1	1	0	0	0	3	1	0	3
59 CHALLA	09-11	2	0	2	0	2	0	0	0	1	0	3
60	09-12	2	1	0	0	0	0	0	0	2	0	1
61	09-13	0	1	1	0	0	0	0	2	1	0	2
62	09-14	2	1	0	0	0	0	0	0	3	0	3
63	09-15	1	2	0	0	0	0	0	0	0	0	1
64	09-16	2	1	0	0	0	0	0	0	3	0	3
Sub-total		164	26	54	13	13	0	0	169	73	20	96

(to be continued)

Appendix Tab. 8 (4) Perceived needs ranking in Gera Area

NAME OF PA	CODE NO.	BETTER ACCESS TO SCHOOL	BETTER ACCESS TO CLINIC	FORMULATION OF FARMER ORGANIZATIONS	FORMULATION OF WOMEN ORGANIZATION	INCREASE IN AGRICULTURE PRODUCTION	INCREASE IN INCOME	BETTER HEALTH CONDITIONS	BETTER TELECOMMUNICATIONS	EMPLOYMENT OPPORTUNITIES	AQUACULTURE TECHNOLOGY	BETTER FARMING TECHNOLOGY
1 G. KASHIMARI	10-21	0	0	0	0	0	1	3	0	0	0	2
2	10-22	0	0	0	0	1	0	3	0	0	0	3
3	10-23	0	0	0	0	1	1	3	0	0	0	3
4	10-24	0	0	0	0	1	1	3	0	0	0	1
5	10-25	0	0	0	0	1	0	3	0	0	0	3
6	10-26	2	2	0	0	1	1	3	0	0	0	3
7 GABA KORRO	10-15	0	0	0	0	2	1	3	0	1	0	3
8	10-16	2	2	0	0	0	1	3	0	1	0	0
9	10-17	2	2	0	0	1	1	3	0	0	0	2
10	10-18	0	0	1	1	0	2	3	0	2	0	2
11	10-19	1	1	0	0	0	0	3	0	0	0	3
12	10-20	3	1	1	0	0	2	3	0	0	0	2
13 GUTTE	10-09	3	2	0	0	1	0	3	0	0	0	2
14	10-10	0	0	0	0	1	2	3	0	0	0	1
15	10-11	1	1	0	0	2	0	3	0	0	0	0
16	10-12	0	0	0	0	0	1	3	0	0	0	3
17	10-13	0	1	0	0	2	2	3	0	0	0	3
18	10-14	2	0	0	0	1	2	3	0	0	0	3
19 GAMINA	08-1	0	3	0	0	2	0	0	0	1	0	0
20	08-2	2	2	0	0	2	1	0	0	0	0	0
21	08-3	0	3	0	0	0	2	0	0	1	0	0
22	08-4	0	2	0	0	2	1	1	0	0	0	0
23	08-5	0	3	0	0	1	1	0	1	0	0	0
24	08-6	0	3	0	0	1	1	0	0	0	0	0
25 DBA	08-8	0	0	0	0	0	2	1	0	1	0	1
26	08-9	0	0	0	0	3	2	0	0	0	0	1
27	08-10	0	0	0	0	1	2	1	0	1	1	2
28	08-11	0	0	0	0	2	1	1	0	0	1	0
29	08-12	2	2	0	0	0	2	1	0	2	0	1
30	08-13	0	0	0	0	2	3	2	0	1	0	2
31 DACHOLAKI	08-21	3	2	0	0	1	1	0	0	0	3	0
32	08-22	2	2	0	0	1	1	0	0	0	0	1
33	08-23	2	3	0	0	1	1	0	0	0	0	0
34	08-24	2	3	0	0	0	1	0	0	0	2	3
35	08-25	2	2	0	0	2	1	0	0	0	0	0
36	08-26	2	3	0	0	2	1	0	0	0	0	1
37 WALLA	08-15	3	3	0	0	1	1	0	0	1	0	2
38	08-16	1	1	0	0	3	2	0	0	0	0	1
39	08-17	2	3	0	0	2	2	1	0	0	0	1
40	08-18	3	3	0	0	2	2	0	0	1	1	2
41	08-19	3	3	0	0	1	1	2	0	0	2	3
42	08-20	2	3	0	0	2	2	0	0	1	0	2
43 GURA	09-13	2	2	0	0	1	1	0	0	0	0	3
44	09-14	2	3	0	0	1	1	0	0	0	0	1
45	09-15	2	2	0	0	3	1	0	0	0	0	0
46	09-16	3	2	0	0	2	2	0	0	0	0	1
47	09-17	2	2	0	0	3	0	0	0	0	0	1
48	09-18	2	3	0	0	1	2	0	0	0	0	1
49 KELAHARERE	09-1	0	2	0	0	1	1	0	0	0	0	0
50	09-2	1	0	0	0	0	3	1	0	1	0	0
51	09-3	3	2	0	0	3	0	0	0	0	0	1
52	09-4	2	2	0	0	3	2	0	0	0	0	1
53	09-5	1	2	0	0	3	2	0	0	0	0	2
54	09-6	3	2	0	0	1	0	0	0	0	0	0
55 AFALO	09-7	3	3	0	0	2	2	0	0	0	0	0
56	09-8	2	2	0	0	3	2	0	0	0	0	1
57	09-9	0	2	0	0	0	1	0	0	1	0	0
58	09-10	0	2	0	0	2	3	3	0	0	0	3
59 CHALLA	09-11	2	2	0	0	3	3	2	0	0	0	0
60	09-12	2	2	0	0	3	3	2	0	0	0	0
61	09-13	1	1	0	0	3	0	3	0	0	0	0
62	09-14	1	1	0	0	3	3	2	0	0	0	0
63	09-15	1	0	0	3	3	2	0	0	0	0	0
64	09-16	2	2	0	0	3	3	3	0	0	0	0
Sub-Total		84	102	2	4	96	82	80	1	16	10	77

(to be continued)

Appendix Tab. 8 (5) Perceived needs ranking in Gera Area

NAME OF PA	FAMILY CODE	IMPROVEMENT OF YOUR HOUSE	WATER SUPPLY FOR DOMESTIC USE	LIGHTING FOR YOUR HOUSE	EASIER ACCESS TO FUEL WOOD	EASIER ACCESS TO HONEY	EASIER ACCESS TO FOREST	BETTER ROAD CONDITION	PURCHASE OF FARMING TOOLS	EASIER ACCESS TO FARM LAND	EASIER ACCESS TO AGRICUL. CREDIT
From previous page:		164	28	54	13	13	0	169	73	20	96
65 SELAJA	06-1	1	2	0	0	0	0	3	0	0	0
66	06-2	1	2	0	0	0	0	3	1	0	0
67	06-3	2	0	0	0	0	0	0	1	0	0
68	06-4	1	2	0	0	0	0	3	1	0	0
69	06-5	1	1	0	0	0	0	3	0	0	0
70	06-6	1	1	0	0	0	0	2	2	0	3
71 GERA	06-17	1	0	0	0	0	0	1	3	0	3
72	06-18	1	3	0	0	0	0	0	1	0	3
73	06-19	1	0	0	0	0	0	0	3	0	3
74	06-20	1	0	0	0	0	0	1	3	0	3
75	06-21	1	0	0	0	0	0	0	3	0	2
76	06-22	0	3	0	0	0	0	0	1	0	3
77 GUREKESO	07-19	3	1	0	0	0	0	1	0	2	0
78	07-20	2	3	0	0	0	0	2	0	2	0
79	07-21	1	0	0	0	0	0	1	0	1	0
80	07-22	1	0	0	0	0	0	3	0	2	1
81	07-23	1	3	0	0	0	0	1	0	3	0
82	07-24	3	1	0	0	0	0	1	0	2	0
83 NASAW ABO	07-13	3	1	0	1	0	0	1	0	0	0
84	07-14	1	0	0	0	0	3	1	0	1	0
85	07-15	1	1	0	1	0	0	0	0	3	0
86	07-16	3	2	0	0	0	0	1	0	2	0
87	07-17	2	0	0	0	0	0	0	0	2	0
88	07-18	3	1	0	1	0	0	0	0	1	0
89 KOLLASULAJA	05-2-2	1	1	0	0	0	0	1	0	3	0
90	05-2-3	1	1	0	0	0	0	1	0	3	0
91	05-2-4	2	0	0	0	0	0	3	0	0	0
92	05-2-5	3	2	0	0	0	0	3	2	0	0
93	05-2-6	1	1	1	0	0	0	3	2	0	0
94	05-2-7	3	1	2	0	0	0	3	2	0	0
95 KOBOKOCHO	07-41	3	1	0	0	0	0	1	0	2	0
96	07-42	2	3	0	0	0	0	2	0	2	0
97	07-43	1	0	0	0	0	0	1	0	1	0
98	07-44	1	0	0	0	0	0	3	0	2	1
99	07-45	1	3	0	0	0	0	1	0	3	0
100	07-46	3	1	0	0	0	0	1	0	2	0
101 MUJE	07-07	1	1	0	1	0	0	0	0	3	0
102	07-08	3	2	0	0	0	0	1	0	2	0
103	07-09	2	0	0	0	0	0	0	0	2	0
104	07-10	3	1	0	1	0	0	0	0	1	0
105	07-11	1	1	0	0	0	0	1	0	3	0
106	07-12	1	1	0	0	0	0	1	0	3	0
107 DUSTA	10-07-1	2	3	2	0	0	0	3	0	0	0
108	10-07-2	2	2	2	0	0	0	3	0	0	1
109	10-07-3	3	3	1	0	0	0	3	1	0	1
110	10-07-4	2	2	3	0	0	0	3	1	0	0
111	10-07-5	2	1	2	0	0	0	3	1	0	0
112	10-07-6	3	2	0	0	0	3	3	2	0	1
113 KOMBOLCHA	10-03-1	0	3	2	0	0	0	3	1	0	2
114	10-03-2	2	2	0	0	0	0	3	1	0	1
115	10-03-3	3	0	1	0	0	0	3	2	0	3
116	10-03-4	3	0	3	0	0	0	3	2	0	2
117	10-03-5	3	0	1	2	0	0	3	0	2	3
118	10-03-6	3	0	2	0	0	0	3	2	0	2
119 ANDERACHA	06-9-1	2	2	0	0	0	0	0	1	0	1
120	06-9-2	3	3	0	0	0	0	0	3	0	1
121	06-9-3	3	0	1	0	0	0	0	2	0	2
122	06-9-4	1	1	0	1	0	0	0	0	0	0
123	06-9-5	3	1	2	0	0	0	1	2	0	0
124	06-9-6	3	0	2	0	0	0	1	2	0	0
125 SADI	05-1-1	3	1	2	0	0	0	2	3	0	0
126	05-1-2	3	2	3	0	0	0	2	2	0	0
127	05-1-3	3	1	3	0	0	0	2	3	0	0
128	05-1-4	2	0	3	0	0	0	0	1	0	0
129	05-1-5	3	2	3	0	0	0	0	2	0	0
130	05-1-6	3	2	2	0	0	0	1	1	0	0
TOTAL POINTS		293	108	97	21	13	6	268	133	75	138
RANKING		1	11	13	14	17	19	2	9	13	8

(to be continued)

Appendix Tab. 8 (6) Perceived needs ranking in Gera Area

NAME OF PA	FAMILY CODE	BETTER ACCESS TO SCHOOL	BETTER ACCESS TO CLINIC	FORMULATION OF FARMER ORGANIZATIONS	FORMULATION OF WOMEN ORGANIZATION	INCREASE IN AGRIC. PRODUCTION	INCREASE IN INCOME	BETTER HEALTH CONDITION	BETTER TELECOMMUNICATIONS	EMPLOYMENT OPPORTUNITIES	AQUACULTURE TECHNOLOGY	BETTER FARMING TECHNOLOGY
From previous page:		84	102	2	4	86	89	80	1	16	10	77
65 SELAJA	06-1	0	3	0	0	2	2	1	0	0	0	1
66	06-2	0	3	0	0	2	2	1	0	0	0	0
67	06-3	3	3	0	0	1	1	2	0	0	0	2
68	06-4	1	3	0	0	2	2	0	0	0	0	1
69	06-5	2	3	0	0	2	2	1	0	0	0	0
70	06-6	0	0	0	0	0	2	1	0	0	0	0
71 GERA	06-17	0	3	0	0	0	2	2	0	0	0	1
72	06-18	0	3	0	0	0	2	2	0	0	0	1
73	06-19	0	2	0	0	1	3	2	0	0	0	1
74	06-20	0	3	0	0	0	2	2	0	0	0	1
75	06-21	0	3	0	0	2	3	1	0	0	0	1
76	06-22	0	2	0	0	1	3	2	0	0	0	1
77 GUREKESO	07-19	2	2	0	0	3	3	1	0	0	0	0
78	07-20	1	1	0	0	3	3	1	0	0	0	0
79	07-21	2	2	0	0	3	3	2	0	0	0	0
80	07-22	1	2	0	0	3	2	2	0	0	0	0
81	07-23	2	2	0	0	3	3	1	0	0	0	0
82	07-24	2	2	0	0	3	3	2	0	0	0	0
83 NASAWABO	07-13	2	2	0	0	3	3	2	0	0	0	0
84	07-14	2	2	0	0	3	3	2	0	0	0	0
85	07-15	2	2	0	0	3	3	2	0	0	0	0
86	07-16	1	2	0	0	3	3	1	0	0	0	0
87	07-17	1	1	0	0	3	3	3	0	0	2	0
88	07-18	2	2	0	0	3	3	2	0	0	0	0
89 KOLLASULAJA	05-2-2	2	2	0	0	3	3	2	0	0	0	0
90	05-2-3	2	2	0	0	3	3	2	0	0	0	0
91	05-2-4	1	3	0	0	1	0	2	0	0	1	2
92	05-2-5	0	1	0	0	3	0	1	0	0	0	1
93	05-2-6	0	3	0	0	2	0	2	0	0	0	3
94	05-2-7	0	1	0	0	3	0	2	0	0	0	1
95 KOBOKOCHO	07-41	2	2	0	0	3	3	1	0	0	0	0
96	07-42	1	1	0	0	3	3	1	0	0	0	0
97	07-43	2	2	0	0	3	3	2	0	0	0	0
98	07-44	1	2	0	0	3	2	2	0	0	0	0
99	07-45	2	2	0	0	3	3	1	0	0	0	0
100	07-46	2	2	0	0	3	3	2	0	0	0	0
101 MUJE	07-07	0	3	0	0	1	1	0	1	0	0	0
102	07-08	0	3	0	0	1	1	0	0	0	0	0
103	07-09	0	0	0	0	0	2	1	0	1	0	1
104	07-10	0	0	0	0	3	2	0	0	0	0	1
105	07-11	0	0	0	0	1	2	1	0	1	1	2
106	07-12	0	0	0	0	2	1	1	0	0	1	0
107 DUSTA	10-07-1	2	2	0	0	3	3	2	0	0	0	0
108	10-07-2	2	2	0	0	3	3	2	0	0	0	0
109	10-07-3	1	1	0	0	3	0	3	0	0	0	0
110	10-07-4	1	1	0	0	3	3	2	0	0	0	0
111	10-07-5	1	0	0	3	3	2	0	0	0	0	0
112	10-07-6	2	2	0	0	3	3	2	0	0	0	0
113 KOMBOLCHA	10-03-1	2	2	0	0	1	1	0	0	0	0	3
114	10-03-2	2	3	0	0	1	1	0	0	0	0	1
115	10-03-3	2	2	0	0	3	1	0	0	0	0	0
116	10-03-4	3	2	0	0	2	2	0	0	0	0	1
117	10-03-5	2	2	0	0	3	0	0	0	0	0	1
118	10-03-6	2	3	0	0	1	2	0	0	0	0	1
119 ANDERACHA	06-9-1	3	2	0	0	3	0	0	0	0	0	1
120	06-9-2	2	2	0	0	3	2	0	0	0	0	1
121	06-9-3	1	2	0	0	3	2	0	0	0	0	2
122	06-9-4	3	2	0	0	1	0	0	0	0	0	0
123	06-9-5	3	3	0	0	2	2	0	0	0	0	0
124	06-9-6	2	2	0	0	3	2	0	0	0	0	1
125 SADI	05-1-1	0	2	0	0	0	1	0	0	1	0	0
126	05-1-2	0	2	0	0	2	3	3	0	0	0	3
127	05-1-3	0	3	0	0	2	2	1	0	1	0	0
128	05-1-4	0	2	0	0	3	3	1	0	0	0	2
129	05-1-5	0	0	0	0	0	0	0	0	0	0	0
130	05-1-6	0	0	0	0	0	0	0	0	0	0	0
TOTAL POINTS		161	278	2	7	237	220	157	2	20	15	115
RANKING		7	4	20	18	3	5	6	20	15	16	10

Scoring system: priority 1=3, priority 2=2, priority 3=1, no priority=0

Source: The Local Community Survey, JICA, 1996

Appendix Tab. 9 Guideline for soil profile description

I. General Information

Profile No., Location, Date, Weather, Surveyor, Land form, Elevation, Slope, Land use or Vegetation, Parent Material, Drainage, Moisture Condition, Groundwater table(m)

II. Description of Individual Soil Horizons

1. Horizon symbol

Master horizons

H:An organic horizon formed or forming from accumulations of organic material deposited on the surface, that is saturated with water for prolonged periods.

H(P):Peat layer · **H(M) :** Muck layer.

O:An organic horizon formed , that is not saturated with water for more than a few days a year.

A:A mineral horizon formed or forming at or adjacent to the surface.

E:Eluviation layer.

B:A mineral horizon in which rock structure is obliterated or is but faintly evident, characterized by one or more of the following features:

(a)an illuvial concentration of silicate clay, iron, aluminium, or humus, alone or in combinations:

(b)a residual concentration of sesquioxides relative to source materials:

(c)an alteration of material from its original condition to the extent that silicate clays are formed, oxides are liberated, or both, or granular, blocky or prismatic structure is formed.

C:A mineral horizon (or layer) of unconsolidated material from which the solum is presumed to have formed which does not show properties diagnostic of any other master horizons.

R:A layer of continuous indurated rock.

Letter suffixes

The suffix letters used to qualify the master horizons are follows:

b:Buried or bisqual soil horizon.

c:Accumulation in concretionary form.

g:Mottling reflecting variations in oxidation and reduction.

h:Accumulation of organic matter in mineral horizons.

k:Accumulation of calcium carbonate.

m:Strongly cemented, consolidated, indurated.

n:Accumulation of sodium.

p:Disturbed by ploughing or other tillage practices.

q:Accumulation of silica.

r:Strong reduction as a result of groundwater influence.

(to be continued)

s:Accumulation of sesquioxides.

t:Illuvial accumulation of clay.

u:Unspecified.

w:Alteration in situ as reflected by clay content, colour, structure.

x:Occurrence of fragipan.

y:Accumulation of gypsum.

z:Accumulation of salts more soluble than gypsum.

2.Depth of top and bottom horizon (cm)

3.Boundary of horizon

a:abrupt, less than 2.5 cm · c : clear, 2.6 to 6.3 cm · g : gradual, 6.4 to 12.5 cm ·

d:diffuse, more than 12.6 cm

4.Form of boundary

s:smooth · w : wavy · i : irregular · b : broken

5.Colour

- wet, - dry (Munsell Soil colour charts-Hue Value/Chroma)

6.Mottling

- abundance- f : few, less than 2 % of profile · c : common, 2 to 20 % · m : many, more than 20 %

- size- f : fine, less than 5 mm wide · m : medium, 5 to 15 mm · c : coarse, more than 15 mm

- contrast- f : faint · d : distinct · p : prominent

- colour

7.Texture(Sandy, Loamy, Silty, Clay)

8.Structure

- grade- l : structureless · w : weak · m : moderate · s : strong

- type- p : prismatic · c : columnar · b : (angular) blocky · s : sub-angular blocky · p : platy

g:granular · v : non-structure

- size- f : fine · m : medium · c : coarse

9.Consistence

- wet

= stickness- nS : non-sticky · sS : slightly sticky · S : sticky · vS : very sticky

= plasticity- nP : non-plastic · sP : slightly plastic · P : plastic · vP : very plastic

- moist - lo : loose · vf : very friable · fr : friable · Ff : firm · vF : very firm ·

eF : extremely firm

- dry - lo : loose · S : soft · sH : slightly hard · H : hard · vH : very hard ·

eH : extremely hard

10.Roots

- abundance - abundant, very frequent, frequent, common, few, very few

- size - coarse, medium, fine

Appendix Tab. 10 (1) General site condition and profile morphology of soil survey plots

Profile No. Location	Land form	Vegetation	(Dominant tree species)	Depth	Soil properties		pH
					Texture	Hardness	
No.1 Belete Belete	Steeply Undulating	Plantation	<u>Eucalyptus camaldulensis</u> <u>Cupressus lusitanica</u>	85 cm Deep	SiCL Stony	20~22mm	6.17~6.06 Little acidic
No.2 Belete Belete	Steeply	Natural Forest	<u>Croton macrostachyus</u> <u>Aningeria adolf-friedricii</u> <u>Hagenia abyssinica</u>	135 cm Deep	LiC Stony	20~25mm	6.06~5.72 Little acidic
No.3 Belete Meti Abaye	Steeply	Natural Forest	<u>Ficus sur</u> <u>Aningeria adolf-friedricii</u> <u>Syzygium guineense</u>	45 cm Shallow	SiCL Stony	16mm	7.50~6.84 Neutral
No.4 Belete Mt. Damule slope	Very Steeply	Grassland (Plantation)	<u>Eucalyptus camaldulensis</u> (1988 EC Planted)	85 cm Deep	LiC	20mm	7.31~6.30 Neutral
No.5 Belete Gojeb site	Hill Undulating	Grassland (Plantation)	<u>Eucalyptus camaldulensis</u>	200 cm Deep	SiCL	21~24mm	6.56~6.25 Neutral
No.6 Belete Kishe site	Steeply	Grassland (Plantation)	<u>Eucalyptus camaldulensis</u> <u>Cupressus lusitaica</u>	70 cm Deep	CL	22~23mm	7.66~6.21 Neutral
No.7 Belete Hane	Undulating Flat	Grassland		50 cm Shallow ~ Deep	LiC	23~19mm	6.82~6.01 Neutral
No.8 Belete Yanga	Steeply	Natural Forest	<u>Ficus sur</u> <u>Albizia gummifera</u> <u>Syzygium guineense</u>	135 cm Deep	LiC	18~26mm	6.62~5.44 Little acidic

(to be continued)

Appendix Tab. 10 (2) General site condition and profile morphology of soil survey plots

Profile No. Location	Land form	Vegetation	(Dominant tree species)	Depth	Soil properties Texture Hardness	pH
No. 9 Gera Gamino	Steepy	Natural Forest	<u>Aningeria adolf-friedricii</u> <u>Vepris dainellii</u> <u>Croton macrostachyus</u>	65 cm Deep	LiC 20mm	6.02~5.04 Little acidic
No. 10 Gera Koka	Flat	Grassland (Marsh)		100 cm Deep G.W.T.-68cm	LiC 17mm	5.90~5.65 Little acidic
No. 11 Gera Gera Afalo	Hilly Undulating	Natural Forest (Coffee)	<u>Schefflera abyssinica</u> <u>Albizia gummifera</u> <u>Aningeria adolf-friedricii</u>	30 cm Shallow	LiC Stony 15~19mm	5.76~5.46 Little acidic
No. 12 Gera Afalo	Undulating (Steepy)	Natural Forest (Coffee)	<u>Croton macrostachyus</u> <u>Albizia gummifera</u> <u>Syzygium guineense</u> <u>Cordia africana</u>	70 cm Deep	LiC 21mm	6.13~5.31 Little acidic
No. 13 Gera Afalo Hagelo	Undulating Steepy	Natural Forest (Coffee)	<u>Croton macrostachyus</u> <u>Vepris dainellii</u> <u>Ficus sur</u>	100 cm Deep	LiC 23mm	6.00~5.38 Little acidic
No. 14 Gera Kombolcha	Undulating Steepy	Grassland	<u>(Aningeria adolf-friedricii)</u>	60 cm Deep	LiC Stony 27~21mm	6.18~5.86 Little acidic
No. 15 Gera Gena	Steepy	Natural Forest	<u>Aningeria adolf-friedricii</u> <u>Croton macrostachyus</u> <u>Albizia gummifera</u> <u>Polyscias fulva</u>	120 cm Deep	CL~LiC Stony 17~20mm	5.77~4.64 Acidic

(to be continued)

Appendix Tab. 10 (3) General site condition and profile morphology of soil survey plots

Profile No. Location	Land form	Vegetation	(Dominant tree species)	Depth	Soil properties		pH
					Texture	Hardness	
No.16 Gera Timba	Steeply	Natural Forest (Logging)	<u>Syzygium guineense</u> <u>Albizia gummifera</u> <u>Aningeria adolf-friedricii</u>	80 cm Deep	LiC Stony	22~25mm	6.24~4.72 Acidic
No.17 Gera Muje	Steeply	Natural Forest (Logging)	<u>Cordia africana</u> <u>Croton macrostachyus</u> <u>Aningeria adolf-friedricii</u> <u>Polyscias fulva</u>	100 cm Deep	LiC Stony	25~26mm	6.33~5.66 Little acidic
No.18 Gera Maru	Undulating Steeply	Natural Forest	<u>Syzygium guineense</u> <u>Polyscias fulva</u> <u>Apodytes dimidiata</u> <u>Aningeria adolf-friedricii</u>	90 cm Deep	LiC Stony	17~20mm	6.63~5.52 Little acidic
No.19 Gera Andracha	Steeply	Natural Forest	<u>Ekebergia capensis</u> <u>Pygeum africanum</u> <u>Polyscias fulva</u>	60 cm Deep	CL~LiC Stony	19mm	6.19~5.45 Little acidic
No.20 Gera Chara	Steeply	Natural Forest	<u>Polyscias fulva</u> <u>Croton macrostachyus</u> <u>Albizia gummifera</u>	35 cm Shallow	LiC Stony	16~18mm	6.59~5.47 Little acidic
No.21 Gera Sedi Chavra	Undulating	Plantation	<u>Eucalyptus camaldulensis</u>	60 cm Deep	LiC Stony	21mm	6.30~5.58 Little acidic
No.22 Gera Wanja Kersa	Steeply Undulating	Natural Forest (Coffee)	<u>Croton macrostachyus</u> <u>Albizia gummifera</u> <u>Syzygium guineense</u>	190 cm Deep	LiC	25mm	6.28~5.40 Little acidic

(to be continued)

Appendix Tab. 10 (4) General site condition and profile morphology of soil survey plots

Profile No. Location	Land form	Vegetation	(Dominant tree species)	Depth	Soil properties	pH
				30 cm Shallow	Texture LiC Stony	Hardness 19mm Little acidic
No.23 Gera Secha	Steeply	Natural Forest (Logging)	<u>Maytenus undata</u> <u>Aningeria adolf-friedricii</u> <u>Schefflera abyssinica</u> <u>Syzygium guineense</u>	100 cm Deep	LiC	6.72~5.93 Little acidic
No.24 Gera Kolla Selaja	Undulating	Natural Forest	<u>Aningeria adolf-friedricii</u> <u>Maytenus undata</u> <u>Polyscias fulva</u> <u>Hyphane thebaica</u>	100 cm Deep	LiC	6.47~5.13 Little acidic
No.25 Belete Gefere	Steeply	Plantation	<u>Cupressus lusitanica</u> (1982 planted)	150 cm Deep	LiC	6.51~5.87 Little acidic
No.26 Belete Gebo Deka	Very Steeply	Natural Forest	<u>Maytenus undata</u> <u>Phytolacea dodecandra</u> <u>Schefflera abyssinica</u> <u>Maesa lanceolata</u>	35 cm Shallow	SiCL ~LiC Stony	6.55~5.75 Little acidic
No.27 Belete Tugo Milki	Steeply	Natural Forest	<u>Maytenus undata</u> <u>Ficus sur</u> <u>Schefflera abyssinica</u> <u>Syzygium guineense</u>	100 cm Deep	LiC	5.05~4.67 Acidic
No.28 Belete Bore	Undulating Flat	Plantation	<u>Pinus pastula</u>	60 cm Deep	LiC	6.23~6.11 Little acidic

(to be continued)

Appendix Tab. 10 (5) General site condition and profile morphology of soil survey plots

Profile No. Location	Land form	Vegetation	(Dominant tree species)	Depth	Soil properties	pH
No.29 Gera Maru (Belete site)	Steeply	Natural Forest	<u>Schefflera abyssinica</u> <u>Syzygium guineense</u> <u>Pygeum africanum</u> <u>Aningeria adolf-friedricii</u>	75 cm Deep	Texture LiC Stony	24~25mm Stony 6.91~5.44 Little acidic
No.30 Gera Wala	Undulating (Steeply)	Secondary Forest	<u>Markhamia lutea</u> <u>Maesa lanceolata</u> <u>Rosa abyssinica</u> <u>Maytenus undata</u>	80 cm Deep	LiC	25~26mm 6.46~5.93 Little acidic
No.31 Gera Gura	Undulating	Natural Forest	<u>Maytenus undata</u> <u>Cordia africana</u> <u>Schefflera abyssinica</u> <u>Apodytes dimidiata</u>	56 cm Deep	LiC	20~25mm 7.77~5.90 Little acidic
No.32 Gera Loyi	Steeply	Natural Forest	<u>Aningeria adolf-friedricii</u> <u>Pygeum africanum</u> <u>Diospyros abyssinica</u> <u>Polyscias fulva</u>	90 cm Deep	LiC	20~25mm 5.87~5.15 acidic

Appendix Tab. 11 (1) Inventory of encroachment area (Belete Forest)

Belete Forest										
	Comp.	Subcomp.	Encroach No.	Location Type	Veg. Type	Slope			Area (ha) Subtotal	Area (ha) Total
1	1	1	1	M	OT	4			6	6
2	1	1	2	M	OT	2			4	4
3	1	1	3	M	OT	3			2	2
4	1	2	1	S	F3	4			1	1
5	1	2	2	S	F3	4			5	5
6	1	2	3	S	F3	4			1	1
7	1	2	4	M	F3	4			3	3
8	1	2	5	S	F3	3			1	1
9	1	2	6	S	F3	3			3	3
10	1	7	1	M	OT	3	4		22	22
11	1	7	2	M	OT	3			6	6
12	1	7	3	M	OT	6			4	4
13	1	6	1 a	M	OT	3	4		13	18
14	1	5	1 b	M	F1	4			2	15
15	1	5	2 c	M	F1	4	5		10	258
16	1	5	3 d	M	F1	4			7	13
	1	3	1 c	M	OT	4			131	
	2	3	1 a	M	F2	3			5	
17	2	4	1	M	OT	4			15	15
	2	4	2 b	M	OT	3	5		13	
	2	4	3 d	M	OT	5			6	
18	2	4	4	M	OT	4			4	4
19	2	4	5	M	OT	3			16	16
20	2	4	6	M	OT	5			6	6
	2	7	1 c	M	OT	4			117	
21	2	7	2 e	M	OT	3			69	214
22	2	7	3	M	OT	6			15	15
23	2	7	4	M	OT	4			24	24
	2	6	1 e	M	F2	3	4	5	145	
24	3	2	1	M	OT	3			3	3
25	3	1	1	S	F3	3			7	7
26	3	5	1	M	OT	4			18	18
27	4	8	1	M	OT	6			36	36
28	4	8	2	M	OT	6			34	34
29	4	8	3	M	OT	5			95	95
30	4	8	4	M	OT	6			24	24
31	4	8	5	M	OT	6			146	146
32	4	8	6	M	OT	6			118	118
33	4	17	1	M	OT	6			136	136
34	4	14	1	S	F4	6			36	36
35	4	15	1	S	OT	5			78	78
36	4	11	1	S	OT	6			36	36
37	4	12	1	S	OT	6			41	41
38	4	1	1	M	OT	6			1099	1099
39	4	1	2	M	OT	6			61	61
40	4	2	1	S	F3	6			24	24
41	4	2	2	S	F3	6			4	4
42	5	7	1	M	OT	5			34	34
43	5	10	1	M	F4	6			75	75
44	5	8	1	M	OT	6			89	89
45	5	8	2	M	OT	5			10	10
46	5	2	1	M	OT	6			127	127
47	5	2	2	M	OT	5			116	116

(to be continued)

Appendix Tab. 11 (2) Inventory of encroachment area (Belete Forest)

Belete Forest												
	Comp.	Subcomp.	Encroach No.	Location Type	Veg. Type	Slope				Area (ha) Subtotal	Area (ha) Total	
48	5	2	3	M	OT	5				33	33	
49	5	2	4	g M	OT	5				17	32	
50	5	3	1	S	F3	5				23	23	
51	5	3	2	S	F3	5				11	11	
	5	3	3	g M	F3	5				15		
52	5	4	1	M	OT	5				88	88	
53	5	4	2	M	OT	5				26	26	
54	5	4	3	M	OT	5				6	6	
Slope count:						2	1	0	0	0	Total Area:	3322
						3	13	0	0	0	# of Area:	54
						4	14	3	0	0	Max. size:	1099
						5	15	2	1	0	Min. size:	1
						6	18	0	0	0		

Appendix Tab. 12 (1) Inventory of encroachment area(Gara Forest)

Gera Forest												
	Comp.	Subcomp.	Encroach No.		Location Type	Veg. Type	Slope				Area (ha) Subtotal	Area (ha) Total
1	1	1	1		M	OT	3				12	12
2	1	2	1	DD	M	OT	3				39	43
3	1	3	1		S	F3	4				7	7
	1	3	2	DD	M	F3	3				4	
4	1	4	1		M	OT	3				129	129
5	1	4	2		M	OT	4				94	94
6	1	4	3		M	OT	3				42	42
7	1	4	4		M	OT	3				16	16
8	1	4	5		M	OT	3	4			388	388
9	1	4	6		M	OT	3				17	17
10	1	4	7		M	OT	2	3	4	5	246	246
11	1	5	1		S	F3	3				15	15
12	1	5	2		S	F3	2	3			41	41
13	1	5	3		S	F3	3	4			19	19
14	1	5	4	A	S	F3	3				2	7
15	1	5	5	B	S	F3	5				2	7
16	1	5	6	C	S	F3	3				30	43
17	1	6	1		M	OT	3				18	18
18	1	6	2		M	OT	3	4			156	156
19	1	7	1		M	OT	2	3	4		152	152
20	1	9	1		S	OT	2	3	4		337	337
	2	1	1	C	S	F3	2				13	
	2	1	2	B	S	F3	4				5	
	2	1	3	A	S	F3	3				5	
21	2	3	1		S	F4	2	3	4		98	98
22	2	6	1		S	F1	3				8	8
23	2	6	2		S	F1	3				10	10
24	2	6	3		S	F1	2	3	4		23	23
25	2	6	4		S	F1	3				3	3
26	2	6	5	HH	S	F1	4				3	7
27	2	8	1		M	OT	2	3			18	18
28	2	9	1		S	OT	2	3			47	47
29	2	10	1		S	F2	5				6	6
	3	1	1	HH	S	F1	3				4	
30	3	1	2		S	F1	4	5			7	7
31	3	1	3		S	F1	4	5			16	16
32	3	1	4		S	F1	2				3	3
33	4	2	1		S	F1	4	5			7	7
34	5	1	1		S	F3	4				7	7
35	5	1	2		S	F3	5	6			8	8
36	5	4	1	D	M	OT	2				9	17
37	5	4	2	E	M	OT	4				2	7
38	5	5	1	F	M	BT	3	4			7	24
39	5	7	1		S	F2	4				7	7
40	5	7	2	G	S	F2	3				5	7
41	5	9	1		S	F2	2				7	7
42	5	11	1		S	F2	3	4	5		14	14
43	5	11	2		S	F2	4	4			8	8
44	5	11	3		S	F2	3	4	5		10	10
	6	3	1	D	M	OT	2				8	
	6	3	2	E	M	OT	3				5	

(to be continued)

Appendix Tab. 12 (2) Inventory of encroachment area (Gara Forest)

Gera Forest											
	Comp.	Subcomp.	Encroach No.	Location Type	Veg. Type	Slope			Area (ha) Subtotal	Area (ha) Total	
	6	3	3	F	M	OT	3			17	
45	6	3	4		M	OT	4			38	38
46	7	1	1	H	M	OT	2	3	4	36	95
	7	2	1	H	M	F2	3			47	
47	7	2	2		S	F2	2			3	3
48	7	5	1	I	S	F1	2			4	8
49	7	6	1		M	F2	3			9	9
50	7	6	2		M	F2	4			17	17
	7	6	3	I	S	F2	5			4	
51	7	6	4		S	F2	3			12	12
52	7	6	5		M	F2	3			5	5
53	8	4	1		M	OT	4	5		10	10
54	8	2	1		S	F2	4			10	10
55	8	2	2		S	F2	2			2	2
56	8	3	1		S	OT	3			46	46
57	8	4	2		M	OT	5			10	10
58	8	4	3		M	OT	3	5		23	23
59	8	5	1		S	F3	2			11	11
60	8	5	2		M	F3	2			9	9
61	8	6	1		S	F1	4			5	5
62	8	6	2		S	F1	4			6	6
63	8	6	3		M	F1	2			3	3
64	8	6	4		M	F1	3			3	3
65	8	6	5		S	F1	2	3		7	7
66	8	8	1		S	F2	2			5	5
	8	8	2	G	S	F2	3			2	
67	8	8	3		S	F2	4			6	6
	8	8	4	H	M	F2	4			12	
68	8	8	5		S	F2	3			12	12
69	8	9	1		M	OT	2			8	8
70	8	11	1		M	OT	5			22	22
71	8	15	1		M	F3	2			7	7
72	8	15	2		M	F3	2			4	4
73	8	16	1		S	F4	3			5	5
74	8	16	2		S	F4	3			22	22
75	8	19	1		S	F3	3			1	1
76	8	19	2		S	F3	2	3		7	7
77	8	22	1	J	M	OT	2	4		9	11
78	8	22	2		M	OT	3	4	5	17	17
79	8	22	3		M	OT	3	4		6	6
80	8	22	4		M	OT	3	4		5	5
81	8	23	1		S	F4	5			7	7
82	8	24	1		S	F2	3			4	4
83	8	24	2		S	F2	3			2	2
84	8	24	3		S	F2	2			4	4
85	8	24	4		S	F2	2			4	4
86	8	25	1		S	F1	3			2	2
87	8	25	2		S	F1	3			7	7
88	8	25	3		S	F1	4			1	1
89	8	26	1		S	F2	2			2	2
90	8	29	1		S	F3	3			3	3

(to be continued)

Appendix Tab. 12 (3) Inventory of encroachment area (Gara Forest)

Gera Forest										
	Comp.	Subcomp.	Encroach No.	Location Type	Veg. Type	Slope			Area (ha) Subtotal	Area (ha) Total
91	9	14	1	M	OT	4	5		12	12
92	9	16	1	M	F2	3			10	10
93	9	16	2	S	F2	3	4		10	10
94	9	17	1	S	F3	3	4		3	3
95	9	17	2	S	F3	3			3	3
96	9	17	3	S	F3	2	3		3	3
97	9	18	1	S	F2	3			2	2
98	9	18	2	S	F2	3	4		5	5
99	9	21	1	K S	F4	3			4	10
100	9	23	1	M	OT	2	3		39	39
101	9	23	2	M	OT	3	4		21	21
102	9	23	3	M	OT	3			21	21
103	10	1	1	L S	F2	4			1	5
	10	2	1	J M	F1	3	4		1	
104	10	3	1	M	OT	2	3		33	33
105	10	4	1	S	F2	3			15	15
106	10	5	1	M	OT	2			10	10
107	10	5	2	M	OT	2	3		25	25
108	10	5	3	M	OT	3			14	14
109	10	6	1	M	OT	2			27	27
110	10	7	1	S	F2	3			3	3
	10	7	2	K S	F2	3			6	
111	11	1	1	S	F1	3			8	8
112	11	1	2	S	F1	3			3	3
113	11	1	3	S	F1	4			2	2
114	11	1	4	S	F1	2			3	3
115	11	1	5	S	F1	3			4	4
116	11	1	6	S	F1	4			1	1
117	11	4	1	S	F2	3			13	13
	11	4	2	L S	F2	4			4	
118	11	1	7	S	F1	4			2	2
	11	1	8	J M	F1	3			1	
119	13	3	1	M M	OT	3			2	7
120	13	4	1	N M	OT	2	3		44	70
121	13	4	2	M	OT	3			2	2
122	13	4	3	M	OT	3			4	4
123	13	4	4	M	OT	3			6	6
124	13	5	1	O S	F3	3			6	13
125	13	9	1	S	BT	4			4	4
126	13	9	2	S	BT	2			5	5
127	13	9	3	S	BT	3			13	13
128	13	10	1	CC S	F4	3			2	33
129	14	2	1	M	OT	2	3	4	130	130
130	14	2	2	M	OT	3	4		54	54
	14	5	1	O S	F3	3	4		5	
131	14	6	1	M	OT	4			36	36
	14	7	1	M M	OT	3			5	
132	14	7	2	M	OT	3			10	10
133	14	7	3	M	OT	2	3		7	7
134	14	9	1	M	OT	2	3	4	25	25
135	14	9	2	M	OT	3			4	4

(to be continued)

Appendix Tab. 12 (4) Inventory of encroachment area(Gara Forest)

Gera Forest												
	Comp.	Subcomp.	Encroach No.	Location Type	Veg. Type	Slope			Area (ha) Subtotal	Area (ha) Total		
136	14	10	1	S	F2	4			3	3		
137	14	10	2	M	F2	3			7	7		
138	14	12	1	S	F3	3			2	2		
139	14	12	2	S	F3	3			4	4		
140	14	13	1	M	OT	3			19	19		
141	14	15	1	S	F2	4			5	5		
142	14	16	1	S	F3	3			4	4		
143	14	17	1	M	OT	2	3	4	7	7		
144	14	17	2	M	OT	3			18	18		
145	14	17	3	M	OT	4			3	3		
146	12	9	1	P	S	F4	3		9	106		
	12	10	1	P	S	F4	5		20			
147	15	5	1		S	F3	3		6	6		
	15	2	1	P	S	F4	3	4	5	77		
148	15	6	1		S	F4	2	3	4	75		
149	15	7	1		S	F2	3		4	4		
	15	12	1	CC	S	F4	3	4	31			
150	15	11	1		S	F1	2		3	3		
151	15	11	2		S	F1	4		4	4		
152	15	11	3		S	F1	2		4	4		
	15	13	1	N	M	OT	4	5	26			
	15	14	1	O	S	BT	2		2			
153	15	17	1		S	OT	4		20	20		
154	15	18	1		S	OT	4		10	10		
155	15	19	1		M	F4	4		15	15		
156	15	22	1		S	F4	2	3	4	5	547	547
157	16	2	1	Q	M	F3	2	3	4	8	36	
158	16	2	2		S	F3	4		12	12		
159	16	3	1		M	OT	3	4	37	37		
	16	3	2	Q	M	OT	2	3	4	28		
160	16	4	1		M	F2	3		11	11		
161	16	4	2		M	F2	3		6	6		
162	16	4	3	R	S	F2	2		10	17		
163	16	4	4	S	S	F2	3	3	3	7		
164	16	4	5	T	S	F2	2		2	3		
165	16	4	6	H	S	F2	4		2	4		
166	16	6	1		S	F1	2		3	3		
167	16	9	1		S	F1	3		3	3		
168	16	9	2		S	F1	2		3	3		
169	16	9	3		S	F1	2	4	5	7	7	
170	16	9	4		S	F1	2		3	3		
171	16	9	5	U	M	F1	3		2	4		
172	16	10	1		S	F2	3		2	2		
173	16	10	2		S	F2	3		2	2		
174	16	13	1		M	OT	4		11	11		
175	16	13	2		M	OT	3		10	10		
176	16	18	1		S	F2	3		4	4		
177	16	18	2		M	F2	3		1	1		
178	16	18	3		M	F2	3		2	2		
179	16	18	4		M	F2	3		1	1		
180	16	18	5		M	F2	3		1	1		

(to be continued)

Appendix Tab. 12 (5) Inventory of encroachment area(Gara Forest)

Gera Forest										
	Comp.	Subcomp.	Encroach No.	Location Type	Veg. Type	Slope			Area (ha) Subtotal	Area (ha) Total
181	16	18	6	M	F2	3			1	1
182	16	18	7	M	F2	3			1	1
183	16	18	8	S	F2	2			1	1
184	16	18	9	S	F2	4			1	1
185	16	18	10	S	F2	2	4		3	3
186	16	18	11	S	F2	3			5	5
187	16	19	1	M	OT	3			1	1
188	16	19	2	M	OT	3			1	1
189	16	19	3	M	OT	3			3	3
190	16	21	1	M	OT	3			40	40
191	16	23	1	M	OT	3			46	46
192	16	23	2	M	OT	3			6	6
193	16	23	3	M	OT	3			11	11
194	16	23	4	M	OT	4			5	5
195	16	23	5	M	OT	3			6	6
196	16	23	6	M	OT	3			3	3
197	16	23	7	M	OT	3			3	3
198	16	23	8	M	OT	3			3	3
199	16	23	9	M	OT	2	3		23	23
200	17	1	1	V M	OT	3			5	8
201	17	1	2	W M	OT	3			17	29
202	17	2	1	S	F3	4			6	6
203	17	2	2	S	F3	3			5	5
	17	2	3	V M	F3	3			3	
204	17	2	4	M	F3	3			13	13
205	17	2	5	M	F3	3			9	9
206	17	2	6	M	F3	4			5	5
207	17	2	7	GG S	F3	3			4	8
208	17	2	8	S	F3	3			3	3
	17	2	9	W M	F3	3			12	
209	17	2	10	S	F3	4			8	8
	17	3	1	GG S	OT	3			4	
210	18	1	1	S	F1	3	4	5	12	12
211	18	1	2	S	F1	4			3	3
212	18	1	3	S	F1	2			6	6
213	18	1	4	X M	F1	3			11	217
214	18	1	5	EE M	F1	3	5		3	27
	18	4	1	X M	OT	3			13	
215	18	6	1	S	F1	3			3	3
216	18	6	2	Y M	F1	3			3	4
217	18	6	3	Z M	F1	2			7	11
218	18	6	4	FF M	F1	2			2	4
219	18	7	1	M	OT	3			9	9
	18	7	2	FF M	OT	3			2	
220	18	9	1	M	OT	3	4		19	19
221	18	9	2	M	OT	3			55	55
222	18	9	3	AA M	OT	3	4		52	57
	18	9	4	EE M	OT	3	5		24	
223	18	16	1	BB S	F1	3			3	6
224	18	16	2	S	F1	2			4	4
225	18	18	1	S	F4	3	4		15	15
226	18	18	2	M	F4	2			5	5
	18	19	1	AA M	F3	4			5	
227	18	22	1	S	F3	3			4	4

Appendix Tab. 12 (6) Inventory of encroachment area (Gara Forest)

Gera Forest																
	Comp.	Subcomp.	Encroach No.	Location Type	Veg. Type	Slope				Area (ha) Subtotal	Area (ha) Total					
	18	22	2	BB	S	F3	3				3					
228	18	23	1		S	F4	3				10	10				
	18	24	1	U	M	OT	3				2					
229	18	24	2		M	OT	3				4	4				
230	18	24	3		M	OT	3				9	9				
231	18	25	1		S	F3	4				15	15				
	18	26	1	II	S	F2	2				2					
	18	26	2	R	S	F2	2				7					
	18	26	3	S	S	F2	2				4					
	18	26	4	T	S	F2	2				1					
232	18	28	1		S	F3	3				33	33				
233	18	28	2		S	F3	3				6	6				
234	18	28	3		S	F3	2				4	4				
	19	1	1	Z	M	OT	2				4					
	19	1	2	Y	M	OT	3				1					
	19	1	3	X	M	OT	2	3			166					
235	19	2	1		S	F3	3	4			28	28				
236	19	2	2		S	F3	4				3	3				
237	19	3	1		S	F2	4				13	13				
	19	4	1	X	M	F1	2	3			27					
						Slope count:				2	72	0	0	0	Total area:	5293
										3	149	28	0	0	# of area:	237
										4	49	28	13	0	Max. size:	547
										5	8	9	6	2	Min. size:	1
										6	0	1	0	0		

Appendix Tab. 13 (1) Survey results of coffee production sites

Tree species (40m x 40m plot)		Collecting coffee beans only					Plantation	
	Management intensity	none	none	mini.	mini.	mini.	1st yr	4th yr
Local name	Scientific name	plot 1	plot 2	plot 3	plot 4	plot 7	plot 5	plot 6
U-do	*leave looks like palm	2						
saho	*tree				4			
Ammabeyya	?	1						
babessa	?				1			
Halele	<i>Albizia grandibracteata</i>	1			3			
Ambabbessa	<i>Albizia gummifera</i>	2	2	4		1		6
Sehoo	<i>Allophylus abyssinicus</i>	6	3	1	1	4		
chalalaka	<i>Apodytes dimidiata</i>		2					1
Lolchisa	<i>Bersama abyssinica</i>	1			1	4		
loko	<i>Cassipourea nuxensorensis</i>			1				1
ulumay	<i>Clausena anisata</i>					13		
wadesa	<i>Cordia africana</i>			4			11	1
bakkannisa	<i>Croton macrostachyus</i>			8			4	
Ulaga	<i>Ehliia cymosa</i>	1		1				
adamy	<i>Euphorbia candelabrum</i>				1			1
harbu	<i>Ficus sur</i>					1		
simarraru	<i>Galiniera coffeoides / G. saxifraga</i>			1		1		
warangoo	<i>Macaranga lophostigma</i>	2	10					
kombolcha	<i>Maytenus senegalensis</i>				1	2		
askra	<i>Milletia ferruginea</i>					5		2
gagama	<i>Olea hochstetteri</i>		6	8	1	11		
bayaa	<i>Olea welwitschii</i>			3	9			1
birango	<i>Oxyanthus speciosus</i>				3			
Podocarpus	<i>Podocarpus gracilior</i>	2	1					
kaariyoo	<i>Polyscias ferruginea / P. fluva</i>		4					1
korasuma	<i>Premna schimperi</i>			1				
homi	<i>Pygeum africana</i>					1		1
bosoka	<i>Sapium ellipticum</i>			1	1			
buto	<i>Schefflera abyssinica</i>	2	4			3		
badesa	<i>Syzygium guineense</i>			15	3			1
Hadessa	<i>Teclea nobilis</i>	18	13	2	9	10		
	Total # of species	11	9	13	14	11	7	6
	upper layer	6	5	7	6	2	3	3
	middle layer	4	2	5	4	4	4	4
	lower layer	5	8	9	9	7	2	1
	Total # of trees:	38	45	50	43	51	20	12
	upper layer	8	10	17	12	2	4	5
	middle layer	7	3	12	7	7	7	6
	lower layer	23	32	20	24	42	9	1

(to be continued)

Appendix Tab. 13 (2) Survey results of coffee production sites

Shrub species:		Collecting coffee beans only					Plantation	
	Management intensity	none	none	mini.	mini.	mini.	1st yr	4th yr
Local name	Scientific name	plot 1	plot 2	plot 3	plot 4	plot 7	plot 5	plot 6
coffee (natural)	<i>Coffea arabica</i>	28	47	241	224	62	26	
coffee (planted)	<i>Coffea arabica</i>						35	28
sehoo	<i>Allophylus abyssinicus</i>			1		1		
chalalaga	<i>Apodytes dimidiata</i>					1		
lolchisa	<i>Bersama abyssinica</i>		1					1
Ulumay	<i>Clausena anisata</i>	1	1	1		1		
cordia sp.	<i>Cordia africana</i>	1						
dambi	<i>Ficus spp.</i>	1				1		
simararu	<i>Galiniera coffeoides / G. saxifraga</i>	1	1	1		1		
kombolcha	<i>Maytenus senegalensis</i>		1		1			1
askra	<i>Milletia ferruginea</i>							1
Gaja	<i>Mimusops kummel</i>							1
gagama	<i>Olea hochstetteri</i>			1	1	1		
bayaa	<i>Olea welwitschii</i>		1	1	1			
birango	<i>Oxyanthus speciosus</i>	1	1		1			
podo	<i>Podocarpus gracilior</i>	1	1					
hadessa	<i>Teclea nobilis</i>		1		1	1		
ebicha	<i>Vernonia amygdalina</i>	1						
	<i>Total # of sp.</i>	7	8	5	5	7	4	0
Stumps (10m x 10m subplot):							diameter	
?	?						4,4	
lolchisa	<i>Bersama abyssinica</i>						2	
Loko	<i>Cassiporea ruwensorensis</i>						22	
askra	<i>Milletia ferruginea</i>						8	
Gaja	<i>Mimusops kummel</i>						5,6,6,6,6,12	
badessa	<i>Syzygium guineense</i>						8	
hadessa	<i>Teclea nobilis</i>						4,10,20	

Appendix Tab. 14 Comparison between coffee sites and F1 forest with coffee in the understory in Belete Forest

Plots with naturally grown coffee plants:

Belete Forest

frequency surveyed coffee plot (total 2)	frequency F1 forest (total 4)	Species	F1 plots with coffee in the understory (plot No.):				Coffee plantation:	
			56	57	62	68	1st yr	4th yr
		2 <i>Albizia grandibracteata</i>	1	7				
1		2 <i>Albizia gummifera</i>		6	1			6
		1 <i>Allophylus abyssinicus</i>	2					
		1 <i>Aningeria adolfi-friederici</i>	1					
1		3 <i>Apodytes dimidiata</i>	2			1	1	
		3 <i>Bersama abyssinica</i>	2	3	2			
1		3 <i>Cassipourea ruwensorensis</i>	4		7	4		1
		3 <i>Celtis africana</i>		1	2	1		
2		2 <i>Cordia africana</i>				7	11	1
1		4 <i>Croton macrostachyus</i>	7	6	2	1		4
		<i>Cupressus lucitanica</i>						
		<i>Dracaena steudneri</i>						
		<i>Ehretia cymosa</i>						
1		<i>Euphorbia candelabrum</i>						1
		1 <i>Ficus</i> spp.				10		
		2 <i>Ficus sur</i>		1	1			
		2 <i>Galiniera coffeoides/ G. saxifrage</i>	6			1		
		<i>Maesa lanceolata</i>						
		2 <i>Maytenus senegalensis</i>	2		1			
1		2 <i>Milletia ferruginea</i>	2	8				2
		4 <i>Mimusops kummel</i>	10	1	5	9		
1		5 <i>Olea welwitschii</i>	2	5	16	9	1	
		1 <i>Podocarpus gracilior</i>	1					
1		3 <i>Polyscias ferruginea/P. flava</i>	3	3			1	
		<i>Premna schimperi</i>						
1		3 <i>Pygeum africana</i>	1		1		1	
		2 <i>Rothmannia urcelliformis</i>	3			2		
		1 <i>Sapium ellipticum</i>	2					
		1 <i>Schefflera abyssinica</i>	1					
2		4 <i>Syzygium guineense</i>	5	11	1		1	1
		3 <i>Teclea nobilis</i>	8		4	15		
		<i>Vernonia amygdalina</i>						
				1				
		total number of species:	20	12	12	11	7	6
		upper layer	2	9	7	4	3	3
		middle layer	9	8	5	3	4	4
		lower layer	17	5	6	10	2	1
		total number of trees:	65	53	43	60	20	12
		upper layer	6	18	17	6	4	5
		middle layer	16	23	11	10	7	6
		lower layer	43	12	15	44	9	1

Appendix Tab. 15 Comparison between coffee beans collecting sites
and F1 forest with coffee in the understory in Gera Forest

Plots with naturally grown coffee plants:
Gera Forest

frequency surveyed coffee plot (total 5)	frequency F1 forest (total 13)	Species name	F1 plots with coffee in the understory (plot #)													Coffee collecting site				
			5	9	11	12	13	39	47	48	49	50	52	53	54	c1	c2	m1	m2	m3
2		<i>Albizia grandibracteata</i>														1			3	
4	7	<i>Albizia gummifera</i>	1	5	2		1	23	5		4					2	2	4		1
5		<i>Allophylus abyssinicus</i>	2	8		1	2	19	1			1				6	3	1	1	4
		<i>Aninperia adolfi-friederici</i>												2						
1	5	<i>Apodytes dimidiata</i>	1				4			2		2		1			2			
3	1	<i>Bersama abyssinica</i>				1									1				1	4
1	8	<i>Cassipourea ruwensorensis</i>		1	2	6			14	4	10	8	13					1		
	7	<i>Celtis africana</i>		3	14	10			2	6		12			11					
1		<i>Clausena anisata</i>																		13
1	7	<i>Cordia africana</i>				1	2		1	1			1	3	2				4	
1	6	<i>Croton macrostachyus</i>					4	7	3		1			1	3				8	
		<i>Cupressus lucitanica</i>																		
		<i>Discopodium penninevium</i>																		
	2	<i>Dracaena steudneri</i>				1								3						
2		<i>Ehliia cymosa</i>	1	2											1	1		1		
	1	<i>Ekebergia capensis</i>														1				
	2	<i>Elaeodendron buchananii</i>												8	1	8				
		<i>Eleusine laegeri</i>																		
		<i>Euclea schimperi</i>																		1
1	1	<i>Euphorbia candelabrum</i>				1														1
		<i>Ficus spp.</i>																		
1	5	<i>Ficus sur</i>		4		3					2	1	1							
2		<i>Gahnia coffeoides / G. saxifrage</i>																	1	1
	1	<i>Grewia bicolor</i>			1															
	1	<i>Ilex mitis</i>			1															
	1	<i>Landolphia owariensis</i>													1					
2	2	<i>Macaranga lophostigma</i>		1				2								2	10			
	2	<i>Maesa lanceolata</i>																		
	2	<i>Manilkara butugi</i>		1											1					
2	3	<i>Maytenus senegalensis</i>							1		3	2							1	2
1	4	<i>Millettia ferruginea</i>				8	13							2	12					5
		<i>Mimusops kummel</i>																		
4	8	<i>Olea hochstetteri</i>		9	5			2	2		1	6	1	5			6	8	1	11
2	12	<i>Olea welwitschii</i>	6	11	7	10	16		8	24	16	39	19	20	14			3	9	
1	3	<i>Oxyanthus speciosus</i>		2				7		1										3
	1	<i>Pittosporum abyssinicum</i>	1																	
2	1	<i>Podocarpus gracilior</i>								6						2	1			
1	5	<i>Polyscias ferruginea / P. flava</i>			1			2	4			1	1				4			
1	2	<i>Premna schimperi</i>									1	7						1		
		<i>Pterocephalus frutescens</i>																		
1	4	<i>Pygeum africana</i>	12	1					1	1										1
		<i>Rapanea simensis</i>																		
	2	<i>Rothmannia urcelliformis</i>								3			3							
	2	<i>Rytigynia neglecta</i>		1								2								
2	4	<i>Sapium ellipticum</i>								3	1		1		1			1	1	
3	9	<i>Scheffera abyssinica</i>	2	2	4	1	1			3	6	2	1			2	4			3
2	10	<i>Syzygium guineense</i>	3	5	11	1	3			12	4	1	3	15				15	3	
5	10	<i>Teclea nobilis</i>	26	3	19	3		8		9		5	2	21	2	18	13	2	9	10
		<i>Terminalia glanescens / T. brownii</i>																		
		<i>Vernonia amygdalina</i>																		
	2?	?			1									1						
	1?	?													1					
1		U-do (local name only)														2				
1		saho (local name only)																		4
1		ammabeyya (local name only)														1				
1		babessa (local name only)																		1
		Total number of species:	10	18	11	13	8	8	13	12	11	15	11	12	11	11	9	13	14	11
		upper layer	3	7	7	4	2	2	4	4	7	4	6	3	4	6	5	7	6	2
		middle layer	6	5	4	8	7	3	8	7	5	8	3	9	9	4	2	5	4	4
		lower layer	6	12	7	8	6	7	10	10	7	11	7	7	7	5	8	9	9	7
		total number of trees	55	61	74	52	33	72	60	61	46	99	56	141	56	38	45	50	43	51
		upper layer	12	20	15	14	11	19	8	18	18	21	23	21	16	8	10	17	12	2
		middle layer	13	11	12	17	13	7	25	17	13	23	23	47	26	7	3	12	7	7
		lower layer	30	30	47	21	9	46	27	26	15	55	10	73	14	23	32	20	24	42

Appendix Tab. 16 (1) List of tree/shrub

Local name	Botanical name	tree, shrub	Type for Volume formulas
Dumuga	<i>Adhatoda schimperana</i>	shrub	2
Ulumay	<i>Clausena anisata</i>	shrub	2
Buna	<i>Coffea arabica</i>	shrub	2
Meraro	<i>Discopodium penninevium</i>	shrub	2
Ulaga	<i>Ehlitia cymosa</i>	shrub	2
Akuku	<i>Eleusine jaegeri</i>	shrub	2
Mi'esa	<i>Euclea schimperi</i>	shrub	2
Mito (small tree) / Simaraaruu	<i>Galiniera coffeoides / G. saxifraga</i>	shrub	2
Balansofi	<i>Grewia bicolor</i>	shrub	2
Abayii	<i>Maesa lanceolata</i>	shrub	2
Kombolcha	<i>Maytenus senegalensis</i>	shrub	2
Birango	<i>Oxyanthus speciosus</i>	shrub	2
Cheka / Sole	<i>Pittosporum abyssinicum</i>	shrub	2
Chocho / Korasuma / Urgessa	<i>Premna schimperi</i>	shrub	2
Gutondango	<i>Pterocephalus frutescens</i>	shrub	2
Alge	<i>Rapanea simensis</i>	shrub	2
Gesho	<i>Rhamnus prinoides</i>	shrub	2
Diboo / Mitosare / Sigiluu	<i>Rothmannia urcelliformis</i>	shrub	2
Barsadi	<i>Rytigynia neglecta</i>	shrub	2
Hadessa / Mitiri	<i>Teclea nobilis</i>	shrub	2
Aballo	<i>Terminalia glancescens / T. brownii</i>	shrub	2
Addessa	<i>Vepris dainellii</i>	shrub	2
Ebicha	<i>Vernonia amygdalina</i>	shrub	2
Rejii	<i>Vernonia auriculifera</i>	shrub	2

(to be continued)

Appendix Tab. 16 (2) List of tree/shrub

Local name	Botanical name	tree, shrub	Type for Volume formulas
Agamuso	?	shrub	2
Sokaru	?	shrub	2
Sokolu	?	shrub	2
Halele	<i>Albizia grandibracteata</i>	tree	3
Ambabessa	<i>Albizia gummifera</i>	tree	2
Sehoo	<i>Allophylus abyssinicus</i>	tree	2
K'araru	<i>Aningeria adolfi-friederici</i>	tree	1
Chalalaqa / 'Wendabiyo	<i>Apodytes dimidiata</i>	tree	2
Boko / Lolchisa	<i>Bersama abyssinica</i>	tree	2
Loko	<i>Cassiporea ruwensorensis</i>	tree	2
Ka'e	<i>Celtis africana</i>	tree	2
Wadesa	<i>Cordia africana</i>	tree	3
Bakkannisa	<i>Croton macrostachyus</i>	tree	3
Cupressus	<i>Cupressus lucitanica</i>	tree	2
Danissa	<i>Dombeya goetzenii / D.schimperiana / D.torrída</i>	tree	3
Somboo	<i>Ekebergia capensis</i>	tree	2
Loko guracha / gachain fulasa	<i>Elaeodendron buchananii / Diospyros abyssinica</i>	tree	1
Welensu /Belo	<i>Erythrina brucei</i>	tree	2
Dambi	<i>Ficus spp</i>	tree	2
Harbuu	<i>Ficus sur</i>	tree	3
Ufo	<i>Grewia mollis</i>	tree	2
Hetoo	<i>Hagenia abyssinica</i>	tree	2
Keto / Kett	<i>Ilex mitis</i>	tree	2
Gebo	<i>Landolphia owarensis</i>	tree	2

(to be continued)

Appendix Tab. 16 (3) List of tree/shrub

Local name	Botanical name	tree, shrub	Type for Volume formulas
Warangoo	<i>Macaranga lophostigma</i>	tree	2
Butuji / Gayo	<i>Manilkara butugi</i>	tree	3
Askra	<i>Milletia ferruginea</i>	tree	2
Gayu / Gaja / Gajo / Mito(big tree)	<i>Mimusops kummel</i>	tree	2
Gagama	<i>Olea hochstetteri</i>	tree	2
Bayaa	<i>Olea welwitschii</i>	tree	2
Birbirsa	<i>Podocarpus gracilior</i>	tree	0
Kaariyoo	<i>Polyscias ferruginea / P. fluva</i>	tree	3
Homi / Omo	<i>Pygeum africana</i>	tree	2
Bosoka / Sedoo	<i>Sapium ellipticum</i>	tree	2
Buto	<i>Schefflera abyssinica</i>	tree	3
Badesa	<i>Syzygium guineense</i>	tree	2
Meddesa	<i>Vepris dainellii</i>	tree	2
Dido	?	tree	2
Getemi	?	tree	2
Nunu	?	tree	2
Selti	?	tree	2
Solee	?	tree	2

Appendix Tab. 17 (1) Volume table for Belete-Gera NFPA (Type-0; Indigenous tree)

Type-0 : Natural tree

$$V = 0.000129 \cdot DBH^{1.7671} \cdot H^{0.9946}$$

Formula
DBH:cm H:(merchantable height):m V:m³

Height (m)	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70																																																																																																																																																																																																																																																																				
5	0.0773	0.0805	0.1116	0.1348																																																																																																																																																																																																																																																																																													
6	0.0854	0.1084	0.1338	0.1616	0.1915	0.2237																																																																																																																																																																																																																																																																																											
7	0.0996	0.1264	0.1560	0.1883	0.2233	0.2606	0.3009	0.3435																																																																																																																																																																																																																																																																																									
8	0.1137	0.1444	0.1782	0.2151	0.2550	0.2979	0.3436	0.3923	0.4437	0.4979																																																																																																																																																																																																																																																																																							
9	0.1279	0.1623	0.2003	0.2418	0.2867	0.3349	0.3863	0.4410	0.4988	0.5588	0.6208																																																																																																																																																																																																																																																																																						
10	0.1420	0.1807	0.2224	0.2685	0.3183	0.3719	0.4290	0.4897	0.5540	0.6218	0.6927	0.7672	0.8450																																																																																																																																																																																																																																																																																				
11	0.1561	0.1982	0.2446	0.2962	0.3520	0.4118	0.4756	0.5434	0.6152	0.6910	0.7707	0.8543	0.9418	1.0333	1.1287	1.2280	1.3311	1.4381	1.5491	1.6640	1.7828	1.9055	2.0321	2.1626	2.2970	2.4353	2.5775	2.7236	2.8736	3.0274	3.1850	3.3463	3.5113	3.6804	3.8534	4.0303	4.2111	4.3958	4.5843	4.7766	4.9727	5.1725	5.3758	5.5825	5.7926	6.0060	6.2227	6.4426	6.6657	6.8919	7.1212	7.3535	7.5888	7.8270	8.0681	8.3122	8.5592	8.8091	9.0618	9.3173	9.5755	9.8365	10.1003	10.3669	10.6362	10.9082	11.1828	11.4600	11.7397	12.0219	12.3066	12.5937	12.8832	13.1751	13.4694	13.7660	14.0649	14.3660	14.6693	14.9747	15.2822	15.5917	15.9032	16.2167	16.5322	16.8496	17.1689	17.4901	17.8132	18.1383	18.4653	18.7942	19.1250	19.4577	19.7922	20.1285	20.4666	20.8064	21.1479	21.4911	21.8360	22.1825	22.5306	22.8803	23.2316	23.5844	23.9387	24.2944	24.6515	25.0100	25.3700	25.7314	26.0942	26.4584	26.8240	27.1910	27.5593	27.9290	28.3000	28.6723	29.0460	29.4210	29.7973	30.1749	30.5538	30.9339	31.3153	31.6980	32.0820	32.4672	32.8536	33.2413	33.6303	34.0205	34.4119	34.8045	35.1983	35.5933	35.9894	36.3866	36.7849	37.1843	37.5848	37.9863	38.3888	38.7923	39.1968	39.6023	40.0088	40.4163	40.8248	41.2343	41.6448	42.0562	42.4686	42.8819	43.2961	43.7112	44.1272	44.5441	44.9619	45.3806	45.7999	46.2199	46.6405	47.0617	47.4835	47.9058	48.3286	48.7519	49.1757	49.5999	50.0246	50.4497	50.8752	51.3011	51.7274	52.1541	52.5812	53.0087	53.4366	53.8648	54.2934	54.7224	55.1517	55.5813	56.0112	56.4413	56.8717	57.3023	57.7331	58.1641	58.5953	59.0267	59.4582	59.8898	60.3215	60.7534	61.1854	61.6175	62.0497	62.4820	62.9144	63.3469	63.7794	64.2120	64.6446	65.0772	65.5099	65.9426	66.3753	66.8080	67.2407	67.6734	68.1061	68.5388	68.9714	69.4041	69.8367	70.2693	70.7019	71.1345	71.5671	71.9997	72.4322	72.8647	73.2972	73.7297	74.1622	74.5947	75.0272	75.4597	75.8922	76.3247	76.7572	77.1897	77.6222	78.0547	78.4872	78.9197	79.3522	79.7847	80.2172	80.6497	81.0822	81.5147	81.9472	82.3797	82.8122	83.2447	83.6772	84.1097	84.5422	84.9747	85.4072	85.8397	86.2722	86.7047	87.1372	87.5697	87.9997	88.4297	88.8597	89.2897	89.7197	90.1497	90.5797	91.0097	91.4397	91.8697	92.2997	92.7297	93.1597	93.5897	94.0197	94.4497	94.8797	95.3097	95.7397	96.1697	96.5997	97.0297	97.4597	97.8897	98.3197	98.7497	99.1797	99.6097	100.0397

Appendix Tab. 17 (3) Volume table for Belete-Gera NFPA (Type-2: Indigenous tree)

Type-2: Natural tree

Formula $V = 0.000132 \cdot DBH^1.8730 \cdot H^{0.6421}$

DBH:cm H:(merchantable height):m V:m³

Height (m)	10	11	12	13	14	15	16	17	18	19	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	70	80	90	100	110	120																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
DBH(cm)	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0	54.0	56.0	58.0	60.0	70.0	80.0	90.0	100.0	110.0	120.0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
10	0.015	0.018	0.021	0.024	0.027	0.030	0.033	0.036	0.039	0.042	0.045	0.048	0.051	0.054	0.057	0.060	0.063	0.066	0.069	0.072	0.075	0.078	0.081	0.084	0.087	0.090	0.093	0.096	0.099	0.102	0.105	0.108	0.111	0.114	0.117	0.120	0.123	0.126	0.129	0.132	0.135	0.138	0.141	0.144	0.147	0.150	0.153	0.156	0.159	0.162	0.165	0.168	0.171	0.174	0.177	0.180	0.183	0.186	0.189	0.192	0.195	0.198	0.201	0.204	0.207	0.210	0.213	0.216	0.219	0.222	0.225	0.228	0.231	0.234	0.237	0.240	0.243	0.246	0.249	0.252	0.255	0.258	0.261	0.264	0.267	0.270	0.273	0.276	0.279	0.282	0.285	0.288	0.291	0.294	0.297	0.300	0.303	0.306	0.309	0.312	0.315	0.318	0.321	0.324	0.327	0.330	0.333	0.336	0.339	0.342	0.345	0.348	0.351	0.354	0.357	0.360	0.363	0.366	0.369	0.372	0.375	0.378	0.381	0.384	0.387	0.390	0.393	0.396	0.399	0.402	0.405	0.408	0.411	0.414	0.417	0.420	0.423	0.426	0.429	0.432	0.435	0.438	0.441	0.444	0.447	0.450	0.453	0.456	0.459	0.462	0.465	0.468	0.471	0.474	0.477	0.480	0.483	0.486	0.489	0.492	0.495	0.498	0.501	0.504	0.507	0.510	0.513	0.516	0.519	0.522	0.525	0.528	0.531	0.534	0.537	0.540	0.543	0.546	0.549	0.552	0.555	0.558	0.561	0.564	0.567	0.570	0.573	0.576	0.579	0.582	0.585	0.588	0.591	0.594	0.597	0.600	0.603	0.606	0.609	0.612	0.615	0.618	0.621	0.624	0.627	0.630	0.633	0.636	0.639	0.642	0.645	0.648	0.651	0.654	0.657	0.660	0.663	0.666	0.669	0.672	0.675	0.678	0.681	0.684	0.687	0.690	0.693	0.696	0.699	0.702	0.705	0.708	0.711	0.714	0.717	0.720	0.723	0.726	0.729	0.732	0.735	0.738	0.741	0.744	0.747	0.750	0.753	0.756	0.759	0.762	0.765	0.768	0.771	0.774	0.777	0.780	0.783	0.786	0.789	0.792	0.795	0.798	0.801	0.804	0.807	0.810	0.813	0.816	0.819	0.822	0.825	0.828	0.831	0.834	0.837	0.840	0.843	0.846	0.849	0.852	0.855	0.858	0.861	0.864	0.867	0.870	0.873	0.876	0.879	0.882	0.885	0.888	0.891	0.894	0.897	0.900	0.903	0.906	0.909	0.912	0.915	0.918	0.921	0.924	0.927	0.930	0.933	0.936	0.939	0.942	0.945	0.948	0.951	0.954	0.957	0.960	0.963	0.966	0.969	0.972	0.975	0.978	0.981	0.984	0.987	0.990	0.993	0.996	0.999	1.002	1.005	1.008	1.011	1.014	1.017	1.020	1.023	1.026	1.029	1.032	1.035	1.038	1.041	1.044	1.047	1.050	1.053	1.056	1.059	1.062	1.065	1.068	1.071	1.074	1.077	1.080	1.083	1.086	1.089	1.092	1.095	1.098	1.101	1.104	1.107	1.110	1.113	1.116	1.119	1.122	1.125	1.128	1.131	1.134	1.137	1.140	1.143	1.146	1.149	1.152	1.155	1.158	1.161	1.164	1.167	1.170	1.173	1.176	1.179	1.182	1.185	1.188	1.191	1.194	1.197	1.200	1.203	1.206	1.209	1.212	1.215	1.218	1.221	1.224	1.227	1.230	1.233	1.236	1.239	1.242	1.245	1.248	1.251	1.254	1.257	1.260	1.263	1.266	1.269	1.272	1.275	1.278	1.281	1.284	1.287	1.290	1.293	1.296	1.299	1.302	1.305	1.308	1.311	1.314	1.317	1.320	1.323	1.326	1.329	1.332	1.335	1.338	1.341	1.344	1.347	1.350	1.353	1.356	1.359	1.362	1.365	1.368	1.371	1.374	1.377	1.380	1.383	1.386	1.389	1.392	1.395	1.398	1.401	1.404	1.407	1.410	1.413	1.416	1.419	1.422	1.425	1.428	1.431	1.434	1.437	1.440	1.443	1.446	1.449	1.452	1.455	1.458	1.461	1.464	1.467	1.470	1.473	1.476	1.479	1.482	1.485	1.488	1.491	1.494	1.497	1.500	1.503	1.506	1.509	1.512	1.515	1.518	1.521	1.524	1.527	1.530	1.533	1.536	1.539	1.542	1.545	1.548	1.551	1.554	1.557	1.560	1.563	1.566	1.569	1.572	1.575	1.578	1.581	1.584	1.587	1.590	1.593	1.596	1.599	1.602	1.605	1.608	1.611	1.614	1.617	1.620	1.623	1.626	1.629	1.632	1.635	1.638	1.641	1.644	1.647	1.650	1.653	1.656	1.659	1.662	1.665	1.668	1.671	1.674	1.677	1.680	1.683	1.686	1.689	1.692	1.695	1.698	1.701	1.704	1.707	1.710	1.713	1.716	1.719	1.722	1.725	1.728	1.731	1.734	1.737	1.740	1.743	1.746	1.749	1.752	1.755	1.758	1.761	1.764	1.767	1.770	1.773	1.776	1.779	1.782	1.785	1.788	1.791	1.794	1.797	1.800	1.803	1.806	1.809	1.812	1.815	1.818	1.821	1.824	1.827	1.830	1.833	1.836	1.839	1.842	1.845	1.848	1.851	1.854	1.857	1.860	1.863	1.866	1.869	1.872	1.875	1.878	1.881	1.884	1.887	1.890	1.893	1.896	1.899	1.902	1.905	1.908	1.911	1.914	1.917	1.920	1.923	1.926	1.929	1.932	1.935	1.938	1.941	1.944	1.947	1.950	1.953	1.956	1.959	1.962	1.965	1.968	1.971	1.974	1.977	1.980	1.983	1.986	1.989	1.992	1.995	1.998	2.001	2.004	2.007	2.010	2.013	2.016	2.019	2.022	2.025	2.028	2.031	2.034	2.037	2.040	2.043	2.046	2.049	2.052	2.055	2.058	2.061	2.064	2.067	2.070	2.073	2.076	2.079	2.082	2.085	2.088	2.091	2.094	2.097	2.100	2.103	2.106	2.109	2.112	2.115	2.118	2.121	2.124	2.127	2.130	2.133	2.136	2.139	2.142	2.145	2.148	2.151	2.154	2.157	2.160	2.163	2.166	2.169	2.172	2.175	2.178	2.181	2.184	2.187	2.190	2.193	2.196	2.199	2.202	2.205	2.208	2.211	2.214	2.217	2.220	2.223	2.226	2.229	2.232	2.235	2.238	2.241	2.244	2.247	2.250	2.253	2.256	2.259	2.262	2.265	2.268	2.271	2.274	2.277	2.280	2.283	2.286	2.289	2.292	2.295	2.298	2.301	2.304	2.307	2.310	2.313	2.316	2.319	2.322	2.325	2.328	2.331	2.334	2.337	2.340	2.343	2.346	2.349	2.352	2.355	2.358	2.361	2.364	2.367	2.370	2.373	2.376	2.379	2.382	2.385	2.388	2.391	2.394	2.397	2.400	2.403	2.406	2.409	2.412	2.415	2.418	2.421	2.424	2.427	2.430	2.433	2.436	2.439	2.442	2.445	2.448	2.451	2.454	2.457	2.460	2.463	2.466	2.469	2.472	2.475	2.478	2.481	2.484	2.487	2.490	2.493	2.496	2.499	2.502	2.505	2.508	2.511	2.514	2.517	2.520	2.523	2.526	2.529	2.532	2.535	2.538	2.541	2.544	2.547	2.550	2.553	2.556	2.559	2.562	2.565	2.568	2.571	2.574	2.577	2.580	2.583	2.586	2.589	2.592	2.595	2.598	2.601	2.604	2.607	2.610	2.613	2.616	2.619	2.622	2.625	2.628	2.631	2.634	2.637	2.640	2.643	2.646	2.649	2.652	2.655	2.658	2.661	2.664	2.667	2.670	2.673	2.676	2.679	2.682	2.685	2.688	2.691	2.694	2.697	2.700	2.703	2.706	2.709	2.712	2.715	2.718	2.721	2.724	2.727	2.730	2.733	2.736	2.739	2.742	2.745	2.748	2.751	2.754	2.757	2.760	2.763	2.766	2.769	2.772	2.775	2.778	2.781	2.784	2.787	2.790	2.793	2.796	2.799	2.802	2.805	2.808	2.811	2.814	2.817	2.820	2.823	2.826	2.829	2.832	2.835	2.838	2.841	2.844	2.847	2.850	2.853	2.856	2.859	2.862	2.865	2.868	2.871	2.874	2.877	2.880	2.883	2.886	2.889	2.892	2.895	2.898	2.901	2.904	2.907	2.910	2.913	2.916	2.919	2.922	2.925	2.928	2.931	2.934	2.937	2.940	2.943	2.946	2.949	2.952	2.955	2.958	2.961	2.964	2.967	2.970	2.973	2.976	2.979	2.982	2.985	2.988	2.991	2.994	2.997	3.000	3.003	3.006	3.009	3.012	3.015	3.018	3.021	3.024	3.027	3.030	3.033	3.036	3.039	3.042	3.045	3.048	3.051	3.054	3.057	3.060	3.063	3.066	3.069	3.072	3.075	3.078	3.081	3.084	3.087	3.090	3.093	3.096	3.099	3.102	3.105	3.108	3.111	3.114	3.117	3.120	3.123	3.126	3.129	3.132	3.135	3.138	3.141	3.144	3.147	3.150	3.153	3.156	3.159	3.162	3.165	3.168	3.171	3.174	3.177	3.180	3.183	3.186	3.189	3.192	3.195	3.198	3.201	3.204	3.207	3.210	3.213	3.216	3.219	3.222	3.225	3.228	3.231	3.234	3.237	3.240	3.243	3.246	3.249	3.252	3.255	3.258	3.261	3.264	3.267	3.270	3.273	3.276	3.279	3.282	3.285	3.288	3.291	3.294	3.297	3.300	3.303	3.306	3.309	3.312	3.315	3.318	3.321	3.324	3.327	3.330	3.333	3.336	3.339	3.342	3.345	3.348	3.351	3.354	3.357	3.360	3.363	3.366	3.369	3.372	3.375	3.378	3.381	3.384	3.387	3.390	3.393	3.396	3.399	3.402	3.405	3.408	3.411	3.414	3.417	3.420	

Appendix Tab. 17 (4) Volume table for Belete-Gera NFPA (Type-3: Indigenous tree)

Type-3: Natural tree

Formula $V=0.000153 \cdot DBH^2 \cdot H$, $H=H_{1.150} - H_{0.4725}$
 DBH:cm H(merchantable height):m V:m³

Height (m)	DBH(cm)																																			
	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	70	80	90	100	110	120				
5	0.0468	0.0558	0.0751	0.0957	0.1185	0.1435	0.1707	0.1989	0.2317	0.2645	0.2988	0.3371	0.3783	0.4175	0.4695	0.5400	0.5927	0.6476	0.7047																	
6	0.0478	0.0666	0.0881	0.1122	0.1380	0.1663	0.2001	0.2344	0.2711	0.3101	0.3515	0.3952	0.4412	0.4890	0.5400	0.6117	0.6780	0.7406	0.8061	0.8739	0.9441															
7	0.0547	0.0761	0.1007	0.1284	0.1590	0.1925	0.2299	0.2681	0.3101	0.3547	0.4021	0.4521	0.5047	0.5599	0.6177	0.6780	0.7406	0.8061	0.8739	0.9441	1.0607															
8	0.0614	0.0856	0.1132	0.1443	0.1787	0.2163	0.2572	0.3012	0.3484	0.3988	0.4516	0.5079	0.5678	0.6284	0.6917	0.7584	0.8284	0.9018	0.9787	1.0591	1.1607															
9	0.0681	0.0948	0.1254	0.1598	0.1980	0.2397	0.2850	0.3338	0.3861	0.4417	0.5006	0.5629	0.6284	0.6971	0.7691	0.8441	0.9224	1.0037	1.0880	1.1753	1.2656	1.3588	1.4558													
10	0.0748	0.1039	0.1375	0.1753	0.2171	0.2628	0.3125	0.3660	0.4232	0.4842	0.5488	0.6171	0.6889	0.7643	0.8431	0.9254	1.0111	1.1003	1.1928	1.2886	1.3878	1.4902	1.5958													
11	0.0811	0.1130	0.1497	0.1907	0.2359	0.2856	0.3398	0.3977	0.4593	0.5246	0.5936	0.6663	0.7428	0.8229	0.9064	0.9934	1.0839	1.1780	1.2759	1.3776	1.4831	1.5925	1.7057	1.8227												
12	0.0875	0.1219	0.1612	0.2055	0.2545	0.3081	0.3664	0.4291	0.4962	0.5677	0.6434	0.7235	0.8077	0.8960	0.9884	1.0849	1.1854	1.2900	1.3988	1.5117	1.6287	1.7498	1.8750	2.0043	2.1377											
13	0.0938	0.1307	0.1729	0.2203	0.2729	0.3304	0.3928	0.4601	0.5321	0.6095	0.6916	0.7784	0.8699	0.9661	1.0661	1.1699	1.2774	1.3887	1.5038	1.6228	1.7457	1.8725	2.0033	2.1381	2.2769											
14	0.1001	0.1394	0.1844	0.2350	0.2911	0.3525	0.4191	0.4908	0.5678	0.6499	0.7371	0.8294	0.9268	1.0293	1.1368	1.2493	1.3667	1.4890	1.6162	1.7483	1.8854	2.0275	2.1746	2.3267	2.4837											
15	0.1063	0.1480	0.1958	0.2496	0.3092	0.3743	0.4451	0.5213	0.6028	0.6897	0.7817	0.8789	0.9813	1.0898	1.2044	1.3251	1.4519	1.5847	1.7234	1.8671	2.0158	2.1695	2.3282	2.4919	2.6606											
16	0.1125	0.1567	0.2072	0.2641	0.3271	0.3968	0.4728	0.5551	0.6437	0.7377	0.8370	0.9418	1.0521	1.1679	1.2892	1.4161	1.5485	1.6864	1.8297	1.9784	2.1325	2.2925	2.4584	2.6302	2.8079											
17	0.1185	0.1654	0.2193	0.2804	0.3484	0.4241	0.5078	0.5984	0.6959	0.7994	0.9088	1.0241	1.1453	1.2724	1.4054	1.5443	1.6891	1.8397	1.9960	2.1581	2.3260	2.4997	2.6792	2.8645	3.0556											
18	0.1245	0.1739	0.2308	0.2951	0.3684	0.4504	0.5408	0.6396	0.7468	0.8614	0.9834	1.1128	1.2497	1.3941	1.5459	1.7045	1.8698	2.0418	2.2204	2.4056	2.5974	2.7958	3.0008	3.2124	3.4305											
19	0.1305	0.1814	0.2412	0.3091	0.3859	0.4714	0.5654	0.6678	0.7786	0.8969	1.0227	1.1560	1.2967	1.4448	1.6002	1.7629	1.9329	2.1101	2.2944	2.4859	2.6846	2.8905	3.1036	3.3238	3.5511											
20	0.1365	0.1888	0.2515	0.3225	0.4020	0.4907	0.5884	0.6951	0.8108	0.9354	1.0689	1.2113	1.3626	1.5228	1.6918	1.8694	2.0556	2.2503	2.4534	2.6648	2.8844	3.1122	3.3483	3.5926	3.8451											
21	0.1425	0.1962	0.2619	0.3358	0.4183	0.5102	0.6115	0.7220	0.8416	0.9702	1.1078	1.2543	1.4107	1.5769	1.7529	1.9387	2.1344	2.3400	2.5555	2.7809	3.0161	3.2612	3.5161	3.7808	4.0553											
22	0.1485	0.2038	0.2715	0.3483	0.4348	0.5308	0.6371	0.7536	0.8802	1.0168	1.1633	1.3207	1.4890	1.6681	1.8579	2.0584	2.2695	2.4912	2.7234	2.9661	3.2192	3.4827	3.7566	4.0409	4.3356											
23	0.1545	0.2114	0.2811	0.3607	0.4501	0.5501	0.6604	0.7810	0.9118	1.0527	1.2036	1.3654	1.5381	1.7217	1.9162	2.1215	2.3376	2.5644	2.8019	3.0500	3.3087	3.5780	3.8578	4.1481	4.4489											
24	0.1605	0.2190	0.2907	0.3721	0.4651	0.5694	0.6849	0.8115	0.9482	1.0949	1.2516	1.4183	1.5950	1.7817	1.9784	2.1851	2.3918	2.6084	2.8349	3.0714	3.3179	3.5744	3.8409	4.1174	4.4039											
25	0.1665	0.2265	0.3001	0.3842	0.4801	0.5879	0.7074	0.8384	0.9807	1.1342	1.2979	1.4717	1.6555	1.8492	2.0528	2.2663	2.4897	2.7230	2.9661	3.2191	3.4820	3.7548	4.0375	4.3301	4.6326											
26	0.1725	0.2339	0.3104	0.3974	0.5003	0.6101	0.7277	0.8529	0.9895	1.1374	1.2965	1.4667	1.6479	1.8399	2.0428	2.2565	2.4809	2.7159	2.9614	3.2173	3.4836	3.7603	4.0474	4.3448	4.6525											
27	0.1785	0.2414	0.3207	0.4106	0.5164	0.6290	0.7493	0.8772	1.0135	1.1582	1.3122	1.4764	1.6507	1.8352	2.0298	2.2345	2.4493	2.6741	2.9089	3.1547	3.4114	3.6790	3.9575	4.2468	4.5469											
28	0.1845	0.2489	0.3301	0.4228	0.5315	0.6471	0.7704	0.9022	1.0434	1.1939	1.3537	1.5229	1.7014	1.8893	2.0866	2.2934	2.5105	2.7378	2.9752	3.2227	3.4802	3.7477	4.0251	4.3124	4.6095											
29	0.1905	0.2565	0.3396	0.4351	0.5467	0.6652	0.7914	0.9261	1.0702	1.2236	1.3863	1.5584	1.7400	1.9310	2.1313	2.3408	2.5597	2.7880	3.0257	3.2728	3.5293	3.7952	4.0705	4.3552	4.6493											
30	0.1965	0.2639	0.3490	0.4475	0.5610	0.6815	0.8099	0.9471	1.0941	1.2508	1.4171	1.5929	1.7781	1.9727	2.1767	2.3899	2.6124	2.8442	3.0853	3.3357	3.5953	3.8641	4.1421	4.4292	4.7254											
31	0.2025	0.2713	0.3584	0.4597	0.5761	0.7004	0.8325	0.9733	1.1236	1.2833	1.4524	1.6308	1.8185	2.0156	2.2220	2.4377	2.6627	2.8970	3.1405	3.3932	3.6551	3.9262	4.2065	4.4958	4.7941											
32	0.2085	0.2787	0.3678	0.4710	0.5893	0.7164	0.8504	0.9931	1.1453	1.3069	1.4779	1.6582	1.8479	2.0460	2.2524	2.4671	2.6901	2.9214	3.1610	3.4090	3.6653	3.9308	4.2054	4.4890	4.7815											
33	0.2145	0.2861	0.3772	0.4833	0.6035	0.7336	0.8695	1.0141	1.1683	1.3320	1.5051	1.6876	1.8794	2.0805	2.2908	2.5103	2.7381	2.9742	3.2186	3.4713	3.7324	3.9919	4.2608	4.5390	4.8265											
34	0.2205	0.2935	0.3866	0.4947	0.6168	0.7499	0.8978	1.0535	1.2187	1.3943	1.5794	1.7739	1.9778	2.1911	2.4137	2.6456	2.8868	3.1372	3.3960	3.6632	3.9388	4.2228	4.5151	4.8158	5.1248											
35	0.2265	0.3009	0.3950	0.5051	0.6292	0.7663	0.9183	1.0791	1.2497	1.4302	1.6206	1.8208	2.0308	2.2505	2.4798	2.7187	2.9671	3.2250	3.4923	3.7690	4.0551	4.3507	4.6558	4.9704	5.2945											
36	0.2325	0.3083	0.4044	0.5165	0.6426	0.7827	0.9377	1.1015	1.2751	1.4585	1.6517	1.8547	2.0675	2.2900	2.5221	2.7637	3.0148	3.2754	3.5455	3.8251	4.1142	4.4128	4.7204	5.0371	5.3628											
37	0.2385	0.3157	0.4128	0.5269	0.6550	0.8001	0.9571	1.1280	1.3037	1.4891	1.6842	1.8891	2.1038	2.3283	2.5625	2.8063	3.0597	3.3226	3.5950	3.8769	4.1683	4.4691	4.7792	5.0986	5.4272											
38	0.2445	0.3231	0.4212	0.5373	0.6674	0.8155	0.9755	1.1494	1.3291	1.5144	1.7053	1.9018	2.1038	2.3113	2.5243	2.7427	2.9665	3.1957	3.4303	3.6703	3.9156	4.1663	4.4224	4.6838	4.9504											
39	0.2505	0.3297	0.4288	0.5469	0.6790	0.8291	0.9911	1.1670	1.3487	1.5360	1.7288	1.9271	2.1308	2.3399	2.5544	2.7742	2.9994	3.2299	3.4657	3.7068	3.9531	4.2046	4.4614	4.7235	5.0008											
40	0.2565	0.3361	0.4362	0.5563	0.6904	0.8425	1.0065	1.1854	1.3701	1.5604	1.7561	1.9572	2.1637	2.3756	2.5929	2.8155	3.0434	3.2765	3.5148	3.7582	4.0068	4.2605	4.5193	4.7832	5.0522											

Appendix Tab. 17 (5) Volume table for Belete-Gera NFPA (*Cupressus lusitanica*)

Species: *Cupressus lusitanica*

Formula 1 $V = 0.000230 \cdot D^2 \cdot H^{1.985}$

Formula 2 $V = 0.000054 \cdot D^1 \cdot H^{1.985}$

DBH:cm H(total height):m $V:m^3$

Figures refer to stem volume (m³) including bark between stump and top

Height (m)	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56		
Form. 1	0.0148	0.029	0.0487	0.0743	0.1064	0.1451	0.1908	0.2439	0.3044	0.3726	0.4499	0.5333	0.6281	0.7275	0.8376	0.9567	1.0848	1.2222	1.3691	1.5255	1.6916	1.8676	2.0536	2.2487	2.456	2.6726		
5	0.0077	0.0125	0.0183																									
6	0.0095	0.0156	0.0227	0.0310																								
7	0.0115	0.0187	0.0273	0.0372	0.0484																							
8	0.0134	0.0219	0.0320	0.0436	0.0567	0.0711																						
9	0.0155	0.0252	0.0368	0.0502	0.0652	0.0818	0.0999																					
10	0.0175	0.0286	0.0417	0.0569	0.0739	0.0927	0.1133	0.1355																				
11	0.0196	0.0320	0.0469	0.0639	0.0831	0.1038	0.1266	0.1517	0.1784																			
12	0.0218	0.0355	0.0518	0.0707	0.0918	0.1152	0.1407	0.1683	0.1978	0.2294																		
13	0.0239	0.0390	0.0570	0.0777	0.1010	0.1287	0.1584	0.1891	0.2210	0.2543	0.2890																	
14	0.0262	0.0426	0.0623	0.0849	0.1103	0.1384	0.1690	0.2021	0.2377	0.2755	0.3158	0.3589																
15	0.0284	0.0463	0.0676	0.0921	0.1197	0.1502	0.1835	0.2194	0.2580	0.2991	0.3426	0.3886	0.4369															
16	0.0306	0.0500	0.0720	0.0968	0.1249	0.1562	0.1907	0.2284	0.2692	0.3131	0.3598	0.4084	0.4589	0.5113	0.5656	0.6217	0.6798	0.7399	0.7999	0.8616	0.9249	0.9899	1.0566	1.1249	1.1949	1.2666	1.3399	
17	0.0327	0.0535	0.0768	0.1029	0.1319	0.1638	0.1986	0.2364	0.2772	0.3209	0.3674	0.4158	0.4659	0.5178	0.5712	0.6262	0.6827	0.7407	0.7992	0.8591	0.9204	0.9831	1.0472	1.1127	1.1796	1.2479	1.3176	
18	0.0348	0.0566	0.0804	0.1076	0.1374	0.1699	0.2052	0.2434	0.2845	0.3284	0.3751	0.4236	0.4739	0.5259	0.5795	0.6346	0.6912	0.7493	0.8089	0.8691	0.9308	0.9940	1.0587	1.1249	1.1926	1.2618	1.3325	
19	0.0369	0.0596	0.0840	0.1114	0.1418	0.1752	0.2116	0.2509	0.2931	0.3382	0.3852	0.4341	0.4849	0.5376	0.5921	0.6484	0.7065	0.7664	0.8281	0.8915	0.9566	1.0234	1.0918	1.1617	1.2331	1.3060	1.3804	
20	0.0389	0.0625	0.0876	0.1161	0.1476	0.1820	0.2193	0.2595	0.3026	0.3486	0.3974	0.4481	0.5007	0.5551	0.6113	0.6694	0.7294	0.7913	0.8550	0.9205	0.9878	1.0569	1.1278	1.1995	1.2729	1.3478	1.4242	
21	0.0408	0.0652	0.0911	0.1203	0.1526	0.1880	0.2263	0.2675	0.3116	0.3586	0.4084	0.4611	0.5166	0.5739	0.6329	0.6936	0.7560	0.8201	0.8858	0.9531	1.0219	1.0922	1.1640	1.2373	1.3121	1.3884	1.4661	
22	0.0427	0.0678	0.0945	0.1256	0.1600	0.1976	0.2383	0.2821	0.3289	0.3787	0.4314	0.4870	0.5454	0.6065	0.6694	0.7340	0.8003	0.8682	0.9377	1.0087	1.0812	1.1552	1.2307	1.3077	1.3861	1.4659	1.5471	
23	0.0446	0.0703	0.0978	0.1309	0.1684	0.2092	0.2532	0.3003	0.3504	0.4035	0.4596	0.5187	0.5807	0.6456	0.7134	0.7841	0.8576	0.9339	1.0129	1.0936	1.1759	1.2597	1.3459	1.4344	1.5252	1.6184	1.7139	
24	0.0465	0.0728	0.1011	0.1361	0.1758	0.2191	0.2658	0.3159	0.3693	0.4260	0.4860	0.5484	0.6132	0.6804	0.7500	0.8221	0.8966	0.9734	1.0525	1.1338	1.2173	1.3030	1.3909	1.4809	1.5731	1.6674	1.7638	
25	0.0484	0.0753	0.1044	0.1414	0.1833	0.2291	0.2788	0.3323	0.3895	0.4495	0.5124	0.5781	0.6465	0.7175	0.7911	0.8671	0.9454	1.0260	1.1088	1.1937	1.2817	1.3728	1.4669	1.5640	1.6641	1.7672	1.8723	
26	0.0503	0.0777	0.1077	0.1467	0.1906	0.2394	0.2920	0.3484	0.4085	0.4724	0.5392	0.6089	0.6814	0.7566	0.8344	0.9147	0.9974	1.0824	1.1695	1.2587	1.3500	1.4434	1.5388	1.6361	1.7353	1.8364	1.9394	
27	0.0522	0.0799	0.1107	0.1517	0.1977	0.2486	0.3043	0.3648	0.4291	0.4971	0.5688	0.6441	0.7229	0.8052	0.8909	0.9790	1.0693	1.1617	1.2561	1.3525	1.4508	1.5510	1.6531	1.7571	1.8629	1.9705	2.0800	
28	0.0541	0.0821	0.1138	0.1568	0.2049	0.2580	0.3160	0.3789	0.4458	0.5167	0.5915	0.6702	0.7527	0.8390	0.9281	1.0191	1.1119	1.2064	1.3035	1.4031	1.5051	1.6095	1.7163	1.8254	1.9367	2.0501	2.1655	
29	0.0560	0.0842	0.1168	0.1619	0.2120	0.2681	0.3291	0.3950	0.4658	0.5415	0.6221	0.7075	0.7967	0.8897	0.9865	1.0860	1.1881	1.2927	1.3997	1.5090	1.6206	1.7344	1.8504	1.9685	2.0887	2.2109	2.3350	
30	0.0579	0.0863	0.1198	0.1670	0.2202	0.2793	0.3443	0.4152	0.4910	0.5717	0.6573	0.7477	0.8429	0.9429	1.0465	1.1536	1.2641	1.3779	1.4950	1.6153	1.7387	1.8651	1.9944	2.1266	2.2616	2.3994	2.5399	
31	0.0598	0.0884	0.1228	0.1721	0.2274	0.2886	0.3557	0.4287	0.5067	0.5896	0.6774	0.7701	0.8676	0.9698	1.0757	1.1851	1.2979	1.4140	1.5333	1.6557	1.7811	1.9094	2.0406	2.1746	2.3114	2.4510	2.5933	
32	0.0617	0.0905	0.1258	0.1762	0.2336	0.2969	0.3660	0.4409	0.5206	0.6051	0.6944	0.7884	0.8871	0.9904	1.0981	1.2091	1.3233	1.4406	1.5609	1.6842	1.8104	1.9395	2.0714	2.2061	2.3434	2.4832	2.6254	
33	0.0636	0.0926	0.1287	0.1802	0.2397	0.3051	0.3764	0.4535	0.5364	0.6251	0.7186	0.8168	0.9197	1.0274	1.1397	1.2553	1.3741	1.4960	1.6209	1.7488	1.8796	2.0133	2.1498	2.2890	2.4308	2.5751	2.7219	
34	0.0655	0.0947	0.1307	0.1834	0.2450	0.3125	0.3858	0.4639	0.5478	0.6374	0.7317	0.8306	0.9341	1.0421	1.1544	1.2709	1.3915	1.5161	1.6446	1.7769	1.9129	2.0525	2.1956	2.3421	2.4920	2.6443	2.7990	
35	0.0674	0.0968	0.1328	0.1866	0.2503	0.3190	0.3934	0.4734	0.5590	0.6492	0.7440	0.8433	0.9471	1.0553	1.1679	1.2848	1.4060	1.5315	1.6613	1.7953	1.9334	2.0755	2.2216	2.3716	2.5244	2.6800	2.8382	
36	0.0693	0.0989	0.1348	0.1897	0.2555	0.3254	0.4009	0.4819	0.5684	0.6604	0.7574	0.8597	0.9673	1.0799	1.1967	1.3177	1.4429	1.5722	1.7055	1.8428	1.9840	2.1291	2.2781	2.4300	2.5848	2.7424	2.9027	
37	0.0712	0.1009	0.1369	0.1929	0.2608	0.3318	0.4084	0.4905	0.5780	0.6709	0.7692	0.8728	0.9818	1.0961	1.2147	1.3374	1.4641	1.5947	1.7292	1.8675	2.0096	2.1555	2.3052	2.4585	2.6152	2.7753	2.9388	
38	0.0731	0.1029	0.1389	0.1959	0.2659	0.3379	0.4156	0.4987	0.5872	0.6811	0.7804	0.8850	0.9949	1.1091	1.2275	1.3501	1.4767	1.6072	1.7415	1.8795	2.0212	2.1665	2.3153	2.4675	2.6230	2.7818	2.9440	
39	0.0750	0.1049	0.1409	0.1989	0.2709	0.3439	0.4226	0.5067	0.5961	0.6908	0.7909	0.8963	1.0070	1.1229	1.2439	1.3699	1.4998	1.6335	1.7709	1.9119	2.0564	2.2043	2.3556	2.5094	2.6666	2.8271	2.9910	
40	0.0769	0.1069	0.1429	0.2009	0.2739	0.3479	0.4276	0.5127	0.6031	0.6988	0.7998	0.9061	1.0176	1.1342	1.2558	1.3823	1.5136	1.6486	1.7873	1.9296	2.0753	2.2244	2.3768	2.5324	2.6912	2.8532	3.0184	

Appendix Tab. 17 (7) Volume table for Belete-Gera NFPA (*Eucalyptus saligna*)

Species: *Eucalyptus saligna*

Formula 1 $V = 0.000130 \cdot D^2 \cdot H$

Formula 2 $V = 0.000039 \cdot D^3 \cdot H$
 DBH:cm H:(total height):m V:m³

Figures refer to stem volume (m³) including bark between stump and top

Height (m)	5	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	
Form. 1	0.0114	0.0234	0.0408	0.0643	0.0945	0.1319	0.177	0.2303	0.2921	0.363	0.4433	0.5334	0.6337	0.7445	0.8661	0.999	1.1434	1.2996	1.4679	1.6487	1.8423	2.0488	2.2686	2.502	2.7492	3.0105	
5	0.0092	0.0173	0.0314	0.0521	0.0794	0.1131	0.1531	0.2003	0.2548	0.3168	0.3864	0.4638	0.5491	0.6425	0.7441	0.8541	0.9727	1.0999	1.2359	1.3809	1.5351	1.6987	1.8720	2.0552	2.2486	2.4526	
6	0.0076	0.0127	0.0190	0.0263	0.0348	0.0445	0.0553	0.0673	0.0804	0.0947	0.1102	0.1268	0.1445	0.1634	0.1835	0.2048	0.2274	0.2513	0.2765	0.3031	0.3311	0.3605	0.3914	0.4238	0.4578	0.4934	0.5307
7	0.0090	0.0152	0.0226	0.0314	0.0414	0.0527	0.0653	0.0792	0.0943	0.1106	0.1281	0.1468	0.1667	0.1878	0.2102	0.2339	0.2589	0.2852	0.3129	0.3420	0.3725	0.4045	0.4380	0.4731	0.5098	0.5481	0.5880
8	0.0105	0.0177	0.0264	0.0366	0.0483	0.0614	0.0759	0.0918	0.1091	0.1278	0.1478	0.1692	0.1920	0.2163	0.2421	0.2693	0.2980	0.3283	0.3602	0.3937	0.4289	0.4657	0.5042	0.5445	0.5866	0.6305	0.6762
9	0.0120	0.0202	0.0302	0.0419	0.0552	0.0702	0.0866	0.1044	0.1237	0.1445	0.1668	0.1907	0.2162	0.2433	0.2720	0.3023	0.3343	0.3680	0.4034	0.4405	0.4793	0.5198	0.5620	0.6059	0.6516	0.6991	0.7484
10	0.0136	0.0228	0.0340	0.0472	0.0623	0.0792	0.0979	0.1184	0.1408	0.1651	0.1914	0.2196	0.2497	0.2818	0.3158	0.3518	0.3898	0.4298	0.4719	0.5161	0.5625	0.6111	0.6619	0.7149	0.7702	0.8278	0.8877
11	0.0151	0.0254	0.0379	0.0522	0.0685	0.0865	0.1064	0.1281	0.1516	0.1769	0.2041	0.2333	0.2645	0.2978	0.3332	0.3707	0.4103	0.4521	0.4961	0.5424	0.5910	0.6419	0.6951	0.7506	0.8084	0.8685	0.9309
12	0.0167	0.0281	0.0419	0.0582	0.0767	0.0974	0.1204	0.1457	0.1734	0.2037	0.2356	0.2692	0.3045	0.3416	0.3805	0.4212	0.4647	0.5110	0.5593	0.6096	0.6620	0.7165	0.7732	0.8322	0.8935	0.9571	1.0231
13	0.0183	0.0308	0.0469	0.0657	0.0884	0.1159	0.1474	0.1828	0.2222	0.2646	0.3100	0.3584	0.4099	0.4645	0.5213	0.5804	0.6418	0.7055	0.7716	0.8402	0.9114	0.9852	1.0617	1.1409	1.2228	1.3075	1.3950
14	0.0200	0.0335	0.0500	0.0694	0.0915	0.1164	0.1438	0.1738	0.2063	0.2412	0.2786	0.3185	0.3609	0.4058	0.4533	0.5034	0.5561	0.6115	0.6696	0.7295	0.7914	0.8553	0.9213	0.9894	1.0597	1.1322	1.2069
15	0.0216	0.0362	0.0541	0.0751	0.0990	0.1258	0.1556	0.1881	0.2233	0.2610	0.3014	0.3444	0.3899	0.4378	0.4881	0.5408	0.5960	0.6537	0.7140	0.7769	0.8425	0.9108	0.9818	1.0555	1.1318	1.2107	1.2922
16	0.0232	0.0390	0.0582	0.0808	0.1068	0.1356	0.1673	0.2019	0.2395	0.2801	0.3236	0.3701	0.4195	0.4719	0.5272	0.5854	0.6466	0.7108	0.7780	0.8483	0.9217	0.9982	1.0778	1.1605	1.2463	1.3352	1.4272
17	0.0249	0.0418	0.0624	0.0868	0.1143	0.1453	0.1798	0.2170	0.2578	0.3012	0.3478	0.3973	0.4498	0.5052	0.5633	0.6243	0.6884	0.7555	0.8257	0.8990	0.9754	1.0548	1.1373	1.2228	1.3114	1.4032	
18	0.0266	0.0446	0.0668	0.0925	0.1220	0.1551	0.1917	0.2317	0.2749	0.3215	0.3713	0.4242	0.4802	0.5393	0.6014	0.6665	0.7346	0.8058	0.8800	0.9573	1.0378	1.1214	1.2083	1.2985	1.3919	1.4885	
19	0.0283	0.0479	0.0706	0.0974	0.1288	0.1650	0.2059	0.2494	0.2956	0.3445	0.3961	0.4504	0.5075	0.5675	0.6304	0.6963	0.7652	0.8371	0.9121	0.9899	1.0707	1.1544	1.2411	1.3308	1.4235	1.5193	
20	0.0299	0.0508	0.0740	0.1004	0.1316	0.1684	0.2107	0.2584	0.3126	0.3701	0.4311	0.4956	0.5636	0.6351	0.7102	0.7888	0.8709	0.9566	1.0459	1.1388	1.2352	1.3352	1.4389	1.5463	1.6574	1.7723	
21	0.0315	0.0537	0.0784	0.1064	0.1394	0.1784	0.2234	0.2744	0.3314	0.3934	0.4604	0.5315	0.6066	0.6858	0.7691	0.8565	0.9480	1.0436	1.1434	1.2474	1.3556	1.4680	1.5846	1.7054	1.8304	1.9597	
22	0.0331	0.0567	0.0829	0.1127	0.1481	0.1890	0.2354	0.2884	0.3470	0.4111	0.4807	0.5558	0.6365	0.7228	0.8147	0.9122	1.0154	1.1243	1.2379	1.3563	1.4795	1.6076	1.7407	1.8788	2.0219	2.1699	
23	0.0347	0.0600	0.0884	0.1217	0.1618	0.2095	0.2647	0.3274	0.3966	0.4714	0.5518	0.6379	0.7296	0.8269	0.9299	1.0386	1.1529	1.2728	1.3984	1.5297	1.6667	1.8094	1.9578	2.1119	2.2717	2.4373	
24	0.0362	0.0630	0.0939	0.1302	0.1731	0.2236	0.2817	0.3474	0.4207	0.4999	0.5851	0.6764	0.7738	0.8773	0.9869	1.1027	1.2247	1.3529	1.4874	1.6282	1.7753	1.9287	2.0884	2.2544	2.4267	2.6054	
25	0.0377	0.0660	0.0984	0.1377	0.1836	0.2381	0.2994	0.3685	0.4454	0.5302	0.6231	0.7241	0.8323	0.9476	1.0701	1.2000	1.3373	1.4821	1.6344	1.7942	1.9615	2.1363	2.3186	2.5084	2.7057	2.9095	
26	0.0392	0.0690	0.1031	0.1444	0.1937	0.2521	0.3185	0.3930	0.4757	0.5668	0.6663	0.7743	0.8907	1.0156	1.1490	1.2910	1.4415	1.5996	1.7654	1.9390	2.1204	2.3096	2.5066	2.7115	2.9244	3.1444	
27	0.0407	0.0715	0.1074	0.1517	0.2050	0.2673	0.3386	0.4189	0.5082	0.6065	0.7138	0.8301	0.9554	1.0907	1.2360	1.3913	1.5566	1.7319	1.9172	2.1125	2.3178	2.5331	2.7584	2.9937	3.2390	3.4943	
28	0.0422	0.0745	0.1123	0.1596	0.2183	0.2876	0.3674	0.4577	0.5576	0.6670	0.7859	0.9143	1.0523	1.2000	1.3574	1.5244	1.7011	1.8874	2.0842	2.2915	2.5094	2.7379	2.9771	3.2271	3.4879	3.7594	
29	0.0437	0.0775	0.1173	0.1677	0.2304	0.3046	0.3894	0.4848	0.5908	0.7074	0.8346	0.9716	1.1185	1.2754	1.4424	1.6195	1.8067	2.0040	2.2114	2.4290	2.6569	2.8951	3.1436	3.4026	3.6721	3.9521	
30	0.0452	0.0804	0.1222	0.1757	0.2424	0.3215	0.4094	0.5071	0.6146	0.7318	0.8587	0.9954	1.1419	1.2983	1.4647	1.6411	1.8275	2.0240	2.2306	2.4474	2.6745	2.9118	3.1594	3.4173	3.6856	3.9644	
31	0.0467	0.0825	0.1263	0.1828	0.2535	0.3374	0.4303	0.5322	0.6441	0.7660	0.8978	1.0395	1.1912	1.3529	1.5247	1.7065	1.8984	2.1004	2.3124	2.5345	2.7667	3.0090	3.2614	3.5239	3.7966	4.0794	
32	0.0482	0.0851	0.1308	0.1904	0.2651	0.3538	0.4525	0.5602	0.6770	0.7928	0.9176	1.0514	1.1952	1.3490	1.5128	1.6866	1.8704	2.0642	2.2680	2.4818	2.7056	2.9394	3.1833	3.4371	3.7009	3.9747	
33	0.0497	0.0876	0.1345	0.2000	0.2796	0.3733	0.4770	0.5907	0.7135	0.8453	0.9862	1.1361	1.2950	1.4629	1.6408	1.8287	2.0266	2.2345	2.4524	2.6802	2.9181	3.1660	3.4239	3.6918	3.9697	4.2576	
34	0.0512	0.0900	0.1374	0.2078	0.2923	0.3918	0.4994	0.6161	0.7419	0.8767	1.0205	1.1734	1.3363	1.5092	1.6921	1.8850	2.0879	2.2908	2.5037	2.7266	2.9595	3.2024	3.4553	3.7182	3.9911	4.2740	
35	0.0527	0.0925	0.1418	0.2151	0.3046	0.4081	0.5216	0.6443	0.7761	0.9179	1.0697	1.2315	1.4033	1.5852	1.7771	1.9790	2.1909	2.4128	2.6447	2.8866	3.1385	3.4004	3.6723	3.9542	4.2461	4.5480	
36	0.0542	0.0950	0.1459	0.2221	0.3156	0.4241	0.5426	0.6703	0.8081	0.9559	1.1137	1.2815	1.4594	1.6473	1.8452	2.0531	2.2710	2.4989	2.7368	2.9847	3.2426	3.5105	3.7884	4.0763	4.3742	4.6821	
37	0.0557	0.0975	0.1478	0.2280	0.3255	0.4390	0.5625	0.6952	0.8379	0.9907	1.1535	1.3264	1.5093	1.7022	1.9051	2.1180	2.3409	2.5738	2.8167	3.0696	3.3325	3.6054	3.8883	4.1812	4.4841	4.7970	
38	0.0572	0.0999	0.1508	0.2349	0.3364	0.4559	0.5844	0.7271	0.8798	1.0426	1.2155	1.3984	1.5913	1.7942	2.0071	2.2300	2.4629	2.7058	2.9587	3.2216	3.4945	3.7774	4.0703	4.3732	4.6861	5.0090	
39	0.0587	0.1024	0.1543	0.2424	0.3489	0.4734	0.6090	0.7546	0.9102	1.0758	1.2514	1.4371	1.6328	1.8385	2.0542	2.2800	2.5157										

Appendix Tab. 17 (8) Volume table for Belete-Gera NFPA (*Eucalyptus camaldulensis*)

Species: *Eucalyptus camaldulensis*

Formula 1 $V = 0.000740 \cdot D^{1.9430}$

Formula 2 $V = 0.000100 \cdot D^{1.5953} \cdot H^{1.0688}$

DBH:cm : H(total height):m : $V \cdot m^3$

Figures refer to stem volume (m³) including bark between stump and top

Height (m)	DBH(cm)																										
	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54		
Form.1	0.0249	0.0439	0.068	0.0972	0.1315	0.171	0.2154	0.2649	0.3195	0.379	0.4434	0.5129	0.5872	0.6666	0.7508	0.84	0.934	1.0329	1.1368	1.2455	1.359	1.4774	1.6007	1.7288	1.8617		
5	0.0098	0.0154	0.0220	0.0285																							
6	0.0119	0.0186	0.0268	0.0358	0.0458																						
7	0.0140	0.0221	0.0316	0.0422	0.0540	0.0668																					
8	0.0161	0.0255	0.0364	0.0487	0.0623	0.0771	0.0930																				
9	0.0183	0.0289	0.0413	0.0553	0.0707	0.0875	0.1055	0.1248																			
10	0.0205	0.0324	0.0462	0.0619	0.0791	0.0979	0.1181	0.1397	0.1627																		
11	0.0227	0.0359	0.0512	0.0685	0.0876	0.1084	0.1308	0.1547	0.1802	0.2070																	
12	0.0249	0.0394	0.0562	0.0752	0.0961	0.1190	0.1436	0.1698	0.1977	0.2272	0.2581																
13	0.0271	0.0429	0.0612	0.0819	0.1047	0.1296	0.1564	0.1850	0.2154	0.2475	0.2812	0.3165															
14	0.0464	0.0663	0.0887	0.1134	0.1403	0.1693	0.2003	0.2332	0.2679	0.3044	0.3428	0.3825															
15	0.0500	0.0714	0.0955	0.1221	0.1510	0.1823	0.2156	0.2510	0.2884	0.3277	0.3688	0.4118	0.4564														
16	0.0765	0.1023	0.1308	0.1618	0.1953	0.2310	0.2690	0.3090	0.3511	0.3952	0.4412	0.4890	0.5387														
17	0.1091	0.1396	0.1727	0.2084	0.2465	0.2870	0.3298	0.3747	0.4217	0.4707	0.5218	0.5748	0.6297														
18	0.1160	0.1484	0.1836	0.2215	0.2621	0.3051	0.3505	0.3983	0.4483	0.5004	0.5547	0.6110	0.6694	0.7297	0.7919												
19	0.1572	0.1945	0.2347	0.2777	0.3233	0.3714	0.4220	0.4750	0.5302	0.5877	0.6474	0.7092	0.7731	0.8390	0.9069	0.9768											
20	0.1661	0.2055	0.2480	0.2933	0.3415	0.3924	0.4458	0.5018	0.5601	0.6209	0.6839	0.7492	0.8167	0.8864	0.9581	1.0319											
21	0.2165	0.2612	0.3097	0.3598	0.4134	0.4697	0.5286	0.5901	0.6541	0.7208	0.7894	0.8605	0.9338	1.0084	1.0872	1.1671	1.2491	1.3331	1.4192	1.5073							
22	0.2275	0.2746	0.3248	0.3782	0.4345	0.4937	0.5556	0.6203	0.6875	0.7573	0.8296	0.9044	0.9815	1.0609	1.1427	1.2267	1.3128	1.4012	1.4916	1.5842							
23	0.2879	0.3407	0.3966	0.4556	0.5177	0.5827	0.6505	0.7210	0.7942	0.8701	0.9484	1.0293	1.1126	1.1983	1.2864	1.3768	1.4694	1.5643	1.6614	1.7608							
24	0.3014	0.3565	0.4151	0.4769	0.5418	0.6098	0.6808	0.7546	0.8312	0.9108	0.9926	1.0772	1.1644	1.2542	1.3463	1.4409	1.5379	1.6372	1.7388	1.8424							
25	0.3724	0.4336	0.4982	0.5660	0.6370	0.7112	0.7883	0.8683	0.9512	1.0369	1.1253	1.2164	1.3101	1.4064	1.5052	1.6065	1.7102	1.8164	1.9252	2.0364							
26	0.4522	0.5195	0.5903	0.6643	0.7416	0.8221	0.9055	0.9920	1.0814	1.1736	1.2686	1.3663	1.4667	1.5697	1.6753	1.7835	1.8942	2.0074	2.1231	2.2414							
27	0.5408	0.6146	0.6917	0.7722	0.8559	0.9428	1.0329	1.1259	1.2219	1.3208	1.4226	1.5271	1.6344	1.7444	1.8570	1.9722	2.0894	2.2095	2.3324	2.4581							
28	0.6390	0.7192	0.8028	0.8899	0.9803	1.0738	1.1704	1.2704	1.3732	1.4790	1.5877	1.6992	1.8136	1.9307	2.0505	2.1728	2.2974	2.4244	2.5537	2.6854							
29	0.7467	0.8335	0.9239	1.0178	1.1149	1.2154	1.3190	1.4257	1.5356	1.6484	1.7642	1.8830	2.0045	2.1289	2.2560	2.3858	2.5184	2.6537	2.7918	2.9327							
30	0.8643	0.9581	1.0553	1.1561	1.2602	1.3677	1.4784	1.5923	1.7093	1.8294	1.9525	2.0786	2.2076	2.3394	2.4741	2.6116	2.7519	2.8950	3.0409	3.1896							
31	0.9923	1.0930	1.1974	1.3052	1.4165	1.5312	1.6491	1.7703	1.8947	2.0222	2.1528	2.2864	2.4231	2.5628	2.7054	2.8509	2.9994	3.1508	3.3041	3.4594							
32	1.1308	1.2387	1.3503	1.4655	1.5841	1.7061	1.8315	1.9602	2.0921	2.2272	2.3654	2.5066	2.6508	2.7980	2.9482	3.1014	3.2576	3.4158	3.5760	3.7391							
33	1.2802	1.3955	1.5145	1.6371	1.7632	1.8928	2.0258	2.1621	2.3017	2.4445	2.5904	2.7394	2.8914	3.0464	3.2044	3.3654	3.5294	3.6964	3.8664	4.0394							
34	1.4408	1.5637	1.6902	1.8204	1.9542	2.0915	2.2323	2.3764	2.5239	2.6744	2.8279	2.9844	3.1439	3.3064	3.4719	3.6404	3.8119	3.9864	4.1639	4.3444							
35	1.6129	1.7435	1.8778	2.0158	2.1574	2.3026	2.4512	2.6024	2.7564	2.9134	3.0734	3.2364	3.4024	3.5714	3.7434	3.9184	4.0964	4.2774	4.4614	4.6484							

Appendix Tab. 17 (9) Volume table for Belete-Gera NFPA (*Eucalyptus grandis*)

Species: *Eucalyptus grandis*
 Formula 1 $V = 0.000050 \cdot D^2 \cdot h$
 Formula 2 $V = 0.000052 \cdot D^2 \cdot H \cdot 0.738$
 DBH:cm H:(total height):m V:m³

Figures refer to stem volume (m³) including bark between stump and top

Height (m)	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	
Form.1	0.0096	0.0217	0.0408	0.0663	0.1068	0.1544	0.2204	0.3004	0.3804	0.4688	0.6108	0.7532	0.9158	1.0995	1.3054	1.5349	1.7888	2.0685	2.3751	2.7098	3.0731	3.4658	3.8977	4.349	4.8398	5.3647	5.9253	6.5274	
5	0.0073	0.0122	0.0182	0.0253	0.0333	0.0422	0.0515	0.0607	0.0703	0.0806	0.0917	0.1034	0.1157	0.1286	0.1421	0.1562	0.1709	0.1861	0.2019	0.2182	0.2351	0.2526	0.2707	0.2894	0.3087	0.3286	0.3491	0.3703	0.3922
6	0.0069	0.0146	0.0222	0.0307	0.0405	0.0515	0.0631	0.0750	0.0878	0.1012	0.1153	0.1299	0.1452	0.1611	0.1776	0.1947	0.2124	0.2307	0.2495	0.2688	0.2886	0.3089	0.3297	0.3509	0.3725	0.3945	0.4169	0.4397	0.4629
7	0.0105	0.0175	0.0261	0.0353	0.0451	0.0552	0.0657	0.0767	0.0882	0.1002	0.1126	0.1254	0.1387	0.1525	0.1668	0.1815	0.1966	0.2121	0.2281	0.2445	0.2614	0.2787	0.2964	0.3145	0.3330	0.3519	0.3712	0.3909	0.4109
8	0.0121	0.0202	0.0302	0.0418	0.0542	0.0676	0.0816	0.0963	0.1117	0.1276	0.1440	0.1609	0.1783	0.1961	0.2144	0.2331	0.2523	0.2719	0.2919	0.3123	0.3331	0.3543	0.3759	0.3979	0.4203	0.4431	0.4663	0.4899	0.5139
9	0.0137	0.0229	0.0342	0.0476	0.0628	0.0796	0.0971	0.1153	0.1342	0.1537	0.1737	0.1942	0.2152	0.2367	0.2586	0.2810	0.3038	0.3271	0.3508	0.3749	0.3994	0.4244	0.4498	0.4756	0.5018	0.5284	0.5554	0.5828	0.6106
10	0.0153	0.0257	0.0383	0.0532	0.0701	0.0891	0.1091	0.1300	0.1519	0.1748	0.2007	0.2265	0.2533	0.2811	0.3098	0.3394	0.3699	0.4013	0.4336	0.4668	0.5008	0.5357	0.5714	0.6079	0.6451	0.6831	0.7218	0.7612	0.8013
11	0.0170	0.0285	0.0425	0.0589	0.0777	0.0987	0.1217	0.1466	0.1734	0.2021	0.2327	0.2652	0.2996	0.3358	0.3730	0.4111	0.4501	0.4900	0.5308	0.5725	0.6151	0.6586	0.7029	0.7481	0.7941	0.8409	0.8885	0.9369	0.9860
12	0.0187	0.0313	0.0466	0.0647	0.0853	0.1084	0.1339	0.1617	0.1919	0.2243	0.2590	0.2950	0.3323	0.3708	0.4106	0.4517	0.4940	0.5375	0.5822	0.6280	0.6749	0.7229	0.7720	0.8222	0.8735	0.9258	0.9791	1.0334	1.0887
13	0.0203	0.0341	0.0508	0.0705	0.0929	0.1181	0.1459	0.1762	0.2091	0.2444	0.2821	0.3213	0.3620	0.4042	0.4479	0.4930	0.5395	0.5874	0.6366	0.6871	0.7389	0.7920	0.8464	0.9021	0.9591	1.0173	1.0767	1.1373	1.1990
14	0.0220	0.0369	0.0550	0.0763	0.1008	0.1278	0.1583	0.1924	0.2291	0.2683	0.3099	0.3530	0.3976	0.4437	0.4913	0.5404	0.5909	0.6429	0.6964	0.7514	0.8079	0.8658	0.9251	0.9858	1.0479	1.1114	1.1763	1.2426	1.3103
15	0.0237	0.0397	0.0583	0.0822	0.1084	0.1377	0.1701	0.2055	0.2439	0.2853	0.3297	0.3762	0.4247	0.4752	0.5277	0.5822	0.6387	0.6972	0.7577	0.8192	0.8827	0.9481	1.0155	1.0848	1.1560	1.2291	1.3041	1.3809	1.4596
16	0.0254	0.0426	0.0633	0.0885	0.1162	0.1476	0.1827	0.2216	0.2634	0.3081	0.3558	0.4065	0.4602	0.5168	0.5763	0.6387	0.7040	0.7722	0.8434	0.9175	0.9945	1.0744	1.1572	1.2429	1.3315	1.4230	1.5174	1.6147	1.7139
17	0.0271	0.0454	0.0678	0.0940	0.1240	0.1575	0.1946	0.2354	0.2799	0.3281	0.3791	0.4329	0.4895	0.5489	0.6111	0.6762	0.7442	0.8151	0.8889	0.9656	1.0452	1.1277	1.2131	1.3013	1.3924	1.4864	1.5834	1.6833	1.7861
18	0.0288	0.0483	0.0721	0.1000	0.1318	0.1675	0.2069	0.2499	0.2965	0.3467	0.3994	0.4546	0.5123	0.5725	0.6353	0.7006	0.7684	0.8387	0.9115	0.9868	1.0646	1.1449	1.2277	1.3130	1.4008	1.4911	1.5839	1.6792	1.7770
19	0.0306	0.0512	0.0764	0.1069	0.1424	0.1818	0.2252	0.2725	0.3237	0.3780	0.4353	0.4956	0.5588	0.6249	0.6939	0.7658	0.8406	0.9184	0.9991	1.0828	1.1694	1.2589	1.3514	1.4468	1.5451	1.6464	1.7506	1.8577	1.9678
20	0.0324	0.0541	0.0807	0.1119	0.1476	0.1878	0.2325	0.2817	0.3345	0.3908	0.4506	0.5139	0.5807	0.6510	0.7248	0.8021	0.8829	0.9672	1.0550	1.1463	1.2411	1.3394	1.4412	1.5465	1.6547	1.7659	1.8801	1.9973	2.1175
21	0.0342	0.0570	0.0851	0.1180	0.1555	0.1976	0.2444	0.2959	0.3511	0.4101	0.4727	0.5389	0.6087	0.6821	0.7591	0.8398	0.9241	1.0120	1.1035	1.1986	1.2973	1.3996	1.5054	1.6147	1.7275	1.8438	1.9636	2.0869	2.2137
22	0.0360	0.0604	0.0901	0.1240	0.1635	0.2076	0.2566	0.3100	0.3678	0.4290	0.4937	0.5619	0.6336	0.7088	0.7875	0.8697	0.9554	1.0446	1.1374	1.2337	1.3335	1.4368	1.5436	1.6539	1.7677	1.8850	2.0058	2.1291	2.2549
23	0.0378	0.0634	0.0945	0.1300	0.1705	0.2160	0.2665	0.3220	0.3825	0.4470	0.5155	0.5880	0.6645	0.7450	0.8295	0.9179	1.0102	1.1064	1.2065	1.3105	1.4184	1.5303	1.6461	1.7658	1.8895	2.0172	2.1489	2.2846	2.4243
24	0.0396	0.0664	0.1001	0.1360	0.1775	0.2245	0.2770	0.3350	0.3984	0.4663	0.5387	0.6156	0.6970	0.7829	0.8733	0.9682	1.0675	1.1713	1.2795	1.3921	1.5091	1.6305	1.7563	1.8865	2.0211	2.1602	2.3038	2.4519	2.6045
25	0.0414	0.0696	0.1055	0.1430	0.1860	0.2345	0.2885	0.3480	0.4130	0.4835	0.5585	0.6380	0.7220	0.8105	0.9035	1.0010	1.1030	1.2094	1.3203	1.4357	1.5556	1.6800	1.8089	1.9423	2.0802	2.2226	2.3695	2.5209	2.6767
26	0.0432	0.0730	0.1115	0.1515	0.1940	0.2420	0.2955	0.3545	0.4190	0.4890	0.5645	0.6455	0.7320	0.8240	0.9210	1.0230	1.1300	1.2420	1.3590	1.4810	1.6079	1.7398	1.8767	2.0186	2.1655	2.3174	2.4743	2.6362	2.8031
27	0.0450	0.0758	0.1175	0.1605	0.2050	0.2540	0.3085	0.3685	0.4340	0.5050	0.5815	0.6635	0.7510	0.8440	0.9425	1.0465	1.1560	1.2710	1.3915	1.5175	1.6490	1.7860	1.9285	2.0765	2.2300	2.3890	2.5535	2.7235	2.8990
28	0.0468	0.0786	0.1225	0.1680	0.2150	0.2640	0.3185	0.3785	0.4440	0.5150	0.5915	0.6735	0.7610	0.8540	0.9525	1.0565	1.1660	1.2810	1.4015	1.5275	1.6590	1.7960	1.9385	2.0865	2.2400	2.3990	2.5635	2.7335	2.9090
29	0.0486	0.0814	0.1275	0.1755	0.2250	0.2760	0.3325	0.3945	0.4625	0.5365	0.6165	0.7025	0.7945	0.8925	0.9965	1.1065	1.2225	1.3445	1.4725	1.6065	1.7465	1.8925	2.0445	2.2025	2.3665	2.5365	2.7125	2.8945	3.0825
30	0.0504	0.0842	0.1325	0.1825	0.2340	0.2880	0.3475	0.4125	0.4835	0.5605	0.6435	0.7325	0.8275	0.9285	1.0355	1.1485	1.2675	1.3925	1.5235	1.6605	1.8035	1.9525	2.1075	2.2685	2.4355	2.6085	2.7875	2.9725	3.1635
31	0.0522	0.0870	0.1375	0.1895	0.2430	0.2990	0.3595	0.4255	0.4975	0.5755	0.6595	0.7495	0.8455	0.9475	1.0555	1.1695	1.2895	1.4155	1.5475	1.6855	1.8295	1.9795	2.1355	2.2975	2.4655	2.6395	2.8195	3.0055	3.1985
32	0.0540	0.0908	0.1425	0.1965	0.2520	0.3100	0.3725	0.4405	0.5145	0.5945	0.6805	0.7725	0.8705	0.9745	1.0845	1.1995	1.3205	1.4475	1.5805	1.7195	1.8645	2.0155	2.1725	2.3355	2.5045	2.6795	2.8605	3.0475	3.2415
33	0.0558	0.0936	0.1475	0.2035	0.2610	0.3200	0.3845	0.4545	0.5305	0.6125	0.7005	0.7945	0.8945	0.9995	1.1105	1.2275	1.3505	1.4795	1.6145	1.7555	1.9025	2.0555	2.2145	2.3795	2.5505	2.7275	2.9105	3.1005	3.2975
34	0.0576	0.0974	0.1525	0.2105	0.2700	0.3310	0.3975	0.4705	0.5495	0.6355	0.7275	0.8255	0.9295	1.0395	1.1555	1.2775	1.4055	1.5395	1.6795	1.8255	1.9775	2.1355	2.2995	2.4695	2.6455	2.8275	3.0155	3.2105	3.4135
35	0.0594	0.1002	0.1575	0.2175	0.2790	0.3420	0.4100	0.4840	0.5640	0.6500	0.7420	0.8400	0.9440	1.0540	1.1690	1.2890	1.4140	1.5440	1.6790	1.8190	1.9640	2.1140	2.2690	2.4290	2.5940	2.7640	2.9390	3.1200	3.3070
36	0.0612	0.1030	0.1625	0.2245	0.2880	0.3530	0.4230	0.4990	0.5810	0.6690	0.7630	0.8630	0.9690	1.0810	1.1980	1.3200	1.4470	1.5790	1.7160										

Appendix Tab. 17 (10) Volume table for Belete-Gera NFPA (*Eucalyptus globulus*)

Species: *Eucalyptus globulus*

Formula 1 $V = 0.00016 \cdot D^2 \cdot 4383$

Formula 2 $V = 0.000035 \cdot D^3 \cdot 9070 \cdot H^{0.720}$

DBH:cm H(total height):m V:m³

Figures refer to stem volume (m³) including bark between stump and top

Height (m)	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50
Form.1	0.0124	0.025	0.043	0.067	0.0974	0.1347	0.1793	0.2316	0.2919	0.3606	0.438	0.5244	0.6201	0.7254	0.8405	0.9657	1.1013	1.2474	1.4044	1.5724	1.7517	1.9425	2.145
5	0.0060	0.0104	0.0159	0.0225																			
6	0.0073	0.0126	0.0193	0.0273	0.0366																		
7	0.0086	0.0149	0.0228	0.0322	0.0432																		
8	0.0099	0.0172	0.0263	0.0372	0.0499	0.0643																	
9	0.0112	0.0195	0.0298	0.0422	0.0566	0.0730																	
10	0.0126	0.0218	0.0333	0.0472	0.0633	0.0817	0.1023																
11	0.0139	0.0241	0.0369	0.0523	0.0702	0.0905	0.1133	0.1385															
12	0.0153	0.0265	0.0405	0.0574	0.0770	0.0994	0.1244	0.1521	0.1824														
13	0.0167	0.0289	0.0442	0.0625	0.0839	0.1083	0.1355	0.1657	0.1987	0.2346													
14	0.0181	0.0313	0.0478	0.0677	0.0909	0.1172	0.1467	0.1794	0.2151	0.2540	0.2958												
15	0.0194	0.0337	0.0515	0.0729	0.0978	0.1262	0.1580	0.1932	0.2317	0.2735	0.3186	0.3689											
16	0.0208	0.0361	0.0552	0.0781	0.1048	0.1353	0.1693	0.2070	0.2482	0.2931	0.3414	0.3932	0.4485										
17	0.0222	0.0385	0.0589	0.0834	0.1119	0.1443	0.1807	0.2209	0.2649	0.3127	0.3643	0.4196	0.4786	0.5413									
18		0.0409	0.0626	0.0867	0.1190	0.1535	0.1921	0.2348	0.2817	0.3325	0.3873	0.4461	0.5089	0.5755	0.6460	0.7204							
19			0.0664	0.0939	0.1261	0.1626	0.2036	0.2489	0.2985	0.3523	0.4104	0.4727	0.5392	0.6098	0.6846	0.7634	0.8462						
20				0.0963	0.1332	0.1718	0.2151	0.2629	0.3153	0.3723	0.4336	0.4995	0.5697	0.6443	0.7233	0.8066	0.8942	0.9865					
21					0.1046	0.1403	0.1810	0.2266	0.2770	0.3323	0.3922	0.4568	0.5253	0.6000	0.6721	0.7527	0.8417	0.9400	1.0485				
22						0.1475	0.1903	0.2382	0.2912	0.3493	0.4123	0.4803	0.5532	0.6310	0.7136	0.8011	0.8933	0.9904	1.0921	1.1986			
23							0.1996	0.2498	0.3054	0.3663	0.4324	0.5037	0.5802	0.6618	0.7484	0.8402	0.9369	1.0387	1.1454	1.2571	1.3737		
24								0.2089	0.2615	0.3197	0.3834	0.4526	0.5272	0.6073	0.6924	0.7824	0.8772	0.9769	1.0814	1.1914	1.3068	1.4275	
25									0.2182	0.2732	0.3340	0.4008	0.4728	0.5508	0.6344	0.7237	0.8184	0.9187	1.0245	1.1366	1.2547	1.3783	1.5073
26										0.2283	0.2843	0.3483	0.4178	0.4932	0.5745	0.6617	0.7547	0.8536	0.9582	1.0685	1.1846	1.3067	1.4353
27											0.2987	0.3627	0.4350	0.5135	0.5982	0.6890	0.7859	0.8897	1.0002	1.1172	1.2409	1.3713	1.5092
28												0.3927	0.4523	0.5339	0.6220	0.7164	0.8171	0.9241	1.0374	1.1569	1.2825	1.4143	1.5522
29													0.4686	0.5544	0.6458	0.7439	0.8485	0.9596	1.0772	1.2012	1.3317	1.4685	1.6117
30														0.4870	0.5749	0.6697	0.7714	0.8799	0.9951	1.1170	1.2457	1.3810	1.5229
31															0.5955	0.6937	0.7990	0.9113	1.0307	1.1570	1.2903	1.4304	1.5774
32																0.6181	0.7177	0.8266	0.9429	1.0664	1.1971	1.3349	1.4799
33																	0.8544	0.9745	1.1021	1.2372	1.3797	1.5295	1.6867
34																		1.1380	1.2774	1.4246	1.5793	1.7416	1.9114
35																			1.4695	1.6291	1.7957	1.9717	2.1546
36																				1.5146	1.6791	1.8516	2.0322
37																					1.2099	1.3582	1.5146
38																						1.3987	1.5597
39																							1.6050
40																							1.8295
41																							2.0730
42																							2.3362
43																							2.6197
44																							2.9243
45																							3.2507

Appendix Tab. 17 (11) Volume table for Belete-Gera NFPA (*Eucalyptus citriodora*)

Species: *Eucalyptus citriodora*

Formula 1 $V = 0.000360 \cdot D^{2.1871}$

Formula 2 $V = 0.000093 \cdot D^{1.8383} \cdot H^{0.7124}$

DBH:cm H((total height):m V:m³)

Figures refer to stem volume (m³) including bark between stump and top

Height (m)	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42
Form. 1	0.0181	0.034	0.055	0.083	0.116	0.155	0.2	0.252	0.311	0.376	0.448	0.527	0.6122	0.705	0.805	0.9122	1.0267	1.1486	1.2779
5	0.0098	0.0172	0.0266	0.0380															
6	0.0111	0.0196	0.0303	0.0433	0.0586														
7	0.0124	0.0218	0.0338	0.0483	0.0653														
8	0.0137	0.0240	0.0372	0.0531	0.0719	0.0933													
9	0.0149	0.0261	0.0404	0.0578	0.0782	0.1015	0.1279												
10	0.0160	0.0282	0.0436	0.0623	0.0843	0.1094	0.1378	0.1694											
11	0.0172	0.0301	0.0467	0.0667	0.0902	0.1171	0.1475	0.1813	0.2185										
12	0.0183	0.0321	0.0496	0.0709	0.0959	0.1246	0.1569	0.1929	0.2325	0.2767									
13	0.0193	0.0339	0.0525	0.0751	0.1016	0.1319	0.1662	0.2042	0.2461	0.2919	0.3414								
14	0.0204	0.0358	0.0554	0.0792	0.1071	0.1391	0.1752	0.2153	0.2595	0.3077	0.3599	0.4161							
15	0.0376	0.0582	0.0832	0.1125	0.1461	0.1840	0.2262	0.2726	0.3232	0.3781	0.4371	0.5003							
16	0.0384	0.0609	0.0871	0.1178	0.1530	0.1926	0.2368	0.2854	0.3384	0.3958	0.4577	0.5239	0.5945						
17	0.0636	0.0909	0.1230	0.1597	0.2011	0.2472	0.2980	0.3533	0.4133	0.4779	0.5470	0.6207	0.6990	0.7280	0.8142				
18	0.0663	0.0947	0.1281	0.1663	0.2095	0.2575	0.3104	0.3680	0.4305	0.4977	0.5697	0.6465	0.7280	0.8142	0.8462				
19	0.0984	0.1331	0.1729	0.2177	0.2676	0.3226	0.3825	0.4474	0.5173	0.5921	0.6719	0.7566	0.8462	0.8462	0.8462				
20	0.1021	0.1380	0.1793	0.2258	0.2776	0.3346	0.3967	0.4640	0.5365	0.6142	0.6969	0.7848	0.8777	0.8777	0.8777				
21	0.1429	0.1857	0.2338	0.2874	0.3464	0.4107	0.4805	0.5555	0.6359	0.7216	0.8125	0.9088	1.0103	1.1170	1.2290				
22	0.1919	0.2417	0.2971	0.3581	0.4246	0.4966	0.5742	0.6573	0.7459	0.8399	0.9394	1.0443	1.1547	1.2705	1.3918				
23	0.2485	0.3067	0.3696	0.4382	0.5126	0.5927	0.6785	0.7698	0.8669	0.9696	1.0779	1.1918	1.3113	1.4365	1.5668				
24	0.3161	0.3810	0.4517	0.5284	0.6109	0.6993	0.7936	0.8936	0.9995	1.1111	1.2285	1.3517	1.4805	1.6148	1.7546				
25	0.3922	0.4651	0.5440	0.6290	0.7200	0.8170	0.9200	1.0289	1.1439	1.2648	1.3916	1.5244	1.6633	1.8074	1.9566				
26	0.4782	0.5594	0.6466	0.7404	0.8401	0.9460	1.0581	1.1763	1.3006	1.4310	1.5674	1.7097	1.8579	2.0120	2.1721				
27	0.5747	0.6644	0.7608	0.8630	0.9718	1.0869	1.2083	1.3360	1.4700	1.6097	1.7551	1.9061	2.0626	2.2246	2.3921				
28	0.6819	0.7805	0.8857	0.9973	1.1155	1.2401	1.3711	1.5086	1.6526	1.8029	1.9594	2.1224	2.2918	2.4676	2.6498				
29	0.8003	0.9081	1.0228	1.1437	1.2715	1.4061	1.5474	1.6954	1.8499	2.0109	2.1783	2.3521	2.5324	2.7191	2.9122				
30	0.9303	1.0476	1.1717	1.3025	1.4402	1.5846	1.7356	1.8931	2.0571	2.2275	2.4043	2.5874	2.7767	2.9721	3.1736				
31	1.0723	1.1984	1.3333	1.4742	1.6211	1.7740	1.9330	2.0981	2.2693	2.4465	2.6297	2.8189	3.0141	3.2153	3.4224				
32	1.2268	1.3638	1.5079	1.6591	1.8164	1.9797	2.1490	2.3242	2.5053	2.6923	2.8852	3.0841	3.2889	3.4996	3.7161				
33	1.3941	1.5414	1.6959	1.8579	2.0261	2.1994	2.3778	2.5612	2.7495	2.9427	3.1408	3.3438	3.5517	3.7645	3.9822				
34	1.5745	1.7324	1.8959	2.0649	2.2394	2.4194	2.6048	2.7956	2.9918	3.1933	3.4002	3.6125	3.8301	4.0530	4.2811				
35	1.7685	1.9324	2.1019	2.2769	2.4574	2.6434	2.8348	3.0316	3.2338	3.4415	3.6547	3.8733	4.0973	4.3266	4.5614				

Appendix Tab. 17 (12) Volume table for Belete-Gera NFPA (*Casuarina equisetifolia*)

Species: *Casuarina equisetifolia*

Formula 1 $V = 0.003000 \cdot D^2 \cdot 0.661$

Formula 2 $V = 0.000134 \cdot D^2 \cdot 0.662 \cdot H^{0.3763}$

DBH:cm H(total height):m V:m³

Figures refer to stem volume (m³) including bark between stump and top

Height (m)	DBH(cm)																	
	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
Form.1	0.0126	0.023	0.0366	0.0535	0.0738	0.0975	0.1247	0.1553	0.1895	0.2272	0.2685	0.3134	0.3619	0.414	0.4698	0.5293	0.5925	0.6594
5	0.0095	0.0170	0.0268	0.0388	0.0531													
6	0.0101	0.0182	0.0287	0.0416	0.0569													
7	0.0107	0.0193	0.0304	0.0441	0.0603													
8	0.0113	0.0203	0.0320	0.0464	0.0635	0.0833												
9	0.0118	0.0212	0.0334	0.0485	0.0663	0.0871	0.1107											
10	0.0123	0.0221	0.0348	0.0504	0.0690	0.0906	0.1152	0.1427										
11	0.0128	0.0229	0.0361	0.0523	0.0716	0.0939	0.1194	0.1480	0.1797									
12	0.0132	0.0237	0.0373	0.0540	0.0740	0.0971	0.1234	0.1529	0.1857	0.2217								
13	0.0136	0.0244	0.0384	0.0557	0.0763	0.1001	0.1272	0.1576	0.1914	0.2285	0.2690							
14		0.0251	0.0395	0.0573	0.0784	0.1029	0.1308	0.1621	0.1968	0.2350	0.2766	0.3217						
15			0.0406	0.0588	0.0805	0.1056	0.1343	0.1664	0.2021	0.2412	0.2839	0.3302	0.3800					
16			0.0416	0.0603	0.0825	0.1083	0.1376	0.1705	0.2070	0.2472	0.2909	0.3383	0.3894	0.4440				
17				0.0617	0.0844	0.1108	0.1408	0.1745	0.2118	0.2529	0.2977	0.3462	0.4071	0.4543	0.5140			
18				0.0630	0.0862	0.1132	0.1439	0.1783	0.2165	0.2584	0.3042	0.3537	0.4071	0.4643	0.5253	0.5901	0.6588	0.7313
19					0.0880	0.1155	0.1468	0.1820	0.2210	0.2638	0.3105	0.3610	0.4155	0.4739	0.5361	0.6023	0.6724	0.7464
20					0.0897	0.1178	0.1497	0.1855	0.2253	0.2689	0.3166	0.3681	0.4236	0.4831	0.5466	0.6141	0.6856	0.7610
21						0.1200	0.1525	0.1890	0.2295	0.2740	0.3225	0.3750	0.4315	0.4921	0.5568	0.6255	0.6983	0.7752
22						0.1221	0.1552	0.1924	0.2336	0.2788	0.3282	0.3816	0.4392	0.5009	0.5667	0.6366	0.7107	0.7890
23							0.1578	0.1956	0.2375	0.2836	0.3337	0.3881	0.4466	0.5094	0.5763	0.6474	0.7228	0.8023
24							0.1604	0.1993	0.2414	0.2882	0.3392	0.3944	0.4539	0.5176	0.5856	0.6579	0.7345	0.8154
25								0.2019	0.2451	0.2926	0.3444	0.4005	0.4610	0.5257	0.5948	0.6682	0.7459	0.8281
26									0.2049	0.2498	0.2970	0.3496	0.4065	0.4678	0.5336	0.6037	0.6782	0.7571
27										0.2524	0.3013	0.3546	0.4124	0.4746	0.5412	0.6123	0.6879	0.7680
28										0.2559	0.3055	0.3595	0.4181	0.4811	0.5487	0.6208	0.6974	0.7786
29											0.3095	0.3643	0.4237	0.4876	0.5561	0.6291	0.7068	0.7859
30												0.3135	0.3690	0.4291	0.4939	0.5632	0.6372	0.7159
31													0.3736	0.4345	0.4992	0.5682	0.6412	0.7182
32														0.4398	0.5061	0.5772	0.6530	0.7336
33															0.5120	0.5839	0.6606	0.7422
34																0.6681	0.7506	0.8380
35																	0.7589	0.8472

Appendix Tab. 17 (13) Volume table for Belete-Gera NFPA (*Hagenia abyssinica*)

Species: *Hagenia abyssinica*

Formula 1 $V = 0.000280 \cdot D^2 \cdot H$

Formula 2 $V = 0.000117 \cdot D^3 \cdot H^0.7620$

DBH:cm H(total height):m V:m³.

Figures refer to stem volume (m³) including bark between stump and top

Height (m)	DBH(cm)																			
	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40		
Form.1	0.0113	0.02	0.032	0.047	0.065	0.085	0.109	0.135	0.165	0.197	0.232	0.271	0.312	0.3584	0.4039	0.4545	0.5081	0.5648		
5	0.0098	0.0163	0.0241	0.0333	0.0438															
6	0.0113	0.0188	0.0278	0.0384	0.0505	0.0639														
7	0.0127	0.0212	0.0314	0.0434	0.0570	0.0721	0.0888													
8	0.0141	0.0235	0.0349	0.0481	0.0632	0.0801	0.0986	0.1188	0.1406	0.1640	0.1889	0.2153	0.2667	0.2990	0.3328	0.3682	0.4399	0.4817		
9	0.0155	0.0258	0.0382	0.0528	0.0693	0.0878	0.1081	0.1302	0.1541	0.1798	0.2071	0.2361	0.2897	0.3247	0.3614	0.3998	0.4740	0.5190		
10	0.0168	0.0280	0.0415	0.0573	0.0753	0.0953	0.1174	0.1414	0.1674	0.1952	0.2249	0.2564	0.3121	0.3498	0.3894	0.4308	0.4740	0.5190		
11	0.0181	0.0302	0.0447	0.0618	0.0811	0.1027	0.1265	0.1524	0.1803	0.2103	0.2423	0.2762	0.3340	0.3744	0.4168	0.4611	0.5074	0.5555		
12	0.0194	0.0323	0.0479	0.0661	0.0868	0.1099	0.1354	0.1631	0.1930	0.2251	0.2594	0.2957	0.3556	0.3986	0.4437	0.4909	0.5401	0.5914		
13	0.0344	0.0510	0.0704	0.0924	0.1170	0.1441	0.1736	0.2055	0.2397	0.2761	0.3148	0.3556	0.3768	0.4224	0.4702	0.5202	0.5724	0.6267		
14			0.0746	0.0979	0.1240	0.1527	0.1840	0.2178	0.2540	0.2926	0.3336	0.3768	0.3977	0.4458	0.4962	0.5490	0.6041	0.6614		
15					0.1309	0.1612	0.1942	0.2298	0.2681	0.3088	0.3521	0.3977	0.4183	0.4689	0.5219	0.5774	0.6354	0.6957		
16							0.2042	0.2417	0.2819	0.3248	0.3703	0.4183	0.4386	0.4916	0.5473	0.6055	0.6662	0.7295		
17										0.2956	0.3406	0.3883	0.4386	0.4916	0.5473	0.6055	0.6662	0.7295		
18													0.4587	0.5141	0.5723	0.6332	0.6967	0.7628		
19														0.4785	0.5363	0.5970	0.6605	0.7268		
20																0.6875	0.7565	0.8283		
21																	0.7143	0.7859		
22																		0.8150		
																		0.8924		

Appendix Tab. 18 Major commercial species in natural high forests
(Ethiopian Forestry Action Program, Annex 2.2)

Botanical name
<i>Albizia schimperiana / gummifera</i>
<i>Aningeria adolfi-friederici</i>
<i>Apodytes dimidiata</i>
<i>Blighia unijugara</i>
<i>Bosqueia phoberos</i>
<i>Celtis africana / ktaussiana</i>
<i>Chlorophora excelsa</i>
<i>Cordia abyssinica / africana</i>
<i>Croton machrostachyus</i>
<i>Dalbergia melanoxyton</i>
<i>Dispyrus abyssinica</i>
<i>Ekebergia caponsis / rueppeliana</i>
<i>Hagenia abyssinica</i>
<i>Linociera giordanii</i>
<i>Juniperus procera</i>
<i>Manilkara butugi</i>
<i>Ocotea kenyaensis</i>
<i>Olea africana</i>
<i>Olea hochsterreri</i>
<i>Olea welwitschii</i>
<i>Podocarpus gracilior</i>
<i>Polyscias fulva / ferruginea</i>
<i>Pygeum africanum</i>
<i>Prunus africana</i>
<i>Syzygium guineense</i>

Appendix Tab. 19 Forest plantation areas (ha) by species and planted year

Planted year	1975	1976	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1993	1994	1995	Total	
Species/age	(22)	(21)	(19)	(18)	(17)	(16)	(15)	(14)	(13)	(12)	(11)	(10)	(9)	(8)	(7)	(6)	(4)	(3)	(2)	(2)	Total
Belete	28.0																				28.0
Belete trial plot		16.2																			16.2
<i>Casuarina equisetifolia</i>																					440.9
<i>Cupressus lusitanica</i>	17.0	44.9	9.6	7.8	21.2	42.6	128.3	13.5	94.8	31.0	9.2	21.0									30.7
<i>E. grandis & camaldulensis</i>						30.7															16.4
<i>Eucalyptus camaldulensis</i>		6.4		2.1						30.3	12.7						3.7	4.2			43.0
<i>Eucalyptus citriodora</i>																					4.4
<i>Eucalyptus globulus</i>							4.4														4.4
<i>Eucalyptus grandis</i>						25.0	27.3						20.4								72.7
<i>Eucalyptus grandis</i>			12.4	15.2	8.4	3.7	75.0	13.8			19.6									2.6	150.7
<i>Eucalyptus saligna</i>														0.6							12.9
<i>Hagenia abyssinica</i>							12.3														1.3
<i>Juniperus procera</i>	1.3																				1.3
mixed												1.1									1.1
Mixed Eucalyptus		2.9								27.5											30.4
<i>Pinus patula</i>	1.9				1.0	19.3				12.7	3.2	15.1	16.8								70.0
Belets Total	48.2	70.4	9.6	12.4	10.9	55.7	111.1	3.7	242.9	84.0	125.6	46.1	37.2	19.6	9.8	21.0	3.7	4.2	2.6		918.7
Gera								18.1	8.8	10.9			64.2		56.6				8.8		167.4
<i>Cupressus lusitanica</i>											5.6										5.6
<i>Eucalyptus globulus</i>																					1.2
<i>Eucalyptus grandis</i>										1.2											1.2
<i>Eucalyptus saligna</i>											10.6										10.6
Gera Total								18.1	8.8	12.1	16.2		64.2		56.6			8.8			184.8
Total	48.2	70.4	9.6	12.4	10.9	55.7	111.1	21.8	251.7	96.1	141.8	46.1	101.4	19.6	66.4	21.0	3.7	13.0	2.6		1103.5

Appendix Tab. 20 (1) Results of forest plantation survey by subcompartment

Forest	Site	New Comp. No.	New Sub Comp. No.	Old comp. No.	Species	area (ha)	planted year	age	Stems/ha	Ave.DBH (cm)	Ave.TH (m)	volume / ha (m ³ /ha)	Total volume (m ³)	M.A.I (m ³ /ha/yr)
Belete	Sebaka Gurati	2	12	1	<i>Eucalyptus saligna</i>	2.5	1986	11	1,017	14.7	21	153.0	383	13.91
Belete	Sebaka Gurati	2	13	1	<i>Eucalyptus saligna</i>	1.9	1986	11	370	21	25	193.3	367	17.57
Belete	Mologo	2	14		<i>Cupressus lusitanica</i>	5.0	1990	7	1,560	12	10	96.0	480	13.71
Belete	Mologo	2	15		<i>Hagenia abyssinica</i>	0.6	1990	7	1,360	12	9	77.3	46	11.04
Belete	Mologo	2	16		<i>Cupressus lusitanica</i>	4.2	1990	7	1,560	12	10	95.9	403	13.70
Belete	Belete trial prot	2	17			28.0	1975	22					0	
Belete	Belete	2	18	6	<i>Pinus patula</i>	1.0	1980	17	640	25	26	472.5	473	27.79
Belete	Belete	2	19	5	<i>Cupressus lusitanica</i>	4.0	1980	17	640	23	18	245.4	982	14.44
Belete	Belete	2	20	2	<i>Cupressus lusitanica</i>	8.3	1975	22	700	31	30	757.1	6,284	34.41
Belete	Belete	2	21	3	<i>Pinus patula</i>	1.9	1975	22	670	34	36	1,162.4	2,209	52.84
Belete	Belete	2	22	4	<i>Juniperus procera</i>	1.3	1975	22	967	23.7	18.4	295.0	384	13.41
Belete	Belete	2	23	1	<i>Cupressus lusitanica</i>	8.7	1975	22	587	29	26	487.4	4,240	22.15
Belete	Aero Tiriba	2	24	10	<i>Cupressus lusitanica</i>	21.2	1981	16	790	26	18	340.6	7,221	21.29
Belete	Aero Tiriba	2	25	9	<i>Euc. gra. & cam.</i>	9.2	1982	15	617	16.5	21.8	137.0	1,260	9.13
Belete	Aero Tiriba	2	26	7	<i>Eucalyptus saligna</i>	15.2	1981	16	880	15	18	205.3	3,121	12.83
Belete	Aero Tiriba	2	27	8	<i>Pinus patula</i>	19.3	1981	16	790	21	25	367.9	7,100	22.99
Belete	Aero Tiriba	2	28	5	<i>Pinus patula</i>	3.7	1985	12	1,240	16.5	14.5	204.0	755	17.00
Belete	Aero Tiriba	2	29	1	<i>Cupressus lusitanica</i>	27.3	1984	13	1,000	20	15	219.3	5,987	16.87
Belete	Aero Tiriba	2	30	2	<i>Cupressus lusitanica</i>	9.6	1987	10	1,380	15	12	156.4	1,501	15.64
Belete	Aero Tiriba	2	31	3	<i>Eucalyptus citriodora</i>	7.6	1986	11	745	7	7	18.3	139	1.66
Belete	Aero Tiriba	2	32	3	<i>Eucalyptus citriodora</i>	5.1	1986	11	745	7	7	18.0	92	1.64
Belete	Aero Tiriba	2	33	4	<i>Pinus patula</i>	12.8	1988	9	1,993	8	8	54.3	695	6.03
Belete	Aero Tiriba	2	34	4	<i>Pinus patula</i>	4.0	1988	9	2,520	10	9	121.5	486	13.50
Belete	Yanga	3	14	6	<i>Cupressus lusitanica</i>	3.4	1986	11	1,460	14	11	142.8	486	12.98
Belete	Yanga	3	15	5	<i>Cupressus lusitanica</i>	4.1	1986	11	1,520	13	11	132.3	542	12.03
Belete	Sebaka Gurati	3	16	5	<i>Cupressus lusitanica</i>	40.7	1986	11	1,640	17	17	348.9	14,200	31.72
Belete	Sebaka Gurati	3	17	4	<i>Cupressus lusitanica</i>	4.1	1986	11	1,367	11.5	8.2	113.0	463	10.27
Belete	Sebaka Gurati	3	18	3	<i>Cupressus lusitanica</i>	2.7	1986	11	700	15.2	13.5	102.0	275	9.27

Appendix Tab. 20 (2) Results of forest plantation survey by subcompartment

Forest	Site	New Comp. No.	New Sub Comp. No.	Old comp. No.	Species	area (ha)	planted year	age	Stems/ha	Ave.DBH (cm)	Ave.TH (m)	volume/ha (m ³ /ha)	Total volume (m ³)	M.A.I. (m ³ /ha/yr)
Belete	Sobeka Gurati	3	19	3	<i>Cupressus lusitanica</i>	7.6	1986	11	1,600	16	12	184.0	1,398	16.73
Belete	Sobeka Gurati	3	20	2	<i>Pinus patula</i>	1.0	1986	11	1,467	14.6	16.6	171.0	171	15.55
Belete	Mologo	3	21		<i>Pinus patula</i>	2.2	1986	11	1,467	14.6	16.6	171.0	376	15.55
Belete	Mologo	3	22		mixed	1.1	1986	11	1,300	11.3	9.4	104.0	114	9.45
Belete	Mologo	3	23	3	<i>Eucalyptus saligna</i>	2.5	1989	8	1,100	15	20	287.0	718	35.88
Belete	Mologo	3	24	3	<i>Eucalyptus saligna</i>	6.0	1989	8	933	13.6	18.9	114.0	684	14.25
Belete	Mologo	3	25	3	<i>Eucalyptus saligna</i>	0.8	1989	8	1,100	15	20	287.2	230	35.90
Belete	Mologo	3	26	3	<i>Eucalyptus saligna</i>	1.4	1989	8	1,100	15	20	287.2	402	35.90
Belete	Mologo	3	27	3	<i>Eucalyptus saligna</i>	5.4	1989	8	1,210	15	22	303.1	1,637	37.89
Belete	Mologo	3	28	3	<i>Eucalyptus saligna</i>	3.5	1989	8	940	12	14	101.4	355	12.68
Belete	Mologo	3	29	6	<i>Cupressus lusitanica</i>	7.6	1984	13	1,340	15	10	121.2	921	9.32
Belete	Mologo	3	30	5	<i>Cupressus lusitanica</i>	36.0	1984	13	1,600	16	12	214.6	7,726	16.51
Belete	Mologo	3	31	4	<i>Cupressus lusitanica</i>	13.3	1984	13	2,080	14	12	219.7	2,922	16.90
Belete	Mologo	3	32	2	<i>Eucalyptus grandis</i>	27.3	1984	13	1,070	16	22	340.2	9,287	26.17
Belete	Mologo	3	33	1	<i>Cupressus lusitanica</i>	13.5	1985	12	1,840	16	14	267.1	3,606	22.26
Belete	Belete	3	34	7	<i>Cupressus lusitanica</i>	9.6	1978	19	667	26	20.1	350.0	3,360	18.42
Belete	Gefere	3	35	1	<i>Pinus patula</i>	15.1	1987	10	1,620	10	10	76.7	1,158	7.67
Belete	Gefere	3	36	2	<i>Pinus patula</i>	9.0	1985	12	1,225	19	24	443.1	3,988	36.93
Belete	Gefere	3	37	3	<i>Eucalyptus citriodora</i>	18.8	1985	12	1,045	13	15	130.7	2,457	10.89
Belete	Gefere	3	38	4	<i>Eucalyptus citriodora</i>	11.5	1985	12	1,160	13	14	135.0	1,533	11.25
Belete	Gefere	3	39	5	<i>Eucalyptus camaldulensis</i>	2.1	1980	17	980	16	18	221.9	466	13.05
Belete	Gefere	3	40	6	<i>Cupressus lusitanica</i>	3.8	1980	17	800	17.8	13.5	191.0	726	11.24
Belete	Gefere	3	41	7	<i>Eucalyptus grandis</i>	11.4	1982	15	600	21.3	24.6	320.0	3,648	21.33
Belete	Gefere	3	42	8	<i>Cupressus lusitanica</i>	8.5	1986	11	1,300	11.3	9.4	135.1	1,148	12.28
Belete	Gefere	3	43	9	<i>Eucalyptus grandis</i>	20.4	1988	9	1,140	11	12	95.2	1,942	10.58
Belete	Gefere	3	44	11	<i>Cupressus lusitanica</i>	6.8	1982	15	1,080	16.9	13.7	199.0	1,353	13.27
Belete	Gefere	3	45	12	<i>Hogonia abyssinica</i>	12.3	1984	13	1,300	14	10	105.2	1,294	8.09
Belete	Gefere	3	46	13	<i>Cupressus lusitanica</i>	1.9	1982	15	1,080	16.9	13.7	199.0	378	13.27

Appendix Tab. 20 (3) Results of forest plantation survey by subcompartment

Forest	Site	New Comp. No.	New Sub Comp. No.	Old comp. No.	Species	area (ha)	planted year	age	Stems/ha	Ave.DBH (cm)	Ave.TH (m)	volume / ha (m ³ /ha)	Total volume (m ³)	M.A.I (m ³ /ha/yr)
Belete	Daru	3	47	1	<i>Cupressus lusitanica</i>	44.1	1984	13	1,000	14	11	94.0	4,145	7.23
Belete	Daru	3	48	2	<i>Euc.gn.& cam.</i>	21.5	1982	15	650	20.2	22.3	177.0	3,806	11.80
Belete	Daru	3	49	3	<i>Cupressus lusitanica</i>	3.2	1982	15	1,000	16.2	17	224.0	717	14.93
Belete	Daru	3	50	4	<i>Cupressus lusitanica</i>	12.5	1982	15	733	19.5	14.8	199.0	2,488	13.27
Belete	Komo	3	51	1	<i>Eucalyptus grandis</i>	13.6	1982	15	550	20.6	22.5	232.0	3,155	15.47
Belete	Komo	3	52	2	<i>Cupressus lusitanica</i>	17.6	1982	15	1,133	18.6	15.4	258.0	4,541	17.20
Belete	Gojob	5	12	1	<i>Eucalyptus saligna</i>	9.4	1986	11	555	16	21	101.0	949	9.18
Belete	Gojob	5	13	2	<i>Mixed Eucalyptus</i>	27.5	1985	12	678	12	11.1	80.0	2,200	6.67
Belete	Gojob	6	7	1	<i>Eucalyptus saligna</i>	23.8	1984	13	1,057	12	17	159.5	3,796	12.27
Belete	Gojob	6	8	1	<i>Eucalyptus globulus</i>	4.4	1982	15	1,800	6	9	42.6	187	2.84
Belete	Gojob	6	9	1	<i>Eucalyptus saligna</i>	8.4	1982	15	1,090	11	15	154.6	1,299	10.31
Belete	Gojob	6	10	3	<i>Cupressus lusitanica</i>	0.6	1982	15	1,780	15	16	299.5	180	19.97
Belete	Gojob Kishe	6	11	1	<i>Cupressus lusitanica</i>	2.7	1976	21	620	23	17	224.6	606	10.70
Belete	Gojob Kishe	6	12	2	<i>Casuarina equisetifolia</i>	16.2	1976	21	445	13	12	32.1	520	1.53
Belete	Gojob Kishe	6	13	3	<i>Cupressus lusitanica</i>	6.7	1976	21	680	23	19	258.5	1,732	12.31
Belete	Gojob Kishe	6	14	4	<i>Eucalyptus camaldulensis</i>	4.2	1994	3	1,360	5	10	31.1	131	10.37
Belete	Gojob Kishe	6	15	5	<i>Eucalyptus saligna</i>	12.4	1979	18	460	19	19	189.4	2,349	10.52
Belete	Gojob Kishe	6	16	6	<i>Cupressus lusitanica</i>	34.2	1976	21	620	25	22	323.1	11,050	15.39
Belete	Gojob Kishe	6	17	7	<i>Eucalyptus camaldulensis</i>	6.4	1976	21	183	31	26.8	162.0	1,037	7.71
Belete	Gojob Kishe	6	18	8	<i>Mixed Eucalyptus</i>	0.9	1976	21	200	31	18.5	207.0	186	9.86
Belete	Gojob Kishe	6	19	9	<i>Mixed Eucalyptus</i>	2.0	1976	21	440	23	20.8	212.0	424	10.10
Belete	Gojob Kishe	6	20	10	<i>Eucalyptus camaldulensis</i>	3.7	1993	4	830	7	10	41.8	155	10.45
Belete	Gojob Kishe	6	21	11	<i>Cupressus lusitanica</i>	1.3	1976	21	800	23	16.4	293.0	381	13.95
Belete	Gojob Kishe	6	22	13	<i>Eucalyptus saligna</i>	2.6	1993	2	2,500	-	-	-	0	-
Belete	Gojob Kishe	6	23	14	<i>Eucalyptus saligna</i>	1.3	1984	13	300	28	27.4	173.0	225	13.31
Belete	Gojob Kishe	6	24	15	<i>Eucalyptus saligna</i>	3.7	1983	14	1,080	8	10	47.7	176	3.41
Belete	Gojob Kishe	6	25	15	<i>Eucalyptus saligna</i>	36.2	1984	13	1,270	8	11	108.5	3,928	8.35
Belete	Gojob Kishe	6	26	15	<i>Eucalyptus saligna</i>	13.7	1984	13	1,640	9	13	179.3	2,456	13.79

Appendix Tab. 20 (4) Results of forest plantation survey by subcompartment

Forest	Site	New Comp. No.	New Sub Comp. No.	Old comp. No.	Species	area (ha)	planted year	age	Stems/ha	Ave.DBH (cm)	Ave.TH (m)	volume / ha (m ³ /ha)	Total volume (m ³)	M.A.I (m ³ /ha/yr)	
Belete	Yanga	6	27		<i>Cupressus lusitanica</i>	2.1	1987	10	1,520	13	11	132.0	277	13.20	
Belete	Yanga	6	28	4	<i>Cupressus lusitanica</i>	23.7	1986	11	1,260	15	12	170.7	4,046	15.52	
Belete	Yanga	6	29	1	<i>Cupressus lusitanica</i>	8.0	1987	10	700	14	4.8	80.0	640	8.00	
Belete	Yanga	6	30	2	<i>Cupressus lusitanica</i>	6.9	1987	10	583	15	6.1	81.0	559	8.10	
Belete	Yanga	6	31	2	<i>Cupressus lusitanica</i>	4.4	1987	10	583	15	6.1	81.0	356	8.10	
Belete	Yanga	6	32		<i>Cupressus lusitanica</i>	21.0	1991	6	1,400	7	5	29.9	628	4.98	
Belete forest total						918.7							173,917		
Gera	Sedi	16	24	TC1	<i>Cupressus lusitanica</i>	18.1	1983	14	1,300	19	20	366.6	6,635	26.19	
Gera	Sedi	16	25	TC2	<i>Eucalyptus grandis</i>	1.2	1985	12	880	25	34	689.2	827	57.43	
Gera	Sedi	16	26	TC3	<i>Cupressus lusitanica</i>	10.9	1985	12	1,440	14	12	165.5	1,804	13.79	
Gera	Sedi	16	27	TC4	<i>Cupressus lusitanica</i>	8.8	1984	13	960	18	19	279.4	2,459	21.49	
Gera	Sedi	16	28	TC5	<i>Eucalyptus saligna</i>	10.6	1986	11	770	19	22	260.5	2,761	23.68	
Gera	Sedi	16	29	TC6	<i>Cupressus lusitanica</i>	15.7	1988	9	640	17	10	74.2	1,165	8.24	
Gera	Sedi	16	30	TC7	<i>Cupressus lusitanica</i>	48.5	1988	9	640	17	10	74.2	3,599	8.24	
Gera	Sedi	16	31	TC8	<i>Eucalyptus globulus</i>	5.6	1986	11	630	22	25	293.6	1,644	26.69	
Gera	Sedi	16	32	TC9	<i>Cupressus lusitanica</i>	48.6	1990	7	1,575	10	9	71.0	3,451	10.14	
Gera	Sedi	16	33	TC10	<i>Cupressus lusitanica</i>	8.8	1994	3					0	0.00	
Gera	Sedi	16	34	TC11	<i>Cupressus lusitanica</i>	8.0	1990	7	1,575	10	9	71.0	568	10.14	
Gera forest total						184.8							24,913		
Grand total						1103.5								198,830	
Belete	Trial prot	2	17	3	<i>Eucalyptus saligna</i>	6.3	1975	22	670	31	39	1,061.8	6,689	48.26	
Belete	Trial prot			10	<i>Eucalyptus grandis</i>	0.9	1975	22	810	30	40	1,189.3	1,070	54.06	
				11	<i>Eucalyptus camaldulensis</i>	1.3	1975	22	450	29	25	365.4	475	16.61	
				12	<i>Pinus patula</i>	2.8	1975	22	560	35	33	879.6	2,463	39.98	
				13	<i>Podocarpus gracilior</i>	1.1	1975	22	1,050	18	17	409.6	451	18.62	

Appendix Tab. 21 Afforestation activities in Belete Forest (1994/95~1996/97)

	Activity	unit	1994/95			1995/96			1996/97			remark
			performed	cost (Birr)	cost/unit	performed	cost (Birr)	cost/unit	performed	cost (Birr)	cost/unit	
Nursery work	Seed collection	kg	70.0	4,200	60.0	15.0	420	28.0	60.0	1,680	28.0	includes soil preparation, seed sowing, watering, raising the seedling up to the out-planting size and all its management
	Seedling raising	No	150,000	30,000	0.2	358,325	71,665	0.2	236,200	25,600	0.11	
Planting work	Site preparation	ha	15.0	4,500	300.0	28.1	3,271	116.4	93.3	4,664	50.0	
	Linning out of planting locations	ha							93.3	2,996	32.0	
	Transporting seedlings	No							236,200	1,178	0.005	
	Watering at flying nursery									448		
	Pitting planting holes	ha	50.0	7,500	150.0	143.3	9,686	67.6	93.3	4,664	50.0	
Tending work	Planting	ha	50.0	9,800	196.0	143.3	12,516	87.3	93.3	6,794	73.0	
	Sub total	ha	50.0	21,800	436.0	143.3	25,473	177.8	93.3	20,744	222.0	
	Weeding	ha				143.3	7,167	50.0				
Other	Pruning	ha	130.0	14,900	114.6	55.1	6,366	115.5				
	Thinning	ha	70.0	27,700	395.7	17.0	1,702	100.1	48.2	9,632	200.0	
	Fire break	Km	19.0	19,995	1,050.7							
	Total			118,595			112,793			57,656		

Appendix Tab. 22 Enrichment plantation activities in Gera Forest (1996/1997)

	Activity	unit	performed	cost (Birr)	cost/ unit	remarks
Nursery work	Seed collection	kg	60.00	1,680	28	
	Clearing nursery site	ha	0.50	540	1,080	
	Ploughing nursery site	ha	1.00	679	679	
	Soil preparation	m ³	120.00	480	4	
	Sand soil preparation	m ³	30.42	9,125	300	
	Loading forest soil	m ³	132.00	376	3	
	Nursery bed preparation	No.	108.00	440	4	
	Sowing seed	Kg	52.00	128	2	
	Cutting grass for shade			720		
	Guarding					
	Collecting material for shade	No.	108.00	1,580	15	
	Making shade	No.	108.00	432	4	
	Moving sand & soil	m ³	172.00	1,004	6	
	Making shade for potting	No.	1.00	120	120	
	Potting	No.	236,200.00	2,502	0.01	
	Laying pots on bed	No.	236,200.00	1,106	0.01	
	Watering		108.00	4,342	40	
	Root pruning	No.	302,500.00	750	0.002	
	Sanitation of nursery site	ha				
	Weeding seedlings on seed bed and keeping the site clean	ha	108.00	422	4	Total
Transplanting	No.	236,200.00	854	0.004	27,280	
planting work	Clearing plantation site	ha	93.28	4,664	50	
	Lining out of planting locations	No.	93.28	2,996	32	
	Transporting seedlings	No.	236,200.00	1,178	0.005	
	Pitting hole for planting	ha	93.28	4,664	50	
	Loading & unloading seedlings			448		
	Watering at flying nursery					
	Planting	ha	94.48	6,794	72	
	Total			48,024		

Appendix Tab. 23 Forest plantation areas (ha) by species and planted year

Type of work	Activity	unit	1995/96(1994/95)		1996/97		
			performed	cost (Birr)	performed	cost (Birr)	
Nursery work	Seed collection	kg	108	760	7	880	
	Guards house construction	No.	1	720			
	Clearing nursery site	ha	0.05	156	3,120	3,667	
	Ploughing nursery site	ha	0.05	280	5,600	4,000	
	Seed bed preparation	No.	86	286	3	5	
	Sowing seed	Kg			30	36	
	Cutting grass for guarding				188	468	
	Guarding				188	2,108	
	Cutting material for shade and making shade	No.		1,940	40	618	
	Watering	ha		2,064		1,532	
	Sanitation of nursery site	ha			0.06	144	
Planting work	Weeding seedlings on seed bed and keeping the site clean	ha	86	784	63	296	
	Transplanting	No.			87,000	592	
	Total		67,500	6,990	87,000	7,426	
	Tending work	Transporting seedlings	No.	67,500	1,068	87,000	856
		Clearing plantation site	ha	27	2,696	34.8	1,114
		Lining out of planting locations	ha	27	928	34.8	1,112
		Hoeing	ha	27	1,780	66	
		Pitting holes for planting	ha	27	1,056	34.8	1,740
		Planting	ha	27	1,080	34.8	1,160
		Total		27	8,608	35	5,982
		Planting work	Weeding(1994/95 & 1995/96)	ha	10	428	
Climber cutting (1994/95 & 1995/96)			ha	10	2,212		
Transporting seedlings site clearing.pitting hole.lightning up, planting 1994/95					10,002		
Total				28,240		13,408	

Appendix Tab. 24 Areas (ha) and number of seedlings planted for enrichment plantation in Gera Forest (1994/95~1996/97)

species	1994/95		1995/96		1996/97		total	
	No. of seedlings planted	Area planted (ha)	No. of seedlings planted	Area planted (ha)	No. of seedlings planted	Area planted (ha)	No. of seedlings planted	Area planted (ha)
<i>Hagentia abyssinica</i>	43,500	17.4	15,460	6.2	82,400	33.0	141,360	56.6
<i>Ekebergia capensis</i>	2,500	1.0	43,000	17.2	2,537	1.0	48,037	19.2
<i>Pygeum africanum</i>			8,000	3.2	2,398	1.0	10,398	4.2
<i>Cordia africana</i>					188	0.1	188	0.1
<i>Pedocarpus gracilior</i>			1,249	0.5			1,249	0.5
Total	46,000	18.4	67,709	27.1	87,523	35.1	201,232	80.6

Appendix Tab. 25

Benefits obtained from natural forest in communities with
sufficient forest resources

Block	Belete		Gera		
District	Seka Chekorsa		Gera		
Village	Elke Togobe	Yanga Deo	Gura Naso	Gura Afalo	
Community	Sufa	Waresa, Beja, Buyo	Haro	Afalo	
No. of interviewees	4	3	6	7	
Plants for medicinal use	1	Alaalule	Akaraqaraha	Acho	Annunu
	2	Ammano	Anunu	Annunn	babarda
	3	Annunn	Arahamandawa	Barbadar	Baruda
	4	Asangra	Asabuda	Barut	Cheke
	5	Askra	Atochi	Damakasio	Demakesie
	6	Dechemarchie	Bakkanisa	Dawo	Hanku
	7	Fitii	Bokkonisa	Dewo	Sigluu
	8	Gura-antudo	Borcha-chafe	Haggo	Surwma
	9	Hancabii	Damakase	Handode	Tojo
	10	Handode	Dikicha	Hanku	
	11	Hankuu	Hadadagu	Hinayie	
	12	Haramandawer	Hidopogasato	Huda	
	13	Hiddiguraati	Home	Kabarcho	
	14	Ijeersa	Jijmble	Komenyo	
	15	Jirma-jalesa	Komenyo	Mukafoni	
	16	Komenyo	Korasoma	Sariti	
	17	Landubee	Korca	Suruma	
	18	Rejiii	Lemmon		
	19	Sarii	Matanifra		
	20	Sayidasajor	Monohada		
	21	Togoo	Sarida-sajar		
	22	Turuijee	Sogidarait		
	23		Suruba		
	24		Turujiii		
	25		Wachino		
Plants for nuts	1	Beddesa	Agamusa	Baddesa	Beddesa
	2		Amburuji	Ficussur	
	3		Beddesa	Mito	
	4		Gore	Tojo	
	5		Mete	Uimayi	
	6		Safafa		
	7		Yebo		
Plants for spices	1	Moomoko	Ogio	Moomoko	Ogio
	2	Segluu	Segluu	Ogio	Tunjo
	3		Tunjo	Segluu	
	4			Tunjo	
Natural coffee	No collect	No collect	Collect	Collect	
Honey	Collect	No collect	Collect	Collect	