

ANNEX K. FARM MACHINERY

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Table K.-1 Current Rice Importation by Private Sector and WFP Shipment Received (1)

Date	Commercial				WFP		
	Commodity	Quantity (mt)	Value (USD)	Origin	Commodity	Quantity (mt)	Origin
22/8/1999	NA	NA	NA	NA	Rice	100.8	Australia
21/9/1999	NA	NA	NA	NA	HDR	298.77	USA
27/9/1999	NA	NA	NA	NA	Biscuit	36.75	Norway
28/9/1999	NA	NA	NA	NA	Edible Fat	10.8	Noeway
1/10/1999	NA	NA	NA	NA	Rice	600	Canada
12/10/1999	NA	NA	NA	NA	Rice	6,340	USA
14/10/1999	NA	NA	NA	NA	Rice	642	Canada
14/10/1999	NA	NA	NA	NA	Rice	528	Germany
14/10/1999	NA	NA	NA	NA	Vegetable Oil	104	Canada
14/10/1999	NA	NA	NA	NA	Vegetable Oil	214	Canada
14/10/1999	NA	NA	NA	NA	Vegetable Oil	79.92	AUL
14/10/1999	NA	NA	NA	NA	Bean	153	Canada
14/19/1999	NA	NA	NA	NA	Bean	227	Norway
14/10/1999	NA	NA	NA	NA	Bean	106	AUL
11/11/1999	NA	NA	NA	NA	Maize	104	Finland
11/11/1999	NA	NA	NA	NA	Maize	574	Portugal
11/11/1999	NA	NA	NA	NA	Maize	193	Denmark
11/11/1999	NA	NA	NA	NA	Maize	148	Luxenburg
11/11/1999	NA	NA	NA	NA	Maize	96	Demark
11/19/1999	NA	NA	NA	NA	Bean	301	Canada
20/11/1999	NA	NA	NA	NA	Vegetable Oil	154.58	AUL
20/11/1999	NA	NA	NA	NA	Vegetable Oil	25	Australia
6/12/1999	NA	NA	NA	NA	Maize	4,000	USA
6/12/1999	NA	NA	NA	NA	Rice	310	USA
26/1/2000	NA	NA	NA	NA	Salt	91	Denmark
2/2/2000	NA	NA	NA	NA	Bean	300	Germany
6/2/2000	NA	NA	NA	NA	CSB	475	Canada
12/2/2000	NA	NA	NA	NA	Bean	11	Italy
12/2/2000	NA	NA	NA	NA	Bean	417	Italy
13/3/2000	NA	NA	NA	NA	Bean	264	Germany
23/3/2000	NA	NA	NA	NA	Rice	1,583	ECO
23/3/2000	NA	NA	NA	NA	Rice	158	ECO
8/4/2000	NA	NA	NA	NA	Vegetable Oil	1,239	ECD
11/4/2000	NA	NA	NA	NA	CSB	550	USA
22/4/2000	NA	NA	NA	NA	Soya Bean	500	USA
22/4/2000	NA	NA	NA	NA	C/Fish	714	Japan
8/5/2000	NA	NA	NA	NA	Maize	3,490.1	USA
10/5/2000	NA	NA	NA	NA	Maize	4,412	ECO
17/5/2000	NA	NA	NA	NA	Rice	3,828	ECD
17/5/2000	NA	NA	NA	NA	Rice	1,620	USA
6/6/2000	NA	NA	NA	NA	Maize	1,009.9	USA
20/6/2000	NA	NA	NA	NA	Rice	2,879	USA
20/6/2000	NA	NA	NA	NA	Maize	1,000	France
7/2000	Rice	307.5	141,270	Vietnam	-	-	-
7/2000	Rice	660.0	171,392	Vietnam	-	-	-
7/2000	Rice	440.0	60,720	Singapore	-	-	-
7/2000	Rice	28.45	3,290	Indonesia	-	-	-
7/2000	Rice	440.0	42,167	Indonesia	-	-	-
7/2000	Rice	1,010.0	105,748	Vietnam	-	-	-
8/2000	Rice	440.0	83,800	Vietnam	-	-	-
8/2000	Rice	18.625	3,518	Australia	-	-	-

Table K.-1 Current Rice Importation by Private Sector and WFP Shipment Received (2)

Date	Commercial				WFP		
	Commodity	Quantity (mt)	Value (USD)	Origin	Commodity	Quantity (mt)	Origin
8/2000	Rice	110,968	37,950	Singapore	-	-	-
9/2000	Rice	330.0	39,600	Singapore	-	-	-
9/2000	Rice	101.05	101,347	Vietnam	-	-	-
10/2000	Rice	440.0	60,720	Vietnam	-	-	-
11/2000	Rice	440.0	63,756	Vietnam	-	-	-
12/2000	Rice	299,068	42,293	Indonesia	-	-	-
12/2000	Rice	253.0	35,786	Indonesia	-	-	-
11/12/2000	-	-	-	-	Mung Bean	300	Canada
11/12/2000	-	-	-	-	Rice	4,812	USA
1/2001	Rice	220.0	31,878	Singapore	-	-	-
2/2001	Rice	575.0	83,375	Vietnam	-	-	-
2/2001	Rice	460.0	74,580	Vietnam	-	-	-
2/2001	Rice	575.0	93,245	Vietnam	-	-	-
17/3/2001	-	-	-	-	Rice	446	USA
17/3/2001	-	-	-	-	Rice	277	Luxemburg
17/3/2001	-	-	-	-	Rice	702	NET
17/3/2001	-	-	-	-	Rice	75	Italy
17/3/2001	-	-	-	-	Rice	530	Italy
3/2001	Rice	220.0	35,721	Vietnam	-	-	-
3/2001	Rice	345.0	60,023	Vietnam	-	-	-
3/2001	Rice	575.0	90,745	Indonesia	-	-	-
3/2001	Rice	575.0	90,745	Indonesia	-	-	-
3/2001	Rice	1,010.0	143,669	Vietnam	-	-	-
3/2001	Rice	759.0	115,454	Indonesia	-	-	-
8/4/2001	-	-	-	-	Nung Bean	46	Canada
8/4/2001	-	-	-	-	Mung Bean	285	Canada
8/4/2001	-	-	-	-	Mung Bean	5	Canada
4/2001	Rice	621.0	82,780	Vietnam	-	-	-
4/2001	Rice	110.0	13,850	Singapore	-	-	-
4/2001	Rice	437.0	58,046	Indonesai	-	-	-
4/2001	Rice	275.95	40,012	Vietnam	-	-	-
4/2001	Rice	184.0	26,679	Vietnam	-	-	-
4/2001	Rice	1,010.0	111,323	Vietnam	-	-	-
4/2001	Rice	230.0	30,560	Indonesia	-	-	-
5/2001	Rice	138.0	17,754	Indonesia	-	-	-
5/2001	Rice	648.0	82,533	Indonesia	-	-	-
5/2001	Rice	483.0	64,134	Vietnam	-	-	-
6/2001	Rice	600.0	81,324	Vietnam	-	-	-
6/2001	Rice	460.0	63,016	Vietnam	-	-	-
6/2001	Rice	46.0	6,670	Vietnam	-	-	-
6/2001	Rice	48.0	6,355.50	Indonesia	-	-	-
6/2001	Rice	69.0	9,015.50	Indonesia	-	-	-
7/2001	Rice	600.0	83,124	Vietnam	-	-	-
7/2001	Rice	600.0	81,324	Vietnam	-	-	-
7/2001	Rice	39.45	6,742.30	Australia	-	-	-
7/2001	Rice	240.0	32,771	Vietnam	-	-	-
8/2001	Rice	600.0	84,931	Indonesia	-	-	-
8/2001	Rice	276.662	44,856	Indonesia	-	-	-
8/2001	Rice	345.0	56,070	Indonesia	-	-	-
8/2001	Rice	235.0	31,410	Indonesia	-	-	-
9/2001	Rice	240.0	31,690	Indonesia	-	-	-

Table K.-1 Current Rice Importation by Private Sector and WFP Shipment Received (3)

Date	Commercial				WFP		
	Commodity	Quantity (mt)	Value (USD)	Origin	Commodity	Quantity (mt)	Origin
9/2001	Rice	550.0	78,836	Singapore	-	-	-
Summary 1999	Rice Total	NA	NA	NA	Rice	8,520.80	-
	-	-	-	-	Maize	5,115.00	-
	-	-	-	-	HDR	298.77	-
	-	-	-	-	Biscuit	36.75	-
	-	-	-	-	Edible Fat	10.80	-
	¥	-	-	-	Veg. Oil	577.50	-
	-	-	-	-	Bean	787.00	-
	-	-	-	-	Total	15,346.62	-
2000	Rice Total	5,318.66	993,357	-	Rice	14,880.00	-
	-	-	-	-	Salt	91.00	-
	-	-	-	-	Bean	1,792.00	-
	-	-	-	-	CSB	1,025.00	-
	-	-	-	-	Veg. Oil	1,239.00	-
	-	-	-	-	Canned Fish	714.00	-
	-	-	-	-	Maize	9,912.00	-
	-	-	-	-	Total	29,653.00	-
2001	Rice Total	14,400.062	2,045,251.30	-	Rice	2,030.00	-
	-	-	-	-	Bean	336.00	-
	-	-	-	-	Total	2,366.00	-
Total	Rice Total	19,718.722	3,038,608.30	-	Total	47,365.62	-

Source : Border Control Office "Rice Importation" and WFP "Shipments received In East Timor"
 Remarks : mt = metric ton, USD = United State's Dollor, WFP = United Nation World Food Program
 NA = Not Available

Table K.-2 Rice Import Price

Year	Origin	A. Volume (mt)	B. Value (USD)	B./A. (USD)
2000	Total	5,318.661	993,357.00	186.77
	Vietnam	3,398.55	728,033	214.22
	Singapore	880.968	138,270	156.95
	Indonesia	1,020.518	123,536	121.05
	Australia	18.625	3,518	188.89
2001	Total	14,400.062	2,045,241.30	142.03
	Vietnam	8,304.95	1,163,770	140.13
	Singapore	880	124,564	141.55
	Indonesia	5,175.662	750,165	144.94
	Australia	39.45	6,742.30	170.91
2000-2001	Grand Total	19,718.723	3,038,598.30	154.10

Source : Border Control Office "Rice Importation" and WFP "Shipments received In East Timor" and modified by JICA Study Team, November, 2001
 Remarks : mt = mt and USD = United Utate's Dollor/C.I.F.-Dili

Table K-3 District Wise Rice and Maize Volume delivered by WFP

District	1999			2000			2001			1999-2001		
	Rice	Maize	Total	Rice	Maize	Total	Rice	Maize	Total	Rice	Maize	Total
1. Lautem	107	87	194	301	169	470	20	24	44	428	280	708
2. Baucau	477	389	866	1,805	1,015	2,820	207	246	453	2,489	1,650	4,139
3. Viqueque	149	121	270	575	324	899	15	17	32	739	462	1,201
4. Manatuto	194	156	350	80	45	125	1	2	3	275	203	478
5. Manufahi	430	351	781	926	521	1,447	12	15	27	1,368	887	2,255
6. Dili	1,381	1,124	2,505	396	218	615	38	48	86	1,815	1,391	3,206
7. Aileu	103	83	186	1,425	801	2,226	88	106	194	1,616	990	2,606
8. Ermera	330	267	597	2,378	1,338	3,716	243	290	533	2,951	1,895	4,846
9. Ainaro	203	165	368	444	249	693	9	10	19	656	424	1,080
10. Liquica	166	136	302	2,032	1,143	3,175	90	108	198	2,288	1,387	3,675
11. Bobonaro	400	326	726	2,666	1,499	4,165	212	252	464	3,278	2,077	5,355
12. Covalima	378	308	686	2,497	1,404	3,901	169	201	370	3,044	1,913	4,957
13. Ambeno	180	147	327	2,208	1,242	3,450	66	79	145	2,454	1,468	3,922
Total	4,498	3,660	8,158	17,733	9,969	27,702	1,170	1,398	2,568	23,401	15,027	38,428

Source : Estimated by JICA Study Team on WFP Data

Table K-4 WFP Food Distribution by Programme and District

(1) September - December, 1999

District	Gen. Distrib. (FR)	Gen. Distrib. (HR)	Gen. Distrib. (Geo)	FFW	VGf	Sup. Feeding	School Feeding	TI	Returness	TB	Seed Exchange	Flood Victims	Unit : MT Total
1. Lautem	232.65	0	0	0	0	0	0	0	0	0	0	0	232.65
2. Baucau	953.75	0	0	0	4.50	0	0	0	82.00	0	0	0	1,040.25
3. Viqueque	308.65	0	0	0	0	0	0	0	0	0	15.50	0	324.15
4. Manatuto	419.20	0	0	0	0	0	0	0	0	0	0.50	0	419.70
5. Manufahi	938.10	0	0	0	0	0	0	0	0	0	0	0	938.10
6. Dili	2,421.00	0	0	403.90	0.70	2.70	0	0	178.70	0	0	0	3,007.00
7. Aileu	223.50	0	0	0	0	0	0	0	0	0	0	0	223.50
8. Ermera	716.50	0	0	0	0	0	0	0	0	0	0	0	716.50
9. Ainaro	441.79	0	0	0	0	0	0	0	0	0	0	0	441.79
10. Liquica	361.90	0	0	0	0.75	0	0	0	0	0	0	0	362.65
11. Bobonaro	838.40	0	0	33.80	0	0	0	0	0	0	0	0	872.20
12. Covalima	820.80	0	0	0	0	0	0	0	3.00	0	0	0	823.80
13. Ambino	392.10	0	0	0	0	0	0	0	0	0	0	0	392.10
Grand Total	9,068.34	0	0	437.70	5.95	2.70	0	0	263.70	0	16.00	0	9,794.39

(2) January - December, 2000

District	Gen. Distrib. (FR)	Gen. Distrib. (HR)	Gen. Distrib. (Geo)	FFW	VGf	Sup. Feeding	School Feeding	TI	Returness	TB	Seed Exchange	Flood Victims	Others	Unit : MT Total
1. Lautem	0	0	0	48.80	45.19	0	33.05	129.30	4.50	0	72.00	0.10	0	332.94
2. Baucau	0	449.90	0	220.75	795.20	7.80	54.10	287.05	0	0.40	111.20	69.34	3.00	1,998.74
3. Viqueque	11.00	187.70	0	20.90	172.63	1.04	13.01	200.40	0	0	17.50	13.05	0	637.23
4. Manatuto	0	0	0	9.00	0	0	0	74.80	0	0	5.00	0	0	88.80
5. Manufahi	45.20	0	122.00	211.00	326.00	0	44.00	42.00	3.00	0	0	232.00	0	1,025.20
6. Dili	0	0	0	20.00	163.44	2.70	154.00	56.00	22.25	1.32	0	2.00	11.37	433.08
7. Aileu	24.30	39.70	0	612.60	590.60	0	223.70	82.80	4.00	0	0	0	0	1,577.70
8. Ermera	133.50	184.00	0	520.90	1,364.50	0	208.80	221.60	0	0	0	0	0	2,633.30
9. Ainaro	0	0	4.00	193.85	156.70	5.10	48.00	75.00	0	0	8.50	0	0	491.15
10. Liquica	530.30	0	0	895.50	675.90	0	84.00	62.70	1.90	0	0	0	0	2,250.30
11. Bobonaro	124.30	0	429.90	613.30	1,338.30	32.50	186.52	95.20	65.80	0	65.85	0	0	2,951.67
12. Covalima	0	891.00	503.80	254.35	635.50	4.00	143.60	158.00	27.80	0	8.50	138.00	0	2,764.55
13. Ambino	337.15	0	900.00	638.70	319.28	87.50	91.30	63.80	2.82	0	0	0	4.50	2,445.05
Grand Total	1,205.75	1,752.30	1,959.70	4,259.65	6,583.24	140.64	1,284.08	1,548.65	132.07	1.72	283.55	454.48	18.87	19,629.71

(3) January - February, 2001

District	FFW/FFT	VGf	Returness	Seed	Sup. Feed	Others	Unit : MT Total
1. Lautem	8.845	30.351	0	2.4	0	6	47.596
2. Baucau	58.421	406.374	0.12	12	0	10	486.915
3. Viqueque	14.15	10.675	0	9	0.444	0.622	34.891
4. Manatuto	0	0.262	0	0	3.014	0	3.276
5. Manufahi	23.594	3.242	0	0	0.896	1.326	28.858
6. Dili	0	36.888	6.95	0	15.18	32.393	91.409
7. Aileu	22.677	182.128	0	0	3.88	0	208.685
8. Ermera	282.25	286.71	0	0	3.419	0	572.379
9. Ainaro	14.2	6.222	0	0	0	0	20.422
10. Liquica	95.4	112.777	0	0	4.268	0	212.445
11. Bobonaro	166.006	295.52	27.498	0	9.194	0	498.216
12. Covalima	135.35	259.105	2.5	0	0	0.19	397.145
13. Ambino	91.91	25.063	0	0	39.2	0	156.173
Grand Total	912.804	1,655.31	37.068	23.4	79.295	50.531	2,758.41

Source : Brief on WFP Operations in East Timor, August 2001

Remarks :

FFW : Food for Work

VGf : Vulnerable Group Feeding

Sup. Feeding : to provide high-energy rations to health clinic patients

TI : Institutional Feeding

Returness : support to repatriation

TB : Patients diagr

Seed Exchange : to provide rice to farmers in exchange of their seeds surplus

Flood Victim : Los Palos in June 2001

FFT : Food for Training

Table K.-5 Current Maize and Rice Retail Price In East Timor

Sample No.	Market/Shop	Commodity	Retail Price (Rp.)		Buying Date/2001
			Per Can	Per KG	
1	Becora/Dili	Mixed Ear Corn 3 pieces =300gr Weight of Ears=60gr	1,000/300gr	3,330	Aug. 11
2	Becora/Dili	Pounded Mixed Corn	2,000/250gr	8,000	Aug. 11
3	Aileu	Pounded Mixed Corn	2,000/250gr	8,000	Aug. 13
4	Becora/Dili	Shelled Yellow Corn	2,000/650gr	3,077	Aug. 11
5	Becora/Dili	Shelled Yellow Corn	1,000/250gr	4,000	Aug. 11
6	Taibesi/Dili	Shelled White Corn	1,000/260gr	3,846	Aug. 11
7	Becora/Dili	Shelled White Corn	2,000/660gr	3,080	Aug. 11
8	Maubisse	Shelled White Corn (from Suai)	1,000/650gr	1,538	Aug. 13
25	Ainaro	Shelled Ear Corn (from Suai)	2,000/1kg	2,000	Aug. 27
29	Manatuto	Mixed Ear Corn, 3 pieces=300gr Weight of Ears = 50gr	1,000/300gr	4,000	Sept. 4
9	Comoro/Dili	Shelled Mixed Corn	1,000/250gr	4,000	Aug. 11
23	Same Suburban	Shelled White Corn (Betano)	1,000/700gr	1,429	Aug. 15
10	Comoro/Dili	Local Milled Rice "Fos Rai"	5,000/700gr	7,143	Aug. 10
11	Becora/Dili	Local Milled Rice (from Viqueque)	5,000/700gr	7,143	Aug. 11
12	Comoro/Dili	Local Milled Rice (from Baucau)	2,500/700gr	3,571	Aug. 11
13	Baucau	Local Milled Rice (variety R8)	2,000/700gr	2,857	July 13
22	Same Suburban	Local Milled Rice (from Betano)	2,500/800gr	3,125	Aug. 15
24	Comoro/Doli	Local Milled Rice "Plin Plin"	5,000/750gr	6,667	Aug. 22
14	Comoro/Dili	Imported Milled Rice (from Indonesia)	2,500/700gr 135,000/50kg	3,571 2,700	Aug. 10
15	Comoro/Dili	Imported Milled Rice (from Indonesia)	2,500/700	3,571	Aug. 10
16	Becora/Dili	Imported Milled Rice (from Thailand)	2,500/750	3,333	Aug. 11
17	Taibesi/Dili	Imported Milled Rice	2,500/760	3,289	Aug. 11
18	Becora/Dili	Imported Milled Rice (from Thailand)	2,500/750	3,333	Aug. 11
19	Maubisse	Imported Milled Rice (from Vietnam)	2,500/800	3,125	Aug. 13
20	Aileu	Imported Milled Rice (from Vietnam)	2,500/750	3,333	Aug. 13
21	Same	Imported Milled Rice (from Indonesia)	2,500/720gr	3,473	Aug. 15
26	Ainaro	Imported Milled Rice (from Indonesia)	2,500/600gr	3,846	Aug. 27
27	Liquica	Imported Milled Rice (from Indonesia)	US\$0.45=Rp.3,500/kg		Aug. 29
28	Manatuto	Imported Milled Rice (from Thailand)	2,500/720gr	3,472	Sept. 4

Source : JICA Study Team through Practical Procurement by a Tin Can

Table K-6 District Wise Farm Machinery distributed under Mobile Brigade and Donation by Chinese Government

No. of Units

Equipment	Lautem	Baucau	Viqueque	Manatuto	Manufahi	Dili	Aileu	Emera	Ainaro	Liquica	Bobonaro	Covalima	Ambino	Total
A. MOBILE BRIGADE														
1. 4-Wheel Tractor, John Deere Model 1100	1	2 (3)	2	1	2	1	1	1	1	1	1	2	1	20
2. 4-Wheel Tractor, John Deere Model 5000	1	(1)			1						1	1		5
3. Hand Tractor, Tongyang Model TDM-120E		20 (2)	12	13	13	1			5		20	9	5	100
<i>Paddy Wheel Set</i>		20 (2)	12	13	13	1			5		20	9	5	100
4. Hand Tractor, John Deere Model 820R	19	7 (4)	13	10	23	5	14	17	13	10	20	25	8	188
<i>Paddy Wheel Set</i>	6	5	10	4	15		7	7	7	7	10	15	7	100
5. Hand Tractor, Siam Kubota Model P131		15		15										30
<i>Paddy Wheel Set</i>		15		15										30
<i>Leveler</i>		15		15										30
<i>Trailer</i>		15		15										30
B. CHINA GRANT AID														
1. 4-Wheel Tractor, Model 504	2	2	3	3	3	2	2	2	2	2	3	2	2	30
<i>Trailer</i>	2	2	3	3	3	2	2	2	2	2	3	2	2	30
<i>5 mouldboard Plough</i>	2	2	3	3	3	2	2	2	2	2	3	2	2	30
<i>4 mouldboard Plough</i>	2	2	3	3	3	2	2	2	2	2	3	2	2	30
<i>2 mouldboard Plough</i>	12	12	13	13	13	5	12	12	12	11	13	12	10	150
<i>Spiral Harrow</i>	2	2	3	3	3	2	2	2	2	2	3	2	2	30
<i>Paddy Harrow</i>	2	2	3	3	3	2	2	2	2	2	3	2	2	30
<i>Paddy Plum Harrow</i>	2	2	3	3	3	2	2	2	2	2	3	2	2	30
<i>Grain Drill</i>	2	2	3	3	3	2	2	2	2	2	3	2	2	30
<i>Trencher</i>	2	2	3	3	3	2	2	2	2	2	3	2	2	30
2. Hand Tractor, Dongfeng 12L	12	12	13	13	13	5	12	12	12	11	13	12	10	150
<i>Paddy Wheel</i>	12	12	13	13	13	5	12	12	12	11	13	12	10	150
<i>Harvester, Model SU 4GL-130</i>	12	12	13	13	13	5	12	12	12	11	13	12	10	150
3. Thresher, Model TDG-400	7	9	10	10	10	3	7	8	8	7	10	9	2	100
4. Separate Rice Mill, Model GNF-13.2	7	8	9	9	9	3	7	8	8	7	9	8	8	100
5. Grain Blower, Model YJ-10A	7	8	9	9	9	3	7	8	8	7	9	8	8	100
6. Mist Duster, Model 3WS-3A	7	8	8	8	8	4	7	8	8	7	8	8	8	100
7. Hand Sprayer	7	8	8	8	8	7	7	8	8	7	8	8	8	400
8. Tipcart	4	4	4	4	3	5	3	3	4	3	4	4	5	50
9. Excavator		1			1						1			3
C. Total (A. + B.)														
1. 4-Wheel Tractor	4	4 (4)	5	4	6	3	3	3	3	3	5	5	3	55
2. Hand Tractor	31	54(6)	38	51	49	11	26	29	30	21	53	45	23	468

Remarks : (figure) means no. of machines delivered to FDTL (Forsa Defesa de Timor Leste/Defence Force of East Timor)

Source : LAPORAN TAHUNAN, BRIGADA MOVEL NACIONAL, APRIL 2000 - MEI 2001 , Chinese Goods in Kind - Distribution Plan

Table K.-7 District Wise Hand Tools Distribution under TFET

Unit : pieces

District	Beneficiaries	Name and Quantity of Hand Tools										Total	Partner
		Pick Axe	Hoe	Sickle	Shovel	Crow Bar	Pitch Fork	Saw	Grass Knife	Cow Plow	Wheel Barrow		
1. Lautem	330	0	330	330	330	330	330	0	0	0	0	1,650	
		0	0	0	0	0	0	0	0	0	0	0	
2. Baucau	1,677	0	1,677	1,669	1,677	1,890	1,669	35	1,000	5	106	9,728	DAA + Thaibatt
		0	905	1,669	736	1,890	200	35	1,000	5	0	6,440	
3. Viqueque	4,135	0	4,135	4,135	0	4,135	4,135	0	0	0	0	16,540	
		0	0	0	0	0	0	0	0	0	0	0	
4. Manatuto	2,900	2,900	2,900	2,900	2,900	2,900	0	0	0	0	0	14,500	ETADEP
		0	0	0	0	0	0	0	0	0	0	0	
5. Manufahi	4,576	0	1,827	1,988	437	0	324	0	0	0	87	4,663	
		0	0	0	0	0	0	0	0	0	0	0	
6. Dili	1,143	1,143	1,143	1,143	1,143	0	1,143	0	0	0	245	5,960	
		0	0	0	0	0	0	0	0	0	0	0	
7. Aileu	389	389	389	389	389	389	0	0	0	0	0	1,945	OIKOS
		389	389	389	389	389	0	0	0	0	0	1,945	
8. Ermera	1,301	1,149	1,305	0	0	1,301	0	155	1,209	0	0	5,119	World Vision
		1,149	1,305	0	0	1,301	0	155	1,209	0	0	5,119	
9. Ainaro	147	147	147	147	147	147	0	0	0	0	37	772	
		0	0	0	0	0	0	0	0	0	0	0	
10. Liquica	1,803	1,893	1,893	1,893	1,893	1,893	0	0	0	0	126	9,591	World Vision
		0	1,893	1,893	0	1,893	0	0	0	0	126	5,805	
11. Bobonaro	357	0	357	357	357	0	357	0	0	0	357	1,785	CMET
		0	357	357	357	0	357	0	0	0	0	1,428	
12. Covalima	1,041	0	803	811	810	0	801	0	0	0	719	3,944	DAA + PKF
		0	607	607	607	0	607	0	0	0	0	2,428	
13. Ambeno	355	0	355	355	355	355	355	0	0	0	0	1,775	DAA + PKF
		0	355	355	355	355	355	0	0	0	0	1,775	
Total	20,154	7,621	17,261	16,117	10,438	13,340	9,114	190	2,209	5	1,677	77,972	
		1,538	5,811	5,270	2,444	5,828	1,519	190	2,209	5	126	24,940	

Source : DAA

Remarks : Upper Column : Total requested by farmers, Lower Column : Delivered before the End of September, 2001

Table K.-8 Hand Tools donated by China

No.	Description	Standard	Quantity
A. Agricultural Tools			
1	Sickle	S1202, 12"	1,200 pcs
2	Square toes steel shovel	2#	800pcs
3	Hoe	3lb	600pcs
4	Iron Dustpan	28 x 28 x 63cm	400pcs
5	Wood lift blank	S503 x 35 x 35cm	500pcs
6	Drag Blank	80# 120cm	200pcs
7	Axe	A60 11.2lb	300pcs
8	Loquat	F101/4G	300pcs
9	Pick axe	P401 6lb	650pcs
B. Pesticides			
1	Monosultap	90%WP	1,600kg
2	Imidacloprid	10%WP	900kg
3	Prochloraz	25%EC	250 lit
4	Carbendazim & Triadimefon	40%WP	250kg
5	Omethote	40%WP	2,500kg
C. Other Materials			
1	Concrete	425#, 50kg/bag	75,000kg
2	Galvanized steel pipe	5", 6m/piece	100pcs
3	Galvanized steel pipe	2.5", 5.8m/piece	518pca
4	Iron thread	16#, 25kg/roll	150kg
5	Iron thread	14#, 50kg/roll	200kg
6	Iron thread	12#, 50kg/roll	150kg
7	Mosquito set	twin	100,000pcs

Source : Packing List

China Friendship Development International
Engineering Design & Consultation Corporation

Date : May 18, 2001, Port of Dispatch : Xingang, Port of Destination : Dili

Table K.-9 Operation and Management of MB for Farm Mechanization In East Timor (1)

Item	Description
1. Project name	Mobile Brigade
2. Fund	<p>(1) Government of Macau fund to purchase 200 units of American made John Deere hand tractors, 20 units of medium size and 5 units of big size 4-wheel tractors directly by CNRT</p> <p>(2) Norwegian fund to purchase Korean made Ton Yang hand tractors and 12 units of motorcycles with their operation cost including staff salary for 1 year through UNDP</p> <p>(3) JICA to donate 30 units of Siam Kubota hand tractors together with attachments, and workshop tools, warehouse and garage together with 6,000 liter diesel fuel and 200 liter engine oil to Baucau and Manatuto</p> <p>(4) Australian Phillips Petroleum Company's donation of 13 units of pick-up truck</p>
3. Implementation agency	Mobile Brigade
4. Period	March, 2000 - May, 2001 and 15 months
5. Goal	<p>Goal which was desired to achieve by an embryo of semi mechanization of agriculture was:-</p> <p>(1) To decrease level of dependency of the farmers to the international aid</p> <p>(2) To empower the people to reconstruct themselves and fulfill their basic needs</p> <p>(3) To increase income of the farmers, and</p> <p>(4) To accelerate the reconstruction of agricultural sector</p>
6. System of work	<p>Mobile Brigade was formed on the early March, 2001, with total number of personnel of 58 persons who consisted of 55 personnel assigned to related Districts and 3 personnel based in Dili. 6 Mobile Brigade were formed in Manatuto, Baucau, Viqueque, Manufahi, Covalima and Bobonaro. The structure of Mobile Brigade in District consists of 1 agronomist cum leader, 2 extensionists, 1 mechanic, 1 hand tractor operator and some operators for 4-wheel tractors. While central structure was made up of 1 national coordinator, 1 secretary and 1 treasurer. National Steering Committee and then District Steering Committee were formed.</p>
7. Farmers' distribution	<p>(1) John Deere Hand Tractor Rp.200,000/ha in wet & dry land</p> <p>(2) Tong Yang Hand Tractor Rp.300,000/ha in wet & dry land</p> <p>(3) John Deere Medium Size Tractor Rp.350,000/ha in wet land</p> <p>(4) John Deere Big Size Tractor Rp.500,000/ha in wet & dry land</p>
8. Farmers contribution system	Contribution of farmers could be as groups or individually and could be paid in cash or on kind as paddy/rice naturally
9. External problem	<p>(1) Lots of lands are not yet cultivated due to no returning of refugees</p> <p>(2) People feel uneasy to cultivate their lands because of receiving humanitarian aid and farmers not to hire/pay any contribution</p> <p>(3) Many Irrigation system, warehouse and houses were destroyed</p> <p>(4) No Input on agriculture yet</p> <p>(5) Socio-culturally, found consideration from the farmers that tractor would help freely</p> <p>(6) Quantity and quality of fuel in Districts are low, so must wait for dropping from Dili</p> <p>(7) UNDP fuel contracted with East Timor Fuel is more</p>

Table K-9 Operation and Management of MB for Farm Mechanization In East Timor (2)

Item	Description
	<p>expensive than PT Pertamina</p> <p>(8) Not available to get spare parts</p> <p>(9) Many operators have less education so it is difficult to manage their services</p>
10. Results of works	<p>(1) Handed over Tong Yang tractors from CNRT to Mobile Brigade, 13 April, 2000</p> <p>(2) Handed over Kubota tractors from Government of Japan to UNTAET, 12 July, 2000</p> <p>(3) Many farmers candidates are not yet familiar with using tractors, therefore special operator training for Kubota was conducted by JICA expert on 13 – 18 July, 2000 at Obrato, Manatuto District and on 20 – 25 July, 2000 at Seical and Caicua village, Baucau District</p> <p>(4) Korean technician to observe operators in the field on 20 – 21 February, 2001 and training assembling and disassembling Tong Yang tractors on 22 – 23 February, 2001 was conducted for five mechanics (except Same/Manufahi District) and six operators</p> <p>(5) On 22 – 25 August, 2000, a consultant from New Zealand educated technical monitoring and reported as follows:-</p> <ul style="list-style-type: none"> a. To ensure to make available key materials/equipment, such as grease pump because it demands maintenance of tractor b. To purchase ink for preparing number and code of tractor c. Numbering and labeling each model of tractor d. To create log books for each tractor to facilitate easier control on each tractor e. Purchase receipt to smooth out payment process, make easier administration, facilitate controlling of contribution money f. Strengthen paddy wheel of Tong Yang, which requires Rp.200,000/unit g. Purchase drums to drop fuel to field h. Coordinate with PT Pertamina to provide fuel and dropping system to field more efficiently i. With Mobile Brigade, there should be Reporting System with activities system, use of fuel and also contribution system of farmers
11. Evaluation on farm mechanization in East Timor	<p>Farm mechanization suggested by Mobile Brigade Implementation, together with NPC evaluation report, many suggestions for farm mechanization in East Timor are given by work results under Mobile Brigade:-</p> <p>(1) Technical skill and management performance</p> <p>During 15 months from April, 2000 up to the end of May, 2001, cultivated 1,027 ha (wet land 706 ha and dry land 321 ha) and farmers' contribution reached to the amount of cash Rp.35,808,506 and credit Rp.57,092,641, total Rp.292,901,147. On emergency phase, the work of Mobile Brigade in field still minimum, working system is not business oriented, over consumption of fuel, lack of responsibility of some staff, and lack of transparency manner, etc. Mobile Brigade in the future ahead can be sustainable if work system is changed in accordance with specific condition of each District and</p>

Table K.-9 Operation and Management of MB for Farm Mechanization In East Timor (3)

Item	Description																
	<p>business orient. Broken down of equipment distributed to Districts are as follows:-</p> <table> <tr> <td>a. 4-wheel tractor John Deere</td> <td>25 units</td> </tr> <tr> <td>b. Hand tractor John Deere</td> <td>188 units</td> </tr> <tr> <td>c. Hand tractor Tong Yang</td> <td>100 units</td> </tr> <tr> <td>d. Hand tractor Siam Kubota</td> <td>30 units</td> </tr> <tr> <td>e. Pick-up truck</td> <td>3 units</td> </tr> </table> <p>Utilization of equipment is wide difference among Districts during 15 months period depending on the District wise strategy and performance as follows:-</p> <table> <tr> <td>a. Cultivated area</td> <td>from 8.88 ha to 420.41 ha</td> </tr> <tr> <td>b. Cultivated dry land</td> <td>0 (9 Districts) to 166.71 ha</td> </tr> <tr> <td>c. Selection of tractors</td> <td>in 6 Districts cultivated by combination of hand tractor and 4-wheel tractor for wet land</td> </tr> </table> <p>(2) Operators experience and technology Even though such factors shall be considered as distance taken to the location quite far and variation of soil and its condition, followings are reported:-</p> <ol style="list-style-type: none"> Dishonesty of operator and negligence of operator in operation Reports of using fuel do not consider farmers' contribution, specially total hectare ploughed and fuel used. Overuse of fuel (64.7 liter/ha) happens to be against 25 - 30 liter per hectare under normal condition <p>(3) Preparation of consumable materials Broken down equipment are left without repair due to lack of spare parts and repairing technology except machinery supplied with spare parts and trained for repairing by JICA. Most engine oil purchased are also left without use.</p> <p>(4) Payment manner of farmers' contribution 19.5% of all farmers' contribution depends on credit or payment by produce after harvest, which requires skilful marketing experts, suitable capacity milling and transportation facility and warehouse to manage paddy effectively</p> <p>(5) Final expenditures required Total direct cost required for cultivation is wide difference among Districts from about Rp.245,000/ha to Rp.610,000/ha</p>	a. 4-wheel tractor John Deere	25 units	b. Hand tractor John Deere	188 units	c. Hand tractor Tong Yang	100 units	d. Hand tractor Siam Kubota	30 units	e. Pick-up truck	3 units	a. Cultivated area	from 8.88 ha to 420.41 ha	b. Cultivated dry land	0 (9 Districts) to 166.71 ha	c. Selection of tractors	in 6 Districts cultivated by combination of hand tractor and 4-wheel tractor for wet land
a. 4-wheel tractor John Deere	25 units																
b. Hand tractor John Deere	188 units																
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d. Hand tractor Siam Kubota	30 units																
e. Pick-up truck	3 units																
a. Cultivated area	from 8.88 ha to 420.41 ha																
b. Cultivated dry land	0 (9 Districts) to 166.71 ha																
c. Selection of tractors	in 6 Districts cultivated by combination of hand tractor and 4-wheel tractor for wet land																

Table K.-10 District Wise Farmers' Contribution and Expenditure (1)
under Mobile Brigade (April 2000 – May 2001)

(1) Farmers' Contribution

District/Suco	Date	Area (ha)		By Use Of			Contribution (Rp.)		
		Wet	Dry	HT	MT	BT	Cash	Credit	Total
Lautem/Fuloro	12/Sept	0	5.00			*	2,500,000	0	2,500,000
/Titilari	5/Oct	0	10.00			*	3,350,000	1,650,000	4,000,000
/Lanuara	24/Oct	0	13.70			*	5,250,000	1,500,000	6,750,000
/Heler	14/Nov	0	12.50			*	5,000,000	1,250,000	6,250,000
/Paoto	21/Dec	0	7.20			*	980,000	1,250,000	2,230,000
Total	-	0	48.40	-	-	-	17,080,000	5,650,000	22,730,000
Baucau/Seisal	5/Sept	3.00	0	*			750,000	0	750,000
/Vemassee	19/Jan	14.48	0		*		2,335,000	2,111,500	4,446,500
/Tekinomata	19/Jan	8.63	0	*			1,007,000	1,380,000	2,387,000
/Bahamori	19/Jan	6.70	0	*			1,044,000	750,000	1,794,000
/Caicua	19/Jan	5.83	0	*			784,800	759,000	1,543,800
/Vemassee	19/Jan	5.91	0	*			833,500	770,000	1,603,500
/Caicua	5/Feb	2.44	0	*			381,600	256,000	637,600
/Vemassee	5/Feb	10.23	0	*			1,471,000	0	1,471,000
/Tekinomata	5/Feb	20.26	0	*			2,542,300	977,000	3,519,300
/Bahamori	5/Feb	5.25	0	*			958,800	425,000	1,383,800
/Vemassee	5/Feb	8.60	0		*		1,150,000	135,000	1,285,000
/Bahamori	12/Feb	a)	0				208,400	0	208,400
/Bahamori	12/Feb	4.70	0	*			1,062,000	0	1,062,000
/Tekinomata	12/Feb	4.55	0		*		1,590,000	0	1,590,000
/Caicua	5/Mar	a)	0				801,500	0	801,500
/Caicua	5/Mar	2.24	0		*		0	867,000	867,000
/Oralan	5/Mar	7.37	0	*			1,404,000	531,000	1,935,000
/Soba	5/Mar	5.27	0	*			1,185,000	162,000	1,347,000
/Mulia	12/Mar	1.36	0			*	341,000	0	341,000
/Vemassee	12/Mar	a)	0				1,575,000	0	1,575,000
/Vemassee	12/Mar	10.84	0		*		2,450,000	0	2,450,000
/Samalri	12/Mar	10.00	0	*			1,000,000	1,500,000	2,500,000
/Cara Vela	7/May	9.94	0	*			2,487,500	0	2,487,500
/Vemassee	7/May	a)	0				260,000	0	260,000
/Vemassee	7/May	3.50	0		*		1,200,000	0	1,200,000
Total	-	151.10	0	-	-	-	27,972,400	10,623,500	38,595,900
Viqueque/Ossu	17/July	11.50	0	*			743,050	379,680	1,122,730
/Aidac	1/Feb	4.52	0		*		664,000	918,750	1,582,750
/Aidac	2/Apr	5.19	0		*		477,045	1,399,659	1,876,704
/Tali Oan	2/Apr	6.12	0	*			1,367,410	182,910	1,550,320
/Namani	2/Apr	6.13	0	*			1,542,300	0	1,542,300
/Aidac	2/Apr	2.55	0		*		600,000	296,210	896,210
Total	-	36.01	0	-	-	-	5,393,805	3,177,209	8,571,014
Manatuto/Laleia	12/Sept	16.15	0	*			1,440,000	3,019,848	4,459,848
/Posto	12/Feb	29.19	0	*	*		4,288,000	29,000	4,317,000
/Lifau	12/Feb	a)	0				546,000	0	546,000
/Posto	17/Apr	a)	0				2,887,500	0	2,887,500
/Posto	17/Apr	21.60	0	*			3,393,500	1,914,000	5,307,500
Total	-	66.94	-	-	-	-	12,555,000	4,417,848	16,972,848
Manufahi/Babulu	25/Aug	0	1.357			*	685,000	0	685,000
/Same	1/Sept	0	2.00			*	1,000,000	0	1,000,000
/Daisua	10/Nov	0	19.40			*	3,374,000	375,000	3,749,000
/Betano-Kuac	4/Dec	0	4.82			*	1,208,500	0	1,208,500

Table K.-10 District Wise Farmers' Contribution and Expenditure (2)
under Mobile Brigade (April 2000 - May 2001)

District/Suco	Date	Area (ha)		By Use Of			Contribution (Rp.)		
		Wet	Dry	HT	MT	BT	Cash	Credit	Total
/Bemetan	9/Feb	0	4.00			*	2,000,000	0	2,000,000
/Loro-Betano	6/Mar	16.80	0	*	*		2,210,000	2,442,000	4,652,000
/Aimetan	24/Mar	0	8.50			*	1,250,000	840,000	2,090,000
Total	-	16.80	40.077	-	-	-	12,819,500	3,657,000	16,476,500
Dili/Hera	2/Mar	2.65	0			*	930,000	0	930,000
/Hera	30/Apr	3.31	0			*	1,089,300	0	1,089,300
/Hera	18/May	2.92	0			*	1,024,000	0	1,024,000
Total	-	8.88	0	-	-	-	3,043,300	0	3,043,300
Aileu/Mantane	13/Dec	1.80	0			*	630,000	0	630,000
/Mantane	10/Jan	0.38	0			*	133,000	0	133,000
/Seioi Kraik	16/Feb	5.14	0			*	1,800,000	0	1,800,000
/Malere	16/Apr	3.85	0			*	1,348,900	0	1,348,900
/Seloi Malere	16/Apr	7.14	0			*	2,161,530	0	2,161,530
Total	-	18.31	0	-	-	-	6,073,430	0	6,073,430
Ermera/Gleno	13/Feb	6.07	0			*	2,124,500	0	2,124,500
/Gleno	5/Mar	5.71	0			*	2,000,000	0	2,000,000
/Gleno	5/Mar	0.35	0	**			1,050,000	0	1,050,000
/Poetete	12/Mar	4.20	0	**			1,476,000	0	1,476,000
/Poetete	10/Apr	3.00	0			*	1,050,000	0	1,050,000
Railaco	30/Apr	1.00	0			*	350,000	0	350,000
Total	-	20.33	0	-	-	-	8,050,500	0	8,050,500
Ainalo/Cassa	2/Mar	11.00	0	*	*		560,000	2,675,000	3,235,000
Total	-	11.00	0	-	-	-	560,000	2,675,000	3,235,000
Liquica/Fau Laran	9/Feb	4.75	0			*	1,400,000	262,500	1,662,500
/Lepa	5/Mar	9.69	0			*	3,272,000	115,000	3,387,000
/Fau Laran	28/Mar	6.79	0			*	2,225,500	151,000	2,376,500
/Fau Laran	17/Apr	5.75	0			*	2,072,500	0	2,072,500
Total	-	26.98	0	-	-	-	8,970,000	528,500	9,498,500
Boronaro/Alabae	17/July	3.83	0	*		*	566,000	0	566,000
/Cailaco	17/July	8.81	0			*	1,010,000	1,430,000	2,440,000
/Maliana	17/July	3.05	0	*		*	925,000	20,000	945,000
/Maliana	29/Augus	11.80	0	*			2,315,000	0	2,315,000
/Corluli	5/Sept	0	11.20			*	2,125,000	675,000	2,800,000
/Holsa	5/Sept	0	10.62			*	2,655,000	0	2,655,000
/Odomau	5/Sept	0	2.20			*	550,000	0	550,000
/Utadai	5/Sept	0	2.08			*	320,000	200,000	520,000
/Lahomea	5/Sept	0	2.08			*	275,000	245,000	520,000
/Maliana	25/Sept	0	30.37			*	7,422,500	182,500	7,605,000
/Maliana	24/Oct	0	6.00			*	950,000	250,000	1,200,000
/Maliana	4/Dec	0	25.40			*	4,675,000	1,675,000	6,350,000
/Cailaco	4/Dec	0	14.00			*	1,080,000	2,420,000	3,500,000
/Ritabou	9/Jan	9.00	0			*	3,150,000	0	3,150,000
/Ritabou	9/Jan	0	7.40			*	1,850,000	0	1,850,000
/Manapa	9/Jam	a)	0				720,000	0	720,000
/Ritabou	9/Jan	0	0				375,000	0	375,000
/Ritabou	29/Jan	0	23.96			*	5,990,000	0	5,990,000
/Lahomea	29/Jan	5.46	0	*			1,365,000	0	1,365,000
/Lahomea	29/Jan	14.80	0			*	5,180,000	0	5,180,000
/Maliana II	1/Feb	11.60	0	*			2,905,000	0	2,905,000
/Ritabou	1/Feb	3.50	0			*	1,225,000	0	1,225,000
/Memo	1/Feb	0	4.00			*	1,000,000	0	1,000,000

Table K.- District Wise Farmers' Contribution and Expenditure (3)
under Mobile Brigade (April 2000 - May 2001)

District/Suco	Date	Area (ha)		By Use Of			Contribution (Rp.)		
		Wet	Dry	HT	MT	BT	Cash	Credit	Total
/Lahomea	5/Feb	12.30	0	*			2,745,000	350,000	3,095,000
/Sulogolo	5/Feb	10.80	0	*			2,065,000	700,000	2,765,000
/Tapomiak	15/Feb	8.00	0	*			1,050,000	1,350,000	2,400,000
/Atudara	15/Feb	14.00	0	*			2,125,000	2,525,000	4,650,000
/Lahomea	15/Feb	12.00	0	*			2,520,000	480,000	3,000,000
/Raefun	19/Feb	10.90	0	*			2,705,000	0	2,705,000
/Tapomiak	19/Feb	a)					950,000	0	950,000
/Lahomea	19/Feb	0	9.00			*	650,000	250,000	900,000
/Ula-alin	27/Feb	11.50	0	*			2,380,000	0	2,380,000
/Odomau	27/Feb	11.00	0	*			1,970,000	0	1,970,000
/Sucu Laran	27/Feb	9.00	0		*		3,150,000	0	3,150,000
/Sucu Laran	27/Feb	3.40	0		*		850,000	0	850,000
/Sugulolo	6/Mar	11.40	0		*		2,525,000	150,000	2,675,000
/Sugulolo	6/Mar	a)			*		500,000	0	500,000
/Sucu Laran	6/Mar	0	12.40		*		2,850,000	0	2,850,000
/Sucu Lalan	6/Mar	13.30	0		*		4,655,000	0	4,655,000
/Berileu	19/Mar	3.50	0	*			600,000	450,000	1,050,000
/Ritabou	19/Mar	7.60	0	*			1,895,000	280,000	2,175,000
/Odomau	19/Mar	7.45	0	*			1,005,000	865,000	1,870,000
/Ula-atin	19/Mar	6.80	0	*			1,379,000	0	1,379,000
/Ula-atin	19/Mar	11.60	0	*			2,401,000	120,000	2,521,000
/Lotan	24/Apr	2.70	0	*			550,000	150,000	700,000
/Sucu Laran	24/Apr	8.10	0	*			1,275,000	0	1,275,000
/Sucu Laran	24/Apr	0	2.00			*	500,000	0	500,000
/Sucu Laran	24/Apr	0	4.00			*	1,000,000	0	1,000,000
/Tapomiak	24/Apr	6.50	0	*			500,000	0	500,000
Total	-	253.70	166.71	-	-	-	93,423,500	14,767,500	108,191,000
Covalima/Aidantuik	4/Oct	4.51	14.63		*	*	3,190,000	0	3,190,000
/Holba	24/Oct	0	6.00			*	2,855,000	250,000	3,105,000
/Maucola	6/Nov	0	7.05			*	2,000,000	1,524,500	3,524,500
/Maucola	10/Nov	0	3.69			*	1,845,000	0	1,845,000
/Maucola	24/Nov	0	16.02			*	8,010,000	0	8,010,000
/Tasilin	22/Dec	1.62	0	*		*	400,000	0	400,000
/Suai Loro	28/Dec	6.17	1.90		*	*	2,146,000	965,000	3,111,000
/Camanasa	28/Dec	0	1.61			*	805,000	0	805,000
/Kulu oan	5/Feb	3.35	0	*			633,900	247,000	880,900
/Aidantuik	5/Feb	2.53	0	*			542,000	91,500	633,500
/Salele	5/Feb	3.68	0	*			888,200	120,000	1,008,200
/Suai Loro	5/Feb	3.31	0		*	*	757,500	457,000	1,214,500
/Suka Bilaran	5/Mar	1.82	0	*			458,000	0	458,000
/Mau Cola	5/Mar	2.00	0		*		355,000	345,000	700,000
/Salele	5/Mar	0.96	0	*			241,000	0	241,000
/Kulu oan	5/Mar	1.75	0	*			139,000	360,000	499,000
/Fatu Leto	5/Mar	1.80	0	*			469,000	0	469,000
/Tasilin	5/Mar	1.25	0	*			312,500	0	312,500
/Suai Loro	2/Apr	3.78	0	*			954,000	0	954,000
/Matai	2/Apr	0	5.37			*	2,585,000	0	2,585,000
/Halbelis	2/Apr	0	2.90			*	1,450,000	0	1,450,000
/Kamanasa	2/Apr	0	3.69			*	1,845,000	0	1,845,000
/Lucalai	2/Apr	10.79	0		*		1,065,000	2,711,500	3,775,500
/Beco	30/Apr	0	3.50			*	1,500,000	100,000	1,600,000

Table K.-10 District Wise Farmers' Contribution and Expenditure (4)
under Mobile Brigade (April 2000 – May 2001)

District/Suco	Date	Area (ha)		By Use Of			Contribution (Rp.)		
		Wet	Dry	HT	MT	BT	Cash	Credit	Total
/Suai Loro	30/Apr	5.56	0		*		1,946,000	0	1,946,000
/Suai Loro	30/Apr	2.03	0	*			509,000	0	509,000
Total	-	56.91	66.36	-	-	-	37,901,100	7,171,500	45,072,600
Ambino/Samoro	6/Nov	17.00	0	*	*		415,000	3,415,000	3,830,000
/Nianapu	28/Mar	3.00	0	**			569,286	351,234	920,520
/Oe-Mathtu	28/Mar	0.8204	0	**			187,410	58,710	248,120
/Roti	28/Mar	7.726	0	**			156,780	75,000	231,780
/Faot-Noni	28/Mar	2.77	0		*		138,770	287,640	426,410
/Panite	28/Mar	3.78	0	*			140,300	150,000	290,300
/Kinloki	28/Mar	3.60	0	*			358,425	87,000	445,425
Total	-	38.6964	0	-	-	-	1,965,971	4,424,584	6,390,555
Grand Total	-	705.6564	321.547	-	-	-	235,808,506	57,092,641	292,901,147

Source : Laporan Tahunan Brigade Movel Nasional April 2000 – Mei 2001, NPC

Remarks : By Use Of HT : * Hand Tractor & ** John Deere

MT : * John Deere Tractor Model 1100

BT : * John Deere Tractor Model 5000

a) = Installment

Table K.-10 District Wise Farmers' Contribution and Expenditure (5)
under Mobile Brigade (April 2000 - May 2001)

(2) Expenditure

A. Fuel, Oil and Grease Consumption

District		Fuel (liter)		Engine Oil (liter)				Grease (kg)
		Diesel	Gasoline	S30	S40	S90	S140	
Lautem	(1) Dropping	2,600	0	25	32	0	5	8
	(2) Consumed	2,090	0	0	0	0	0	0
	(3) Balance (1) - (2)	510	0	25	32	0	5	8
Baucau	(1) Dropping	9,800	0	0	369	200	0	5
	(2) Consumed	5,762	0	0	160.5	87	0	0
	(3) Balance (1) - (2)	4,038	0	0	208.5	113	0	5
Viqueque	(1) Dropping	2,100	0	0	50	50	10	10
	(2) Consumed	1,284	0	0	7.5	0	0	0
	(3) Balance (1) - (2)	816	0	0	42.5	50	10	10
Manatuto	(1) Dropping	4,400	0	0	140	0	0	0
	(2) Consumed	3,646.20	0	0	85.5	0	0	0
	(3) Balance (1) - (2)	753.8	0	0	54.5	0	0	0
Mahufahi	(1) Dropping	3,680	0	15	50	30	20	10
	(2) Consumed	3,680	0	5	43.4	52.6	0	0
	(3) Balance (1) - (2)	0	0	10	6.6	-22.6	20	10
Dili	(1) Dropping	250	0	0	10	5	0	1
	(2) Consumed	250	0	0	0	0	0	0
	(3) Balance (1) - (2)	0	0	0	10	5	0	1
Aileu	(1) Dropping	600	0	0	12	0	0	0
	(2) Consumed	600	0	0	12	5	0	0
	(3) Balance (1) - (2)	0	0	0	0	-5	0	0
Ermera	(1) Dropping	600	0	0	40	0	0	3
	(2) Consumed	500	0	0	0	0	0	0
	(3) Balance (1) - (2)	100	0	0	0	0	0	3
Ainaro	(1) Dropping	360	0	0	0	0	0	1
	(2) Consumed	230	0	0	0	0	0	0
	(3) Balance (1) - (2)	130	0	0	0	0	0	1
Liquica	(1) Dropping	1,000	0	0	10	0	0	0
	(2) Consumed	400	0	0	7	0	0	0
	(3) Balance (1) - (2)	600	0	0	3	0	0	0
Boronaro	(1) Dropping	15,000	0	0	355	100	20	50
	(2) Consumed	13,780	0	0	323	47.5	10	15
	(3) Balance (1) - (2)	1,220	0	0	32	52.5	10	35
Covalima	(1) Dropping	5,600	400	50	82	25	25	10
	(2) Consumed	4,829	360	4	43	33.5	0	3
	(3) Balance (1) - (2)	771	40	46	39	-8.5	25	7
Ambino	(1) Dropping	1,200	0	0	20	15	0	5
	(2) Consumed	0	0	0	0	0	0	0
	(3) Balance (1) - (2)	1,200	0	0	20	15	0	0
Total	(1) Dropping	47,190	400	90	1,170	425	80	103
	(2) Consumed	37,051.20	360	9	681.90	225.60	10	18
	(3) Balance (1) - (2)	10,138.80	40	81	488.10	204.40	70	85

Source : Laporan Tahunan Brigada Movel Nasional April 2000 - Mei 2001, NPA

Remarks : (3) Balance (1) - (2) = minus means "engine oil prepared by farmers"

Value of Consumption (Estimated by JICA Study Team)

(1) Diesel Fuel Rp.120,416,400 (Rp.3,250/lit x 37,051.20 lit)

(2) Gasoline Fuel Rp. 1,800,000 (Rp.5,000/lit x 360 lit)

(3) Engine Oil Rp. 23,162,500 (Rp.25,000/lit x 926.50 lit)

(4) Grease Rp. 450,000 (Rp.25,000/lg x 18kg)

Total Rp.145,828,900

Table K.-10 District Wise Farmers' Contribution and Expenditure (6)
under Mobile Brigade (April 2000 - May 2001)

B. Expenditure for Miscellenious and Cost for Tractor Operators employed on Field

District	Miscellenious Expencc	Of which		Cost for Tractor Operators employed	Unit : Rp.
		Fuel	Oil		Total
Lautem	0	0	0	0	0
Baucau	1,355,000	850,000	184,000	3,749,750	5,104,750
Viqueque	1,616,755	1,370,500	0	1,543,600	3,160,355
Manatuto	0	0	0	1,952,756	1,952,756
Manufahi	0	0	0	400,000	400,000
Dili	0	0	0	0	0
Alleu	0	0	0	0	0
Ermera	0	0	0	115,500	115,500
Alnaro	0	0	0	199,200	199,200
Liquica	0	0	0	0	0
Bolonaro	5,020,000	675,000	0	7,553,000	12,573,000
Covalima	570,900	0	0	1,100,800	1,671,700
Ambino	1,124,000	1,124,000	0	1,974,210	3,098,210
Total	9,686,655	4,019,500	184,000	18,588,816	28,275,471

Source : Laporan Tahunan Brigade Movel Nasional April 2000 - Mei 2001, NPA

Remarks : Miscellenious includees such payments for fuel, oil, spare parts, repair cost, modification of machines, improvement of garage, etc.

C. Personnel Cost

Position	No. of Personnel	Salary	Subsidier			Total/4 months	
			Subsidier	Per/ Personnel	Total Personnel	Per/ Personnel	Total Personnel
1. NPC	1	300	50	350	350	1,400	1,400
2. Secretary	1	170	20	190	190	760	760
3. Finance Clerk & Field Monitoring	1	170	40	210	210	840	840
4. Agronomist	6	225	40	265	1,590	1,060	6,360
5. Extensionist	11	170	30	200	2,200	800	8,800
6. Mechanic	6	170	10	180	1,080	720	4,320
7. Tractor Operator	31	130	25	155	4,805	620	19,220
8. Driver	1	195	0	195	195	780	780
Total	58	-	-	1,745	10,620	6,980	42,480

Source : Laporan Tahunan Brigade Movel Nasional April 2000 - Mei 2001, NPA

Remarks : Total US\$42,480 = Rp.446,040,000

D. Total Direct Expensitures (A. + B. + C.)

(1) Fuel, Oil, Grease	Rp.145,828,900
(2) Miscellenious and Operators	Rp. 28,275,471
(3) Personnel Cost	Rp.446,040,000
Total	Rp.620,144,371

Table K.-10 District Wise Farmers' Contribution and Expenditure (7)
under Mobile Brigade (April 2000 - May 2001)

(3) Analytical Data

District	Area Cultivated (ha)														
	(1) Wet Land					(2) Dry Land					(3) Total (1) + (2)				
	by HT	by MT	by BT	by CT	Total	by HT	by MT	by BT	by CT	Total	by HT	by MT	by BT	by CT	Total
Lautem	0	0	0	0	0	0	0	48.40	0	48.4	0	0	48.40	0	48.40
Baucau	105.53	44.21	1.36	0	151.10	0	0	0	0	0	105.53	44.21	1.36	0	151.10
Viqueque	23.75	0	12.26	0	36.01	0	0	0	0	0	23.75	0	12.26	0	36.01
Manatuto	37.75	0	0	29.19	66.94	0	0	0	0	0	37.75	0	0	29.19	66.94
Manufahi	0	0	0	16.80	16.80	0	0	40.077	0	40.077	0	0	40.077	16.80	56.877
Dili	0	8.88	0	0	8.88	0	0	0	0	0	0	8.88	0	0	8.88
Aileu	0	18.31	0	0	18.31	0	0	0	0	0	0	18.31	0	0	18.31
Ermera	4.55 (4.55)	15.78	0	0	20.33	0	0	0	0	0	4.55 (4.55)	15.78	0	0	20.33
Ainalo	0	0	0	11.00	11.00	0	0	0	0	0	0	0	0	11.00	11.00
Liquica	0	26.98	0	0	26.98	0	0	0	0	0	0	26.98	0	0	26.98
Bobonaro	173.61	64.40	0	15.69	253.70	0	12.40	154.31	0	166.71	173.61	76.80	154.31	15.69	420.41
Covalima	24.57	18.35	0	13.99	56.91	0	0	49.83	16.53	66.36	24.57	18.35	49.83	30.52	123.27
Ambino	18.9264 (11.5464)	2.77	0	17.00	38.6964	0	0	0	0	0	18.9264 (11.5464)	2.77	0	17	38.6964
Total	388.6864	199.68	13.62	103.67	705.6564	0	12.4	292.617	16.53	321.547	388.6864	212.08	306.237	120.2	1,027.2034

Remarks : HT = Hand Tractor, MT = Hohn Deere 4-Wheel Tractor Model 1100, BT = John Deere 4-Wheel Tractor Model 5000, CT = Hand Tractor + 4-Wheel Tractor
() means area cultivated by John Deere Hand Tractor

District	Fuel, Oil and Grease Total Consumption								Fuel, Oil, Grease Consumption/ha			
	Fuel (liter)		Engine Oil (liter)					Grease (kg)	Fuel (lit/ha)		Oil (lit/ha)	Grease (kg/ha)
	Diesel	Gasoline	S30	S40	S90	S140	Total		Diesel	Gasoline		
Lautem	2,090	0	0	0	0	0	0	0	43.182	-	0	0
Baucau	5,762	0	0	160.5	87	0	247.5	0	38.134	-	1.638	0
Viqueque	1,284	0	0	7.5	0	0	0	0	35.657	-	0	0
Manatuto	3,646.20	0	0	85.5	0	0	85.5	0	54.47	-	1.277	0
Manufahi	3,680	0	5	43.4	52.6	0	101.0	0	64.701	-	1.773	0
Dili	250	0	0	0	0	0	0	0	28.153	-	0	0
Aileu	600	0	0	12	5	0	17	0	54.545	-	0.928	0
Ermera	500	0	0	0	0	0	0	0	*24.594	-	0	0
Ainalo	230	0	0	0	0	0	0	0	20.909	-	0	0
Liquica	400	0	0	7	0	0	7	0	14.826	-	0.259	0
Bobonaro	13,780	0	0	323	47.5	10	380.5	15	32.778	-	0.905	0.036
Covalima	4,829	360	4	43	33.5	0	80.5	3	42.095	?	0.653	0.024
Ambino	0	0	0	0	0	0	0	0	-	-	0	0
Total	37,051.20	360	4	661.9	225.6	10	919	18	21.420	-	0.895	0.018

Table K.-10 District Wise Farmers' Contribution and Expenditure under Mobile Brigade (April 2000 - May 2001) (8)

District	Income (Rp.)									
	Wet Land			Dry Land				Total		
	Cash	Credit	Total	Cash	Credit	Total	Rp./ha	Cash	Credit	Total
Lautem	0	0	0	17,080,000	5,650,000	22,730,000	469,628	17,080,000	5,650,000	22,730,000
Baucau	27,972,400	10,623,500	38,595,900	0	0	0	-	27,972,400	10,623,500	38,595,900
Viqueque	5,393,805	3,177,209	8,571,014	0	0	0	-	5,393,805	3,177,209	8,571,014
Manatuto	12,555,000	4,417,848	16,972,848	0	0	0	-	12,555,000	4,417,848	16,972,848
Manufahi	2,210,000	2,442,000	4,652,000	10,609,500	1,215,000	11,824,500	295,045	12,819,500	3,657,000	16,476,500
Dili	3,043,300	0	3,043,300	0	0	0	-	3,043,300	0	3,043,300
Aileu	6,073,430	0	6,073,430	0	0	0	-	6,073,430	0	6,073,430
Ermera	8,050,500	0	8,050,500	0	0	0	-	8,050,500	0	8,050,500
Ainaro	560,000	2,675,000	3,235,000	0	0	0	-	560,000	2,675,000	3,235,000
Liquica	8,970,000	528,500	9,498,500	0	0	0	-	8,970,000	528,500	9,498,500
Bobonaro	59,531,000	8,880,000	68,411,000	33,892,500	5,887,500	39,780,000	238,618	93,423,500	14,767,500	108,191,000
Covalima	14,500,800	5,069,800	19,570,600	23,400,300	2,101,700	25,502,000	384,298	37,901,100	7,171,500	45,072,600
Ambino	1,965,971	4,424,584	6,390,555	0	0	0	-	1,965,971	4,424,584	6,390,555
Total	150,826,206	42,238,441	193,064,647	84,982,300	14,854,200	99,836,500	310,488	235,808,506	57,092,641	292,901,147

District	Operator Cost paid by Farmers (Rp.)		Farmers' Contribution to Wet Land (Rp.)				Farmers Contribution (Rp./Wet and Dry Land)	
	Amount	Rp./ha-Wet	Cash	Credit	Total	Rp./ha	Amount	Rp./ha
Lautem	0	-	0	0	0	-	22,730,000	469,628
Baucau	3,749,750	24,816	31,722,150	10,623,500	42,345,650	280,249	42,345,650	280,249
Viqueque	1,543,600	42,866	6,937,405	3,177,209	10,114,614	280,883	10,114,614	280,883
Manatuto	1,952,756	29,172	14,507,756	4,417,848	18,925,604	282,725	18,925,604	282,725
Manufahi	400,000	23,810	2,610,000	2,442,000	5,052,000	300,714	16,876,500	296,719
Dili	0	-	3,043,300	0	3,043,300	342,714	3,043,300	342,714
Aileu	0	-	6,073,430	0	6,073,430	331,700	6,073,430	331,700
Ermera	0	-	8,050,500	0	8,050,500	395,991	8,050,500	395,991
Ainaro	199,200	18,109	759,200	2,675,000	3,434,200	312,200	3,434,200	312,200
Liquica	0	-	8,970,000	528,500	9,498,500	352,057	9,498,500	352,057
Bobonaro	7,553,000	29,771	67,084,000	8,880,000	75,964,000	299,425	115,744,000	275,312
Covalima	1,100,800	19,343	15,601,600	5,069,800	20,671,400	363,230	46,173,400	374,571
Ambino	1,974,210	51,018	3,940,181	4,424,584	8,364,765	216,164	8,364,765	941,978
Total	18,588,816	26,343	169,415,022	42,238,441	211,653,463	299,938	311,489,963	303,241

Table K.-10 District Wise Farmers' Contribution and Expenditure (April 2000 - May 2001) (9)

District	Farmers Contribution (Rp.)		Fuel, Oil & Grease							
			Diesel Oil		Engine Oil		Grease		Total	
	Amount	Rp./ha	Amount	Rp./ha	Amount	Rp./ha	Amount	Rp./ha	Amount	Rp./ha
Lautem	22,730,000	469,628	6,792,500	140,341	0	-	0	-	6,792,500	140,341
Baucau	42,345,650	280,249	18,726,500	123,934	6,187,500	40,949	0	-	24,914,000	164,884
Viqueque	10,114,614	280,883	4,173,000	115,884	0	-	0	-	4,173,000	115,884
Manatuto	18,925,604	282,725	11,850,150	177,026	2,137,500	31,932	0	-	13,987,650	208,958
Manufahi	16,876,500	296,719	11,960,000	210,278	2,525,000	44,394	0	-	14,485,000	254,672
Dili	3,043,300	342,714	812,500	91,498	0	-	0	-	812,500	91,498
Aileu	6,073,430	331,700	1,950,000	106,499	425,000	23,211	0	-	2,375,000	129,711
Ermera	8,050,500	395,991	1,625,000	79,931	0	-	0	-	1,625,000	79,931
Ainaro	3,434,200	312,200	747,500	67,955	0	-	0	-	747,500	67,955
Liquica	9,498,500	352,057	1,300,000	48,184	175,000	6,486	0	-	10,812,500	400,760
Bobonaro	115,744,000	275,312	44,785,000	106,527	9,512,500	22,627	375,000	891,986	54,672,500	130,046
Covalima	46,173,400	374,571	16,864,250	136,807	2,012,500	16,326	75,000	608	18,951,750	153,742
Ambino	8,364,765	941,978	0	-	0	-	0	-	0	-
Total	311,489,963	303,241	81,413,150	79,257	22,975,000	22,367	450,000	438	104,838,150	102,062

District	Miscellaneous Expenditure (Rp.)		Grand Total (Rp.)	
	Amount	Rp./ha	Amount	Rp./ha
Lautem	0	0	29,522,500	609,969
Baucau	1,355,000	8,968	68,614,650	454,101
Viqueque	1,616,755	44,897	15,904,369	441,665
Manatuto	0	0	32,913,254	491,683
Manufahi	0	0	31,361,500	551,392
Dili	0	0	3,855,800	434,212
Aileu	0	0	6,348,430	346,719
Ermera	0	0	9,675,500	475,922
Ainaro	0	0	4,181,700	380,155
Liquica	0	0	20,311,000	752,817
Bobonaro	5,020,000	11,941	175,436,500	417,299
Covalima	570,900	4,631	65,696,050	532,944
Ambino	1,124,000	29,047	9,488,765	245,211
Total	9,686,655	9,430	426,014,768	414,733

Table K.-11 Estimated Number of Post-Harvest Facility in East Timor (1)
2001

1. Number of Post-Harvest Facility collected by Suco Survey

District	Rice Mill Unit	Drying Facility						Vegetable Processing Facility	Fruit Processing Facility	Storage Facility				Coffee Sheller		Corn Sheller		Rice Mill kg/day
		Mat	Concrete Yard		Mechanical	Curing	Platform			Inside Home	Separate Building	Community	Others	Unit	kg/day	Unit	kg/day	
			Public	Private														
1. Lautem	4	34	2	17	0	0	0	0	0	9	2	0	8	0	0	0	0	1,250
2. Baucau	17	770	433	948	0	0	10	0	0	13	6	0	0	0	0	0	0	675
3. Viqueque	25	3,590	0	0	0	0	646	0	0	18	8	0	1	0	0	7	2,682	14,455
4. Manatuto	1	31	0	882	0	0	0	0	0	4	0	0	0	0	0	0	0	21
5. Manufahi	4	1	1	603	0	0	0	0	0	5	1	0	0	0	0	0	0	3,100
6. Dili	1	204	1	6	0	0	86	0	0	7	0	0	0	12	6,000	0	0	500
7. Aileu	0	120	0	160	0	0	0	0	0	4	0	0	0	0	0	0	0	0
8. Ermera	1	2,500	3	1,722	0	0	1,684	0	0	12	0	0	0	106	73,000	0	0	850
9. Ainaro	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
10. Liquica	0	1,291	0	1,007	0	0	836	0	0	7	0	0	0	19	23,500	0	0	0
11. Bobonaro	7	3,350	0	444	0	0	710	0	0	9	0	0	0	2	200	0	0	8,500
12. Covalima	5	191	80	154	0	0	0	0	0	10	0	0	0	0	0	3	270	1,050
13. Ambino	4	536	0	528	0	0	0	0	0	4	0	0	8	0	0	0	0	600
Total	69	12,618	520	6,471	0	1	3,972	0	0	105	17	0	17	139	102,700	10	2,952	31,001

2. Factors for Calibration

District	No. of Sucos			Population & Households (1997)			Population (2001)	Production (1997)			
	(a) Total	(b) Survey	(b)/(a)	a) Population	(b) Households	(a)/(b)		Rice		Maize	
								(ha)	(MT/Paddy)	(ha)	(MT)
1. Lautem	34	9	0.265	51,900	11,596	4.5	49,213	686	1,656	3,495	6,174
2. Baucau	63	13	0.206	96,800	19,187	5.0	93,368	2,254	6,211	5,873	11,039
3. Viqueque	35	17	0.486	59,400	12,691	4.7	54,315	3,747	9,369	5,257	10,493
4. Manatuto	29	4	0.138	35,200	8,804	4.0	32,598	871	2,467	1,675	3,240
5. Manufahi	29	5	0.172	38,300	7,180	5.3	35,500	446	1,178	1,754	3,816
6. Dili	48	8	0.167	174,200	35,628	4.9	128,490	47	108	797	1,487
7. Aileu	43	4	0.093	31,900	5,479	5.8	30,146	319	900	3,981	8,167
8. Ermera	53	13	0.245	88,300	20,341	4.3	84,510	648	1,708	2,569	4,844
9. Ainaro	21	4	0.190	43,400	9,111	4.8	36,969	319	811	1,839	3,339
10. Liquica	23	6	0.261	52,500	11,452	4.6	43,406	115	253	2,821	3,860
11. Bobonaro	50	9	0.180	91,300	19,925	4.6	62,273	2,670	7,860	11,560	22,944
12. Covalima	45	10	0.222	63,000	12,993	4.8	42,506	910	2,661	7,442	12,824
13. Ambino	25	4	0.160	55,400	12,356	4.5	44,517	1,166	2,786	4,366	5,977
Total	498	106	0.213	881,600	186,743	4.7	737,811	14,198	37,968	53,429	99,204

Table K.-11 Estimated Number of Post-Harvest Facility in East Timor (2)
2001

3. Estimated Number of Post-Harvest Facility

District	Rice Mill		Drying Facility (No. of Units or Plots)					Storage Facility			Pulper/Sheller			
	No. of Unit	Capacity (ton/day)	Mat (Units)	Concrete Yard		Standing Platform (Unit)	Curing (Unit/sq.m.)	Inside Home	Separate Building	Others	Corn		Coffee	
				Public (Plot)	Private (Plot)						(Unit)	(ton/day)	(Unit)	(ton/day)
1. Lautem	15	4.7	453	8	64	0	0	40	8	30	0	0	0	0
2. Baucau	45	1.8	4,302	2,419	5,296	56	0	73	0	0	3	2.0	0	0
3. Viqueque	51	27.2	6,786	0	678	1,221	1/1,000	34	0	0	13	5.0	0	0
4. Manatuto	7	5.4	225	0	6,391	0	0	29	0	0	0	0	0	0
5. Manufahi	23	18.6	919	6	3,611	0	0	30	6	0	0	0	0	0
6. Dili	6	3.0	1,308	7	38	551	0	49	0	0	0	0	77	38.5
7. Aileu	1	0.5	1,200	0	1,600	0	0	40	0	0	0	0	0	0
8. Ermera	4	3.4	10,639	13	7,328	7,166	0	39	0	0	3	1.0	451	310.7
9. Ainaro	1	0.5	400	0	0	0	0	21	0	0	0	0	0	0
10. Liquica	1	0.5	4,267	0	3,313	2,750	0	23	0	0	0	0	63	77.9
11. Bobonaro	38	47.3	18,715	0	38	4,034	0	47	0	0	0	0	11	1.1
12. Covalima	22	4.6	842	353	7,328	0	0	44	0	42	13	1.2	0	0
13. Ambino	25	3.2	2,821	0	2,779	0	0	21	15	2	0	0	0	0
Total	239	120.7	52,877	2,806	38,464	15,778	1/1000	490	15	74	32	9.2	602	428.2

Source : Suco Survey

Remarks : Standing Platform : Bamboo or wooden made bench/stand to protect post-harvest loss from animals, so called "Panggung untuk jemar"

4. Reference - Number of Agricultural Machinery in Nusa Tenggara Timur (1997)

Name of Machinery	Unit
2 wheel tractor	749
4 wheel tractor Mini	76
Medium	32
Big	38
Sprayer	7,739
Padi Thresher	558
Large rice mill	44
Small rice mill	314
Rice milling unit	857
Huller	6

Source : Statistik Indonesia 1998

Remarks : Nusa Tenggara Timur = Flores, Sumba, Solor, Alor, West Timor etc.

5. Agricultural Machineries in Indonesia - 1998

Name of Machines	Unit
2-wheel tractpr	81,108
4-wheel tractpr	4,656
Sprayer	1,673,987
Swing fog	1,729
Rat fumigator	92,959
Thresher	367,250
Dryer	5,525
Cleaner	49,133
Polisher	15,828
Rice mill	37,017

Source : Indonesia Statistic, Central Bureau of Statistic

Table K-12 Origin/Destination of Major Staple Food in East Timor (1)
1997

(1) Summary

a. Maize

Unit : Metric Ton

Origin/Destination (District)	Production	1. Lautem	2. Baucau	3. Viqueque	4. Manatuto	5. Manufahi	6. Dili	7. Aileu	8. Ermera	9. Ainaro	10. Liquica	11. Bobonaro	12. Covalima	13. Ambeno
1. Lautem	4,187	4,373	-	-	-	-	-	-	-	-	-	-	-	-
2. Baucau	7,495	-	7,495	-	-	-	-	-	-	-	-	-	-	-
3. Viqueque	7,131	-	-	5,898	488	-	745	-	-	-	-	-	-	-
4. Manatuto	2,201	-	-	-	2,201	-	-	-	-	-	-	-	-	-
5. Manufahi	2,596	-	-	-	-	2,596	-	-	-	-	-	-	-	-
6. Dili	1,010	-	-	-	-	-	1,010	-	-	-	-	-	-	-
7. Aileu	5,552	-	-	-	-	330	2,054	3,168	-	-	-	-	-	-
8. Ermera	3,301	-	-	-	-	-	-	-	3,301	-	-	-	-	-
9. Ainaro	2,266	-	-	-	-	-	-	-	-	2,266	-	-	-	-
10. Liquica	2,605	-	-	-	-	-	-	-	-	-	2,605	-	-	-
11. Bobonaro	15,590	-	-	-	-	-	4,022	-	1,000	500	1,000	9,068	-	-
12. Covalima	8,694	-	-	-	-	-	1,481	-	-	550	406	-	6,257	-
13. Ambeno	4,723	-	-	-	-	-	-	-	-	-	-	-	-	4,723
Total	67,351	4,373	7,495	5,898	2,689	2,926	9,312	3,168	4,301	3,316	4,011	9,068	6,257	4,723

b. Milled Rice

Unit : Metric Ton

Origin (District)	Destination (Production)	1. Lautem	2. Baucau	3. Viqueque	4. Manatuto	5. Manufahi	6. Dili	7. Aileu	8. Ermera	9. Ainaro	10. Liquica	11. Bobonaro	12. Covalima	13. Ambeno
1. Lautem	873	873	-	-	-	-	-	-	-	-	-	-	-	-
2. Baucau	3,281	-	3,281	-	-	-	-	-	-	-	-	-	-	-
3. Viqueque	4,941	-	300	4,500	131	-	10	-	-	-	-	-	-	-
4. Manatuto	1,304	-	-	-	1,289	-	15	-	-	-	-	-	-	-
5. Manufahi	622	-	-	-	-	622	-	-	-	-	-	-	-	-
6. Dili	57	-	-	-	-	-	57	-	-	-	-	-	-	-
7. Aileu	475	-	-	-	-	-	-	475	-	-	-	-	-	-
8. Ermera	902	-	-	-	-	-	-	-	902	-	-	-	-	-
9. Ainaro	428	-	-	-	-	-	-	-	-	428	-	-	-	-
10. Liquica	133	-	-	-	-	-	-	-	-	-	133	-	-	-
11. Bobonaro	4,156	-	-	-	-	-	-	-	300	-	200	3,656	-	-
12. Covalima	1,407	-	-	-	-	-	-	-	-	-	-	-	1,407	-
13. Ambeno	1,468	-	-	-	-	-	-	-	-	-	-	-	-	1,468
Import	41,845	2,746	3,264	10	1,045	2,135	11,346	1,811	5,220	2,703	3,465	2,806	2,981	2,313
Stock brought	2,708	100	250	50	100	51	1,456	51	50	50	50	150	150	200
Total	64,600	3,719	7,095	4,560	2,565	2,808	12,884	2,337	6,472	3,181	3,848	6,612	4,538	3,981

Table K-12 Origin/Destination of Major Staple Food in East Timor (2)
1997

c. Cassava

Unit : Metric Ton

Origin (District)	Destination (Production)	1. Lautem	2. Baucau	3. Viqueque	4. Manatuto	5. Manufahi	6. Dili	7. Aileu	8. Ermera	9. Ainaro	10. Liquica	11. Bobonaro	12. Covalima	13. Ambeno
1. Lautem	2,224	2,098	126	-	-	-	-	-	-	-	-	-	-	-
2. Baucau	1,821	-	1,821	-	-	-	-	-	-	-	-	-	-	-
3. Viqueque	4,679	-	1,386	2,973	70	-	250	-	-	-	-	-	-	-
4. Manatuto	1,141	-	-	-	1,141	-	-	-	-	-	-	-	-	-
5. Manufahi	3,026	-	-	-	-	1,917	1,059	-	-	50	-	-	-	-
6. Dili	1,084	-	-	-	-	-	1,084	-	-	-	-	-	-	-
7. Aileu	2,562	-	-	-	-	-	665	1,597	300	-	-	-	-	-
8. Ermera	964	-	-	-	-	-	-	-	964	-	-	-	-	-
9. Ainaro	362	-	-	-	-	-	-	-	-	362	-	-	-	-
10. Liquica	2,098	-	-	-	-	-	30	-	-	-	2,068	-	-	-
11. Bobonaro	10,124	-	-	-	-	-	2,873	-	2,036	997	-	4,019	199	-
12. Covalima	2,227	-	-	-	-	-	-	-	-	-	-	-	2,227	-
13. Ambeno	1,619	-	-	-	-	-	-	-	-	-	-	-	-	1,619
Total	33,931	2,098	3,333	2,973	1,211	1,475	5,961	1,597	3,300	1,409	2,068	4,019	2,426	1,619

d. Sweet Potato

Unit : Metric Ton

Origin (District)	Destination (production)	1. Lautem	2. Baucau	3. Viqueque	4. Manatuto	5. Manufahi	6. Dili	7. Aileu	8. Ermera	9. Ainaro	10. Liquica	11. Bobonaro	12. Covalima	13. Ambeno
1. Lautem	810	750	60	-	-	-	-	-	-	-	-	-	-	-
2. Baucau	850	-	850	-	-	-	-	-	-	-	-	-	-	-
3. Viqueque	1,336	-	120	1,035	10	-	171	-	-	-	-	-	-	-
4. Manatuto	524	-	-	-	504	-	20	-	-	-	-	-	-	-
5. Manufahi	846	-	-	-	-	667	179	-	-	-	-	-	-	-
6. Dili	346	-	-	-	-	-	346	-	-	-	-	-	-	-
7. Aileu	677	-	-	-	-	-	91	556	30	-	-	-	-	-
8. Ermera	850	-	-	-	-	-	-	-	850	-	-	-	-	-
9. Ainaro	1,431	-	-	-	-	-	425	-	100	756	150	-	-	-
10. Liquica	366	-	-	-	-	-	-	-	-	-	366	-	-	-
11. Bobonaro	2,661	-	-	-	-	-	386	-	70	-	160	1,590	455	-
12. Covalima	339	-	-	-	-	-	-	-	-	-	-	-	339	-
13. Ambeno	751	-	-	-	-	-	-	-	-	-	-	-	-	751
Total	11,787	750	1,030	1,035	514	667	1,618	556	1,050	756	676	1,590	794	751

Table K.-12 Origin/Destination of Major Staple Food in East Timor (3)
1997

e. Total a. + b. + c. + d.

Origin (District)	Destination (Production)	Unit : Metric Ton												
		1. Lautem	2. Baucau	3. Viqueque	4. Manatuto	5. Manufahi	6. Dili	7. Aileu	8. Ermera	9. Ainaro	10. Liquica	11. Bobonaro	12. Covalima	13. Ambeno
1. Lautem	8,094	7,908	186	-	-	-	-	-	-	-	-	-	-	-
2. Baucau	13,447	-	13,447	-	-	-	-	-	-	-	-	-	-	-
3. Viqueque	18,087	-	1,806	14,406	699	-	1,176	-	-	-	-	-	-	-
4. Manatuto	5,170	-	-	-	5,135	-	35	-	-	-	-	-	-	-
5. Manufahi	7,090	-	-	-	-	5,802	1,238	-	-	50	-	-	-	-
6. Dili	2,497	-	-	-	-	-	2,497	-	-	-	-	-	-	-
7. Aileu	9,266	-	-	-	-	330	2,810	5,796	330	-	-	-	-	-
8. Ermera	6,017	-	-	-	-	-	-	-	6,017	-	-	-	-	-
9. Ainaro	4,487	-	-	-	-	-	425	-	100	3,812	150	-	-	-
10. Liquica	5,202	-	-	-	-	-	30	-	-	-	5,172	-	-	-
11. Bobonaro	32,531	-	-	-	-	-	7,281	-	3,406	1,497	1,360	18,333	654	-
12. Covalima	12,667	-	-	-	-	-	1,481	-	-	550	406	-	10,230	-
13. Ambeno	8,561	-	-	-	-	-	-	-	-	-	-	-	-	8,561
Import	41,845	2,746	3,264	10	1,045	2,135	11,346	1,811	5,220	2,703	3,465	2,806	2,981	2,313
Stock brought	2,708	100	250	50	100	51	1,456	51	50	50	50	150	150	200
Total	177,669	10,754	18,953	14,466	6,979	8,318	29,775	7,658	15,123	8,662	10,603	21,289	14,015	11,074

Source : JICA Study Team

Remarks : Population 881,600 In 1997

Available average annual consumption : maize 76.4kg/capita, rice 73.3kg/capita, cassava 38.5kg/capita and sweet potato 13.4kg/capita

Table K.-12 Origin/Destination of Major Staple Food in East Timor (4)
1997

(2) District Wise Consumable Volume of Major Staple Food Produced in East Timor

District	(A) Production	(B) Seed for Next Crop	(C) Balance (A) - (B)	(D) Feed	(E) Balance (C) - (D)	(F) Post-Harvest Loss	(G) Consumable Volume (E) - (F)
Unit : metric ton							
1. Lautem							
Maize	6,174	91	6,083	803	5,280	1,093	4,187
Rice	1,656	27	1,629	0	1,629	756	873
Cassava	2,712	0	2,712	54	2,658	434	2,224
Sweet Potato	1,033	0	1,033	21	1,012	202	810
Sub-Total	11,575	118	11,457	878	10,579	2,485	8,094
2. Baucau							
Maize	11,039	153	10,886	1,435	9,451	1,956	7,495
Rice	6,211	90	6,121	0	6,121	2,840	3,281
Cassava	2,220	0	2,220	44	2,176	355	1,821
Sweet Potato	1,084	0	1,084	22	1,062	212	850
Sub-Total	20,554	243	20,311	1,501	18,810	5,363	13,447
3. Viqueque							
Maize	10,493	137	10,356	1,364	8,992	1,861	7,131
Rice	9,369	150	9,219	0	9,219	4,278	4,941
Cassava	5,706	0	5,706	114	5,592	913	4,679
Sweet Potato	1,704	0	1,704	34	1,670	334	1,336
Sub-Total	27,272	287	26,985	1,512	25,473	7,386	18,087
4. Manatuto							
Maize	3,240	44	3,196	421	2,775	574	2,201
Rice	2,467	35	2,432	0	2,432	1,128	1,304
Cassava	1,392	0	1,392	28	1,364	223	1,141
Sweet Potato	668	0	668	13	655	131	524
Sub-Total	7,767	79	7,688	462	7,226	2,056	5,170
5. Manufahi							
Maize	3,816	46	3,770	496	3,274	678	2,596
Rice	1,178	18	1,160	0	1,160	538	622
Cassava	3,690	0	3,690	74	3,616	590	3,026
Sweet Potato	1,079	0	1,079	22	1,057	211	846
Sub-Total	9,763	64	9,699	592	9,107	2,017	7,090
6. Dili							
Maize	1,487	21	1,466	193	1,273	263	1,010
Rice	108	2	106	0	106	49	57
Cassava	1,322	0	1,322	26	1,296	212	1,084
Sweet Potato	442	0	442	9	433	87	346
Sub-Total	3,359	23	3,336	228	3,108	611	2,497
7. Aileu							
Maize	8,167	104	8,063	1,062	7,001	1,449	5,552
Rice	900	13	887	0	887	412	475
Cassava	3,125	0	3,125	63	3,062	500	2,562
Sweet Potato	863	0	863	17	846	169	677
Sub-Total	13,055	117	12,938	1,142	11,796	2,530	9,266
8. Ermera							
Maize	4,844	67	4,777	617	4,160	859	3,301
Rice	1,708	26	1,682	0	1,682	780	902
Cassava	1,176	0	1,176	24	1,152	188	964
Sweet potato	1,084	0	1,084	22	1,062	212	850
Sub-Total	8,812	93	8,719	663	8,056	2,039	6,017
9. Ainaro							
Maize	3,339	48	3,291	434	2,857	591	2,266
Rice	811	13	798	0	798	370	428
Cassava	442	0	442	9	433	71	362
Sweet Potato	1,826	0	1,826	37	1,789	358	1,431
Sub-Total	6,418	61	6,357	480	5,877	1,390	4,487
10. Liquica							
Maize	3,860	73	3,787	502	3,285	680	2,605
Rice	253	5	248	0	248	115	133
Cassava	2,558	0	2,558	51	2,507	409	2,098
Sweet Potato	467	0	467	9	458	92	366
Sub-Total	7,138	78	7,060	562	6,498	1,296	5,202

Table K.-12 Origin/Destination of Major Staple Food in East Timor (5)
1997

(2) District Wise Consumable Volume of Major Staple Food Produced in East Timor

District	(A) Production	(B) Seed for Next Crop	(C) Balance (A) - (B)	(D) Feed	(E) Balance (C) - (D)	(F) Post-Harvest Loss	Unit : metric ton	(G) Consumable Volume (E) - (F)
11. Bobonaro								
Maize	22,944	301	22,643	2,983	19,660	4,070		15,590
Rice	7,860	107	7,753	0	7,753	3,597		4,156
Cassava	12,346	0	12,346	247	12,099	1,975		10,124
Sweet Potato	3,394	0	3,394	68	3,326	665		2,661
Sub-Total	46,544	408	46,136	3,298	42,838	10,307		32,531
12. Covalima								
Maize	12,824	193	12,631	1,667	10,964	2,270		8,694
Rice	2,661	36	2,625	0	2,625	1,218		1,407
Cassava	2,716	0	2,716	54	2,662	435		2,227
Sweet Potato	433	0	433	9	424	85		339
Sub-Total	18,634	229	18,405	1,730	16,675	4,008		12,667
13. Ambeno								
Maize	6,977	114	6,863	907	5,956	1,233		4,723
Rice	2,786	47	2,739	0	2,739	1,271		1,468
Cassava	1,974	0	1,974	39	1,935	316		1,619
Sweet Potato	958	0	958	19	939	188		751
Sub-Total	12,695	161	12,534	965	11,569	3,008		8,561
East Timor								
Maize	99,204	1,392	97,812	12,884	84,928	17,577		67,351
Rice	37,968	569	37,399	0	37,399	17,352		20,047
Cassava	41,379	0	41,379	827	40,552	6,621		33,931
Sweet Potato	15,035	0	15,035	302	14,733	2,946		11,787
Total	193,586	1,961	191,625	14,013	177,612	44,496		133,116

Source : JICA Study Team, November 2001

Remarks : (A) Production : Agricultural Statistics 2000, Ministry of Agriculture, Republic of Indonesia

(B) Seed for Next Crop : Maize = 26kg/ha (20kg/ha + 30% seed storage loss)

Rice = average 40kg/ha including direct seeding

(D) Feed for Animals : Maize = production x 13%, Cassava = production x 2% and Sweet Potato = production x 2%

(F) Post-Harvest Loss : Maize = (E) x 20%, Rice = (E) x 46.4%, Cassava = (E) x 20% and Sweet Potato = (E) x 20%

Table K.-12 Origin/Destination of Major Staple Food in East Timor (6)
1997

(3) District Wise Crop Production in 1997

a. Maize, Cassava and Sweet Potato

District	Maize			Cassava			Sweet Potato		
	Area (ha)	Production (mt)	Yield (mt/ha)	Area (ha)	Production (mt)	Yield (mt/ha)	Area (ha)	Production (mt)	Yield (mt/ha)
1. Lautem	4,106	7,689	1.87	1,250	5,590	4.47	288	1,213	4.21
	3,495	6,174	1.77	629	2,712	4.31	260	1,033	3.97
2. Baucau	6,900	13,747	1.99	1,017	4,576	4.50	333	1,272	3.82
	5,873	11,039	1.88	512	2,220	4.34	301	1,084	3.60
3. Viqueque	6,177	13,067	2.12	2,933	11,760	4.01	473	2,000	4.23
	5,257	10,493	2.00	1,475	5,706	3.87	427	1,704	3.99
4. Manatuto	1,967.96	4,034.32	2.05	677	2,869	4.24	167	784	4.69
	1,675	3,240	1.93	341	1,392	4.08	151	668	4.42
5. Manufahi	2,062	4,752	2.30	1,918	7,606	3.97	330	1,266	3.84
	1,754	3,816	2.18	965	3,690	3.82	298	1,079	3.62
6. Dili	937	1,852	1.98	701	2,724	3.89	123	519	4.22
	797	1,487	1.87	353	1,322	3.75	111	442	3.98
7. Aileu	4,677	10,170	2.17	1,533	6,441	4.20	287	1,013	3.53
	3,981	8,167	2.05	771	3,125	4.05	259	863	3.33
8. Ermera	3,019	6,033	2.00	570	2,423	4.25	296	1,272	4.30
	2,569	4,844	1.89	287	1,176	4.10	267	1,084	4.06
9. Ainaro	2,161	4,157	1.92	257	910	3.54	530	2,143	4.04
	1,839	3,339	1.82	129	442	3.43	478	1,826	3.82
10. Liquica	3,314.41	4,805.89	1.45	1,240	5,273	4.25	134	548	4.09
	2,821	3,860	1.37	624	2,558	4.10	121	467	3.86
11. Bobonaro	13,582	28,571	2.10	6,097	25,445	4.17	894	3,984	4.46
	11,560	22,944	1.98	3,067	12,346	4.03	807	3,394	4.21
12. Covalima	8,744	15,969	1.83	1,323	5,600	4.23	122	508	4.16
	7,442	12,824	1.72	665	2,716	4.08	110	433	3.94
13. Ambeno	5,130	8,687	1.69	999	4,070	4.07	294	1,126	3.83
	4,366	6,977	1.6	501	1,974	3.94	265	958	3.62
Total	62,777	123,534.21	1.97	20,515	85,287	4.16	4,271	17,648	4.13
(B)/(A)	53,429	99,204	1.86	10,319	41,379	4.01	3,855	15,035	3.90
(B)/(A)	0.8511	0.8030		0.5030	0.4852		0.9026	0.8519	

Source : Balck color/upper column ; East Timor in Figures 1997, in cooperation with Regional Development Planning Board of East Timor Province and Central Board of Statistics of East Timor Province
Red color/lower column : Agricultural Statistics 2000, Ministry of Agriculture, Republic of Indonesia

Table K.-12 Origin/Destination of Mahor Staple Food in East Timor (7)
1997

(3) District Wise Crop Production in 1997

b. Rice

District	Lowland Paddy			Dryland Paddy			Total		
	Area (ha)	Production (mt)	Yield (mt/ha)	Area (ha)	Production (mt)	Yield (mt/ha)	Area (ha)	Production (mt)	Yield (mt/ha)
1. Lautem	938	2,980	3.18	107	160	1.50	1,045	3,140	3.00
	622	1,551	2.50	64	105	1.64	686	1,656	2.41
2. Baucau	3,398	11,937	3.51	0	0	0	3,398	11,937	3.61
	2,254	6,211	2.76	0	0	0	2,254	6,211	2.76
3. Viqueque	3,888	13,885	3.57	1,959	3,267	1.67	5,847	17,152	2.93
	2,579	7,224	2.80	1,168	2,145	1.84	3,747	9,369	2.5
4. Manatuto	1,003	4,305	4.29	346	346	1.58	1,344	4,651	3.46
	665	2,240	3.37	206	227	1.1	871	2,467	2.83
5. Manufahi	588	2,094	3.56	94	134	1.43	682	2,228	3.27
	390	1,090	2.80	56	88	1.57	446	1,178	2.64
6. Dili	71	207	2.92	0	0	0	71	207	2.92
	47	108	2.30	0	0	0	47	108	2.30
7. Aileu	481	1,729	3.59	0	0	0	481	1,729	3.59
	319	900	2.82	0	0	0	319	900	2.82
8. Ermera	967	3,257	3.37	11	18	1.64	978	3,275	3.35
	641	1,696	2.65	7	12	1.71	648	1,708	2.64
9. Ainaro	481	1,559	3.24	0	0	0	481	1,559	3.24
	319	811	2.54	0	0	0	319	811	2.54
10. Liquica	162	466	2.88	11	15	1.36	173	481	2.78
	108	243	2.25	7	10	1.43	115	253	2.20
11. Bobonaro	3,873	14,762	3.81	171	273	1.60	4,044	15,035	3.72
	2,569	7,681	2.99	101	179	1.77	2,670	7,860	2.94
12. Covalima	1,308	4,992	3.82	72	97	1.35	1,380	5,089	3.69
	867	2,597	3.00	43	64	1.49	910	2,661	2.92
13. Ambino	1,537	4,971	3.23	245	305	1.24	1,782	5,276	2.96
	1,020	2,586	2.54	146	200	1.37	1,166	2,786	2.39
Total	18,695 (A)	67,144(A)	3.59(A)	3,016(A)	4,615(A)	1.53(A)	21,711(A)	71,759(A)	3.31(A)
(B)/(A)	12,400(B)	34,938(B)	2.82(B)	1,798(B)	3,030(B)	1.63(B)	14,198(B)	37,968(B)	2.67(B)
	0.6633	0.5203		0.5962	0.6566				

Source : Black color/upper column : East Timor in Figures 1997, in cooperation with Regional Development Planr Board of East Timor Province and Central Board of Statistics of East Timor Province
Red color/lower column : Agricultural Statistics 2000, Ministry of Agriculture, Republic of Indonesia

Table K.-13 Information on Marketing Activities of Agricultural Produce in West Timor (1)

1. Rice Provide and Distribution by Dolog in East Timor during Indonesian Time (1990 - 1997)

Unit: metric ton

Yaer	Beginning Stock	Input			Output	Decrease	Ending Stock
		National Inter-insular	Provided In East Timor	Total			
1990	9,131	15,169	912	16,081	16,204	15	8,993
1991	8,993	16,357	713	17,070	18,396	13	7,654
1992	7,654	20,559	1,237	21,796	20,995	13	8,442
1993	8,442	13,234	1,027	14,261	19,654	14	3,035
1994	3,035	24,144	1,432	25,576	26,481	21	2,109
1995	2,109	27,934	817	28,751	26,241	208	4,411
1996	4,411	24,986	1,362	26,348	21,187	967	8,599
1997	8,599	36,799	905	37,704	40,392	0	5,891

Source : DOLOG Propinal Timor Timur

Remarks : rice bruto mill produce ax hull provide

2. Distribution of Rice by Dolog in East Timor during Indonesian Time (1990 - 1997)

Unit: metric ton

Year	Armed Force	Vertical Worker	Otonom Worker	Others	Total
1990	8,952	1,982	4,558	647	16,139
1991	9,382	2,249	4,430	2,335	18,396
1992	10,094	3,098	4,613	3,190	20,995
1993	10,651	3,382	4,688	933	19,654
1994	10,022	3,973	4,784	7,532	26,311
1995	9,330	4,200	5,180	7,422	26,132
1996	10,053	4,428	5,186	1,520	21,187
1997	10,846	3,850	6,430	19,257	40,392

Source : DOLOG Propinal Timor Timur

Remarks : rice bruto mill produce ax hull provide

Table K.-13 Information on Marketing Activities of Agricultural Produce in East Timor (2)

3. Beginning Stock, Input, Distribution, Decrease and Ending Stock of Dolog Rice in East Timor (1997)

Unit: metric ton

Month	Beginning stock	Input		Distribution	Decrease	Ending Stock
		Move-In	ADA-DN			
January	8,599	389	101	2,620	0	6,469
February	6,469	1,214	325	2,104	0	5,904
March	5,904	5,750	18	2,168	0	9,504
April	9,504	1,015	17	3,835	0	6,701
May	6,701	7,385	21	3,040	0	11,067
June	11,067	1,927	110	3,672	0	9,432
July	9,432	1,411	85	2,918	0	8,013
August	8,013	5,034	145	2,624	0	10,568
September	10,568	3,871	29	3,552	0	10,916
October	10,916	1,803	0	4,006	0	6,714
November	6,714	2,533	0	5,245	0	6,002
December	6,002	4,447	51	4,609	0	5,891
Total	8,599	36,779	905	40,392	0	5,891

Source : Depolog of East Timor Province

Remarks : Rice bruto mill produce ex hull provide by Depolog of East Timor

4. Distribution Rice Reallocation of Depolog in East Timor (1997)

Unit: metric ton

Month	Armed Forces				Otonom Worker	Central
	Army	Air Force	Navy	Police		
January	1,110	4	0	268	442	283
February	444	0	12	0	435	300
March	425	0	0	77	434	354
April	1,145	0	0	185	540	320
May	741	6	11	181	614	319
June	882	0	0	84	574	319
July	494	0	0	266	551	327
August	932	9	13	31	571	323
September	730	1	0	83	566	322
October	722	5	0	282	569	328
November	786	0	11	47	578	326
December	770	1	0	88	565	329
Total	9,181	26	47	1,592	6,439	3,850

Source : Depolog of East Timor Province

Remarks : Rice bruto mill produce ex hull provide by Depolog of East Timor

Table K.-13 Information on Marketing Activities of Agricultural Produce in East Timor (3)

5. Distribution Rice Realisation of Depolog in East Timor (1997)

Unit: metric ton

Month	Vertical Workers				Market Operation	Others	Total
	Social Department	BTW	Transmigration	Indonesian Red Cross			
January	7	0	58	1	125	322	2,620
February	15	10	107	0	122	659	2,104
March	13	0	187	1	118	559	2,168
April	7	16	83	0	136	1,403	3,835
May	8	4	75	0	324	757	3,040
June	8	9	65	0	95	1,636	3,672
July	9	6	183	0	40	1,042	2,918
August	2	11	0	0	23	709	2,624
September	11	2	67	0	661	1,109	3,552
October	8	6	56	1	1,290	738	4,005
November	18	4	77	0	2,190	1,208	5,245
December	18	15	87	0	2,021	715	4,609
Total	124	83	1,045	3	7,145	10,857	40,392

Source : Depolog of East Timor Province

Remarks : BTW = Bina Tuna Warga/Member Class of Defect

6. District Wise Number of Markets in East Timor (1997)

District	Market			Sampal Market	Portigal Market	Total
	Level I	Level II	Level III			
1. Lautem	-	-	1	2	1	4
2. Baucau	-	-	2	3	1	6
3. Viqueque	-	-	1	1	1	3
4. Manatuto	-	1	3	2	1	7
5. Manufahi	-	-	2	2	-	4
6. Dili	1	-	2	4	1	8
7. Aileu	-	1	-	1	-	2
8. Ermera	-	1	2	2	1	6
9. Ainaro	-	1	2	2	-	5
10. Liquica	-	1	1	2	-	4
11. Bobonaro	-	1	3	3	-	7
12. Covalima	-	1	4	1	-	6
13. Ambeno	-	1	4	2	-	7
Total	1	8	27	27	6	69

Source : Statistik Indonesia 1998

Table K.-13 Information on Marketing Activities of Agricultural Produce in East Timor (4)

7. District Wise Marketing Access in East Timor (1997)

District	Total no. of mid/small merchants	Market access roads in poor/very poor condition (%)
1. Lautem	215	24.12
2. Baucau	375	66.97
3. Viqueque	167	31.00
4. Manatuto	137	6.83
5. Manufahi	192	32.45
6. Dili	2,054	21.76
7. Aileu	53	45.00
8. Ermera	245	30.19
9. Ainaro	111	81.94
10. Liquica	127	75.14
11. Bobonaro	319	52.68
12. Covalima	179	63.29
13. Ambeno	220	59.20
Total	4,394	45.43

Source : Statistik Indonesia 1998

8. Retail Price of Rice in Open Markets in Several Cities

Unit: Rp./kg - milled rice

City	1995	1996	1997	1998
<i>Dili</i>	<i>1,001.88</i>	<i>1,295.42</i>	<i>1,395.21</i>	<i>2,840.03</i>
Banda Aceh	781.25	801.67	955.31	1,844.38
Medan	875.84	917.92	1,099.09	2,090.49
Padang	1,157.89	1,234.56	1,333.57	2,590.84
Pakanbaru	1,204.81	1,187.50	1,347.60	2,714.24
Jambi	859.79	895.83	1,070.54	2,312.06
Palemban	828.25	892.46	963.81	1,935.65
Bandar Lampung	786.04	834.38	995.24	2,040.14
Bengkulu	1,026.41	949.28	1,105.40	2,055.48
Jakarta	1,087.34	1,185.42	1,284.76	2,551.82
Bandung	924.48	1,008.12	1,110.58	2,320.28
Semarang	825.86	839.88	981.11	2,201.69
Yogyakarta	909.60	908.21	1,048.30	2,190.56
Surabaya	834.92	895.08	950.08	2,116.70
Denpasar	859.38	883.33	998.54	2,073.44
Mataram	810.81	824.00	913.05	1,802.33
Kupang	1,185.42	1,254.17	1,361.46	2,804.21
Pontianak	809.24	882.26	978.08	2,199.68
Palangkaraya	1,233.26	1,217.72	1,258.33	2,871.86
Banjarmasin	741.16	870.05	959.25	2,309.47
Samarinda	1,083.12	1,164.83	1,227.35	2,717.67
Manado	859.38	898.17	983.74	1,938.44
Palu	788.81	825.98	912.36	1,946.25
Ujung Pandang	770.54	778.24	841.42	1,591.35
Kendari	816.67	859.38	1,045.76	2,080.14
Ambon	984.38	937.50	1,093.75	2,113.52
Jayapura	1,228.96	1,303.20	1,358.68	2,480.14

Source : Stasyik Indonesia 1998

Remarks : Prices are derived from weekly reports

Table K-13 Information on Marketing Activities of Agricultural Produce in East Timor (5)

9. Cooperative Development In East Timor (1997)

Cooperation			Members (Person)	Effor Volume ('000 Rp.)	Saving ('000 Rp.)	Total ('000 Rp.)
KUD	Non KUD	Total				
79	293	361	94,393	38,193,004	5,094,494	2,713,567

Source : Region Office of Cooperative Representative of East Timor Province

Remarks : Non KUD = Government Employee Cooperation, Armed Force Cooperation, Employee Cooperation, Women Cooperation, Multipurpose Cooperation, School Cooperation, Veteran Deformity Cooperation, Market Cooperation and another cooperation

10. Total Cooperative Manager and Employee In East Timor (1997)

District	KUD			Non KUD			Total	No. of KUD
	Manager	Employee	Total	Manager	Employee	Total		
1. Covalima	10	46	56	9	48	57	113	10
2. Ainaro	4	19	23	4	15	19	42	4
3. Manufahi	8	22	30	7	18	25	55	8
4. Viqueque	5	11	16	5	5	10	26	5
5. Lautem	5	22	27	6	3	9	34	5
6. Baucau	6	18	24	4	25	29	53	6
7. Manatuto	8	18	26	4	4	8	34	8
8. Dili	3	13	16	17	90	107	123	3
9. Aileu	4	16	20	10	19	29	49	4
10. Liquica	4	21	25	7	4	11	36	4
11. Ermera	4	21	25	7	4	11	36	5
12. Bobonaro	7	25	32	11	7	18	50	7
13. Ambeno	4	16	20	4	23	27	47	4
Total	73	275	348	94	269	363	711	73

Source : Region Office of Cooperative Representative of East Timor Province

Remarks : KUD = Koperasi Unit Desa/Village Unit Cooperative

11. Number of Transportation Facilities
in East Timor (1996)

Type of Vehicle	General	Private	Total
1. Motorcycle	10,464	4,577	15,041
2. Passenger Car			
a. Jeep	717	698	1,415
b. Station	338	148	486
c. Sedan	671	87	758
3. Bus			
a. Midi Bus	226	60	286
b. Mini Bus	750	127	877
4. Truck Wagon			
a. Truck	797	392	1,189
b. Mini Truck	0	0	0
c. Pickup	1,252	625	1,877
d. Tangki	8	25	33
e. Ambulance	5	85	90
f. Tractor	5	12	17
Total	15,223	6,739	21,962

Source : SAMSAT of East Timor Province

Table K.-13 Information on Marketing Activities of Agricultural Produce in East Timor (6)

12. Inter Insular of Good at Dili Port (1997)

A. Goods unloaded

Commodity	Unit	Amount
1. Rice	ton	45,729
2. Sugar	ton	2,764
3. Zinc	ton	1,589
4. Palm/Cooking Oil	ton	1,239
	cub.m.	3,936
5. Salt	ton	1,186
6. Wash Soap	cub.m.	2,238
7. Cement	ton	44,818
8. Heavy Equipment	ton	74
9. Flour	ton	2,920
10. Convection	q.m.	6,280
11. Concrete Iron	ton	5,051
12. Container	ton	288
13. Wire	ton	789
	cub.m.	20
14. Fuel	ton	67,213
15. Rice Flour	ton	163
16. Pipe	ton	2,552
17. Saw Wood	cub.m.	341
18. Vehicle	cub.m.	17,833
19. Pole	ton	694
20. Livestock Food	ton	3,243
21. Electric Pilar	ton	1,048
22. Plated Iron	ton	200
23. Ceramics	ton	1,652
24. Maize	ton	197
25. PVC Pope	cub.m.	218
26. Asbestos	ton	273
27. Various Goods	ton	30,017
	cub.m.	32,044
28. Bridge Frame	ton	1,450
29. Wire Mash	ton	789
	cub.m.	20
Total	ton	215,920
	cub.m.	62,930

B. Goods loaded

Commodity	Unit	Amount
1. Coffee	ton	1,795
2. Cow Lether	cub.m.	66
3. Candle Nut	ton	59
4. Marble	ton	70
5. Copra	ton	1,131
6. Scrap Iron	ton	103
7. Container	ton	137
8. Various Goods	ton	2,999
	cub.m.	1,910
Total	ton	6,294
	cub.m.	1,976

Source : Central Board of Statistics of East Timor Province

Table K.-14 Crop Calendar and Farm Labor required in East Timor (1)

1. Planting and Harvest Season

Unit : %

Crop	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.
1. Rice	7.4	1.5	0.7	0.7	0.7	2.9	5.9	13.2	20.6	19.1	16.2	11.0
		*****	*****	*****			xxxxxxx	xxxxxxx	xxxxxxx	xxxxxxx		
2. Maize	0.5	0.5	0.0	1.0	27.2	60.3	20.9	3.7	0.5	0.5	1.0	1.0
		*****	*****					xxxxxxx	xxxxxxx	xxxxxxx	xxxxxxx	
3. Cassava	5.5	4.8	11.6	1.4	20.5	15.1	4.1	4.8	6.2	8.9	10.3	6.8
		*****	*****	*****	*****							
4. Sweet Potato	0.0	5.0	25.0	0.0	35.0	15.0	5.0	5.0	5.0	5.0	0.0	0.0
		*****	*****	*****								
5. Vegetables	4.8	4.8	9.5	0.0	23.8	14.3	9.5	4.8	4.8	4.8	9.5	9.5
6. Coffee	2.2	0.0	0.0	0.0	0.0	0.0	1.1	14.4	23.3	26.7	21.1	11.1
7. Fruits	4.7	7.0	14.0	4.7	20.9	16.3	7.0	7.0	4.7	4.7	4.7	4.7

Source : Suco Survey and DAA "Strategy for Irrigation & Water Management In East Timor" June 8, 2000

Remarks : % = harvest, ***** = main crop planting, xxxxxxx = off-season crop planting

2. Double Rice Cropping in Bobonaro District

	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.
1. 1st Crop												
Nursery		*****	*****									
Transplant			*****	*****								
Harvest							*****	*****				
2. 2nd Crop												
Nursery							*****	*****				
Transplant								*****	*****			
Harvest	*****	*****							*****			

Source : PASC In Bobonaro

Table K.-14 Crop Calendar and Farm Labor required in East Timor (2)

3. Farm Labor required for 1.0 ha Rice Cultivation

Farming Work	Unit : man-day					Remarks
	1 (3,000kg)	2 (3,376kg)	3 (3,750kg)	4 (4,125kg)	5 (4,500kg)	
1. Land preparation						
1.1 Dike maintenance	5	157.5	5	5	5	hand tools
1.2 Plowing and harrowing	10	10	10	10	10	by "Rencah"
2. Seedling preparation	5	5	5	5	5	manual
3. Planting	25	25	25	25	25	manual
4. Field maintenance						
4.1 Weeding	25	25	25	25	25	manual
4.2 Chemical application	10	12	14	16	18	sprayer
5. Fertilization	5	6	7	8	9	manual
6. Irrigation						
6.1 Irrigation	10	10	10	10	10	hand tools
6.2 Canal maintenance	10	10	10	10	10	hand tools
7. Harvesting						
7.1 Harvesting	40	44	48	52	56	hand tools
7.2 Threshing	3.0	3.3	3.6	3.9	4.2	thresher
8. Transportation (field to home)	2.0	2.2	2.4	2.6	2.8	push cart
Total	150.0	157.5	165.0	172.5	180.0	

Source : PASC in Bobonaro and JICA Study Team

4. Human Labor Use on Paddy Cultivation in South-East Asia

Country	Labor Use /ha (hours)	% Share of			Remarks
		Hired	Family	Total	
Indonesia					
- Wetland	595	61.3	38.7	100.0	
- Dryland	182	21.7	78.3	100.0	
Malaysia					
- Main	126	-	100.0	100.0	
- Offseason	126	-	100.0	100.0	
Philippines					
- Irrigated	476	66.8	33.2	100.0	
- Unirrigated	420	50.9	49.1	100.0	
Thailand					
- Main	231	32.6	67.4	100.0	
- Second	189	32.4	67.6	100.0	
Vietnam					
- Spring	1,806	58.8	41.2	100.0	
- Winter	1,687	60.5	39.5	100.0	
Japan	242.5	-	100.0	100.0	

Source : Unpublished Report of FAO RAP, Bangkok and Farm Mechanization System In Chiba Pref.

Table K-15 Estimate of Farming Labor Force in East Timor (1997)

District	Population					Not Economically Active				Economically Active Other Than in Agriculture			
	Population			Percentage		(2) Less than 15 Years Old	(3) Over 60 Years Old	(4) Students	(5) Total (3)+(4)+(5)	(6) Public Services	(7) Teachers	(8) Fishery	(9) In 2nd & 3rd Industry
	(1) Total	Male	Female	Male	Female								
1. Lautem	51,900	26,100	25,800	50.3	49.7	21,610	1,725	2,312	25,647	1,979	210	788	1,768
2. Baucau	96,800	48,200	48,600	49.8	50.2	40,284	3,216	4,310	47,810	3,689	391	735	3,783
3. Viqueque	59,400	28,500	30,900	48.0	52.0	24,728	1,974	2,646	29,348	2,264	240	525	2,053
4. Manatuto	35,200	17,600	17,600	50.0	50.0	14,637	1,169	1,566	17,372	1,340	140	630	2,719
5. Manufahi	38,300	19,100	19,200	49.9	50.1	15,923	1,271	1,704	18,898	1,458	154	420	2,069
6. Dili	174,200	93,400	80,800	53.6	46.4	72,497	5,788	7,757	86,042	6,639	924	210	14,229
7. Aileu	31,900	16,300	15,600	51.1	48.9	13,281	1,060	1,421	15,762	1,216	129	0	1,523
8. Ermera	88,300	44,700	43,600	50.6	49.4	36,762	2,935	3,934	43,631	3,367	357	0	3,165
9. Ainaro	43,400	21,300	22,100	49.1	50.9	18,051	1,441	1,931	21,423	1,653	175	368	1,316
10. Liquica	52,500	27,100	25,400	51.6	48.4	21,866	1,746	2,340	25,952	2,002	212	578	2,343
11. Bobonaro	91,300	45,400	45,900	49.7	50.3	38,009	3,035	4,066	45,110	3,481	369	315	6,088
12. Covalima	63,000	31,300	31,700	49.7	50.3	26,233	2,094	2,806	31,133	2,403	254	419	5,868
13. Ambeno	55,400	28,000	27,400	50.5	49.5	23,041	1,839	2,464	27,344	2,111	224	262	6,711
Total	881,600	447,000	434,600	50.7	49.3	366,922	29,293	39,257	435,472	33,602	3,779	5,250	53,635

District	(10) Total		(11) Prisoners & Accused Persons	(12) Not Economically Active & Economically Active Other Than in Agriculture (5)+(10)+(11)	(13) Farming Labor		(15) Planting Area (ha)	(16) Covering Area/Person (15)/(13)	(17) Land Preparation (15)/(14) (ha/person)
	(6)+(7)+(8)+(9)	Total (1) - (12)			(14) Male				
1. Lautem	4,745	21,481	27	30,419	10,803	4,181	0.19	0.39	
2. Baucau	8,598	40,342	50	56,458	20,088	8,127	0.20	0.40	
3. Viqueque	5,082	24,939	31	34,461	11,966	9,004	0.36	0.75	
4. Manatuto	4,829	12,981	18	22,219	6,491	2,546	0.20	0.41	
5. Manufahi	4,101	15,281	20	23,019	7,621	2,200	0.14	0.29	
6. Dili	22,002	66,066	90	108,134	35,422	844	0.01	0.02	
7. Aileu	2,868	13,254	16	18,646	6,772	4,300	0.32	0.63	
8. Ermera	6,889	37,734	46	50,566	19,102	3,217	0.09	0.17	
9. Ainaro	3,512	18,443	22	24,957	9,052	2,158	0.12	0.24	
10. Liquica	5,135	21,386	27	31,114	11,039	2,936	0.14	0.27	
11. Bobonaro	10,253	35,890	47	55,410	17,847	14,230	0.40	0.80	
12. Covalima	8,944	22,890	33	40,110	11,372	8,352	0.36	0.73	
13. Ambeno	9,308	18,720	28	36,680	9,461	5,532	0.30	0.58	
Total	96,266	349,407	455	532,193	177,036	67,627	0.19	0.38	

Source : (1), (2) & (3) = East Timor In Figure 1997, Central Board of Statistics of East Timor Province, (4) & (7) = East Timor in Figure 1997

(6) = State Personnel Administration Committee, (8) = Estimate by JICA Study Team, (9) = The Department of Industry Office East Timor Province

(11) = East Timor in Figure 1997 (15) = Rice and Maize Planting Area

Table K.-16 Production Cost and Returns from Major Crops In East Timor (1)

1. Typical value of farm input and labor per hectare of rice cultivation

Exchange rate : Rp.11,200 = US\$

Farm Input & Labor	Quantity required	Unit Price		Amount US\$	Remarks
		Rp.	US\$		
1. Seed	40kg	3,500/kg	0.31	12.50	
2. Chemical fertilizer					
2.1 Urea-46% (nursery)	30kg	2,000/kg	0.18	5.36	changeable
2.2 Urea-46% (field)	100kg	2,000/lg	0.18	17.86	changeable
2.3 Triple super phosphate	50kg	4,000/kg	0.36	17.86	changeable
2.4 Potassium	50kg	3,000/lg	0.27	13.39	changeable
3. Insecticide	2 lit	100,000/lit	8.93	17.86	changeable
4. Rodenticide	25kg	10,000/kg	0.89	0.89	changeable
5. Hand tools	1 set	10,000/set	0.89	0.89	
6. Sprayer	1 unit	20,000/unit	1.79	1.79	
7. Bag (50kg)	40 bags	2,000/bag	0.18	7.14	wooven polyethylene
Total	-	-	-	116.96	
1. Lan preparation					
1.1 Dike maintenance	5 man-day	15,000	1.34	6.70	
1.2 Plowing	1 contract	300,000	26.79	26.79	
1.3 Harrowing	1 contract	300,000	26.79	26.79	
2. Seedling preparation	5 man-day	15,000	1.34	6.70	
3. Planting	25 man-day	15,000	1.34	33.48	
4. Weeding	25 man-day	15,000	1.34	33.48	
5. Chemical application	10 man-day	15,000	1.34	13.39	
6. Fertilizer application	5 man-day	15,000	1.34	6.70	
7. Irrigation	10 man-day	15,000	1.34	13.39	
8. Canal maintenance	10 man-day	15,000	1.34	13.39	
9. Harvesting	40 man-day	15,000	1.34	53.57	
10. Threshing	1 contract	280,000	25.00	25.00	
11. Transport	40 bags	11,000	0.98	39.29	
Total	-	-	-	298.66	

Source : PASC in Bobonaro District, February 2001

Reference : transport cost (Maliana to Dili, 150hm) = loading bags US\$0.15/bag + transport US\$1.49/bag/50kg (60 bags/truck) = total cost US\$1.64/bag/50kg/white rice or US\$0.03/kg

2. Revenue of major crops per hectare

Description	Paddy	Maize	Cassava	Sweet Potato
(1) Yield/ha (kg)	4,132	2,150	9,633	9,393
(2) Value (Rp.)	1,736,571	809,827	1,891,259	2,113,426
(3) Total cost (Rp.)	446,402	52,666	68,240	159,952
- Seed (kg)	39.32	25.93	-	-
Seed value (Rp.)	27,550	14,143	10,918	58,431
- Solid pesticide (kg)	0.49	-	-	-
Solid value (Rp.)	4,873	-	-	-
- Liquid pesticide (lit)	0.52	-	-	-
Liquid value (Rp.)	3,027	-	-	-
- Chemicals (kg)	229.89	8.22	0.96	-
Chemicals value (Rp.)	81,198	2,985	481	-
- Manure (Rp.)	79	-	-	-
- Wage/salary	204,396	14,073	23,360	22,961
- Others	125,284	21,465	33,481	78,560
(4) Revenue (2) - (3)	1,290,169	756,161	1,823,019	1,953,474

Source : Bali Nusa Tenggara - 1996

Table K.-16 Production Cost and Returns from Major Crops In East Timor (2)

3. Paddy and maize production cost per hectare

Item	Paddy						Maize		
	Scenario 1			Scenario 2			Q'ty	Unit Price (US\$)	Value (US\$)
	Q'ty	Unit Price (US\$)	Value (US\$)	Q'ty	Unit Price (US\$)	Value (US\$)			
1. Inputs	-	-	-	-	-	-	-	-	-
- Seed (kg)	35	0.35	12.25	35	0.40	14.00	40	0.28	11.20
- Fertilizer (kg)	-	-	-	-	-	-	-	-	-
* Manure	-	-	-	-	-	-	-	-	-
* Urea	-	-	-	100	0.12	12.00	-	-	-
* TSP	-	-	-	75	0.24	18.00	-	-	-
* KCl	-	-	-	60	0.24	14.40	-	-	-
- Chemicals	-	-	-	2	1.90	3.80	-	-	-
Sub-Total	-	-	12.25	-	-	62.20	-	-	11.20
2. Labor	-	-	-	-	-	-	-	-	-
- Nursery	4(F)	own	-	4(F)	own	-	-	-	-
- Land preparation	-	-	-	-	-	-	-	-	-
* Human labor	2(M)	own	-	2(M)	own	-	9(M)+9(F)	own	-
* Animal/machine	-	-	70.60	-	-	70.60	-	-	-
- Transplanting/sowing	20(F)	own	-	25(F)	own	-	2(F)	own	-
- Fertilizer application	-	-	-	2(M)	own	-	-	-	-
- Weeding	15(F)	own	-	18(F)	own	-	8(F)+8(M)	own	-
- Pesticide application	-	-	-	4(M)	own	-	-	-	-
- Harvesting	15(M)	2.00	30.00	20(M)	2.00	40.00	6(F)+6(M)	own	-
(15(F))	2.00	30.00	20(F)	2.00	40.00	-	-	-	
- Threshing/post-harves	16(M)	2.00	32.00	20(M)	2.00	40.00	8(F)	own	-
Sub-Total	-	-	174.85	-	-	190.60	-	-	0.00
3. Imputed value	-	-	-	-	-	-	-	-	-
- Own labor	41	2.00	82.00	55	2.00	110.00	48	2.00	96.00
- Own land	-	-	42.00	-	-	73.50	-	-	25.60
Sub-Total	-	-	124.00	-	-	183.50	-	-	121.60
Total cost (1.+2.+3.)	-	-	298.85	-	-	436.30	-	-	132.80
1. Yield (ton/ha)	-	-	2.00	-	-	3.50	-	-	1.60
2. Gross Income	-	210.00	420.00	-	210.00	735.00	-	160.00	256.00
3. Cultivation cost	-	-	-	-	-	-	-	-	-
- Paid out cost	-	-	174.85	-	-	252.80	-	-	11.20
- Total cost	-	-	298.85	-	-	436.30	-	-	132.80
4. Returns	-	-	-	-	-	-	-	-	-
- Over paid out cost	-	-	245.15	-	-	482.20	-	-	244.80
- Over total cost	-	-	121.15	-	-	298.70	-	-	123.20
5. Cost and returns/ton	-	-	-	-	-	-	-	-	-
- Gross Income	-	-	210.00	-	-	210.00	-	-	160.00
- Production cost	-	-	-	-	-	-	-	-	-
* Paid out cost	-	-	87.43	-	-	72.23	-	-	7.00
* Total cost	-	-	149.43	-	-	124.66	-	-	83.00
- Net Income	-	-	-	-	-	-	-	-	-
* Paid out cost	-	-	122.57	-	-	137.77	-	-	153.00
* Total cost	-	-	60.57	-	-	85.34	-	-	77.00

Source : FAO Price Policy for Rice In East Timor, October, 2001

4. Current retail price of farm machinery in Dili

Dealer	Machinery	Standard	Unit Price (US\$)
1. Victory Timor	(1) Hand Tractor	Kubota C1000 with rotary & paddy wheel set	2,812
	(2) Rice Mill	Satake SB-10, Rubber Rolls 44US\$/pair	1,562.50
	(3) Thresher	Quick TG1000	500
	(4) Coffee Pulper	RG-50	600
	(5) Diesel Engine	Yanmar TS190-di, 16-19ps	3,375
	(6) Diesel Engine	China TF85NT, 10hp	1,750
	(7) Gasoline Engine	Honda G300, 7hp	412
2. Semestanuel	(1) Hand Tractor	Quick Kubota G1000b with rotary & paddy wheel	2,800
	(2) Rice Mill	Satake SB-10	3,350
3. Tristar ACMOBIL	(1) Rice Mill	Echo NP-30C with diesel engine 5.15kw/2,600rpm	1,400
	(2) Thresher	with gasoline engine Honda G200	1,200
	(3) Generator	Honda DC12VB-3Amp	1,250
	(4) Maize Grinder	Rutan RTN-200 with engine 6.18kw-5.15kw/2,600rpm	1,100

Source : JICA Study Team, August 2001

Table K.-17 ODA/NGO Activities for Farm Mechanization in East Timor (1)

ODA/NGO	Program and Activities	Program Start Date	District	Budget	Remarks
Action Centre La Faim (ACF-France)	-Coffee processing equipment		Ermera		
	-(FAO) Distribution of vegetable seeds & farming tools		Ainaro, Manufahi, Baucau & Manatuto		
ADRA	-(JICA) Rehabilitation of markets, food distribution, community, shelter health and education Study on marketing in East Timor Demand & market analysis in 5 Districts In/around Dili.		Comoro & Becora/Dili	US\$750,000	
CARE	-(FAO) Seeds and tools distribution, rice production improvement, repair of broken agricultural machinery (tractors, hand tractors and rice mills)	November, 1999	Dili and Covalima		
	-(AusAID/DFID) Distribution of vegetable seeds	October, 1999	Lautem, Manatuto, Covalima & Dili		
	-(WFP) Distribution of foods		Lautem & Manatuto		
	-(JICA) Community Empowerment Program for Improvement of Agricultural Production	August, 2000	Lautem & Manatuto		Land preparation by hand tractor
	-(MAFF/Japan) Food Improvement Project	2000 - 2001	Lautem, Manatuto & Covalima		
	-(FAO/JICA) Distribution of fertilizer	February, 2000	Lautem, Manatuto Covalima & Dili		
CESVI	-(FAO) Distribution of vegetable seeds and farming tools.		Dili District		
CMET	-(DAA) Distribution of hand tools		Bobonaro		
CRS	-Agriculture, food distribution, education for peace non-food item, primary shelter, rehabilitation, reconciliation, programme and teaching tolerance		Dili District		
	-(FAO) Distribution of seeds and farming tools.		Ainaro		
	-(USAID-OTIDAI) Field base training for rice milling units (10 units importing from Surabaya), 13 groups during 1-2 days/group under Micro Finance Program	September, 2001	Manatuto, Baucau, Ainaro, Manufahi/ Same, Liquica, Bobonaro total 6 Districts	US\$1.5 mil	
	-(WFP) Distribution of foods		Baucau & Viqueque		
ETADEP	-(USAID/CIDA/AusAID) Farm mechanization		Liquica & Manatuto		
	-(DAA) Distribution of hand tools.		Manatuto		

Table K.-17 ODA/NGO Activities for Farm Mechanization in East Timor (2)

ODA/NGO	Program and Activities	Program Start Date	District	Budget	Remarks
German Agro-Action Group	-5.5 metric ton rice seeds to farmers		Laga Sub-District, Baucau		
HAD	-Agriculture, economic development, sustainable natural resources development, land-use planning, land tenure and agreement, related human rights issues (land tenures for women, disadvantaged groups)		Dili District		
OIKOS	-(FAO and DAA) Distribution of seeds (corn, rice & beans) and hand tools (pick axe, hoe, sickle, shovel crow bar, pitch fork and wheel barrow)	November, 1999	Aileu and Atauro Island/Dili District & Manufahi		
Oxfam	-(FAO) Distribution of vegetable seeds		Dili		
Peace Winds/ Japan	-(UNHCR) Rehabilitation of markets and coffee processing equipment	September, 1999	Liquica		
Timor Aid	-(FAO/DAA) Distribution of vegetable seeds and farming tools		Dili		
World Vision	-(FAO) Distribution of seeds (maize, rice, peanut, vegetable) and farm tools (42,000 families in Bobonaro), demonstration plots for maize and rice seed multiplication.	2000	Bobonaro (3.8 ton) Elmera (12.2 ton) Liquica (2.1 ton) Aileu (0.65 ton) Dili (0.65 ton)		
	-(DAA) Distribution of hand tools	September, 2001	Liquica & Ermera		
	-(WFP) Distribution of foods		Ermera & Bobonaro		
Yayasan Hak	-(WRP) Distribution of Foods		Ainaro		
IBRD	-PASO (Pilot Agricultural Service Center) under ARP II (Agricultural Rehabilitation Project)	September, 2001 - December, 2003	Bobonaro, Lautem, Covalima, Dili, Liquica & Manufahi		
	-CEP (Community Empowerment Project) Community loan for hand tractor, fattening cattle, rice mill, chicken project, restaurant, furniture shop, mechanic and a number of shop	February, 2000		US\$21.5 mil	
	-BNU-SEP (Small Enterprise Project) Loan through BNU (Banco Nacional Ultramarino) also to agriculture mechanic, merchandise transport and workshop	April, 2000		US\$29.5 mil	

Table K.-17 ODA/NGO Activities for Farm Mechanization in East Timor (3)

ODA/NGO	Program and Activities	Program Start Date	District	Budget	Remarks
FAO/UNDP USAID	-Reducing post-harvest losses and quality management				
AusAID	-QUT (Queensland University of Technology) and BSES (The Bureau of Sugar Experiment Station) Rat Control Programme	2000 - 2001	Nation wide		Study
IBRD FAO/UNDP USAID Portuguese China Norway	-Farming machines and tools	2000-2001	Nation wide		
AusAID USAID Portugal Brazil	-Coffee production, processing and marketing				
CIDA	-SOS (Seeds of Survival) East Timor			US\$1.5 mil	
Thai Government	-Agricultural officer training programme conducted in Thailand and crop production management	2000-2001			Basic operation of agricultural equipment and tools

Source : JICA Study Team

Table K-18. TRAINING CURRICULUM FOR LOWLAND FARM MECHANIZATION (1/9)

Course No.	Training Unit	Training Contents	Hours	Pilot Project			Medium Term Development Plan			Long Term Development Plan			Remarks	
				Extension Officers	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics		
1.	Orientation on Rice Farming	(1) Field (Soil & Fertilizer)	0.5	*	*		*	*		*	*		indoor	
		(2) Seed	0.5	*	*		*	*		*	*		indoor	
		(3) Irrigation water	0.5	*	*		*	*		*	*		indoor	
		(4) Chemical application (farm management)	0.5	*	*		*	*		*	*		indoor	
		(5) Selection of most suitable machinery	0.5	*	*		*	*		*	*		indoor	
		Total	2.5	-	-	-	-	-	-	-	-	-	-	
2.	Guideline for Rice Farm Mechanization	(1) Role of mechanization for improvement of rice production	0.5	*	*		*	*		*	*	*	indoor	
		(2) System of rice farm mechanization	0.5	*	*		*	*		*	*	*	indoor	
		Total	1.0	-	-	-	-	-	-	-	-	-	-	
3.-1	Prime Mover 2-cycle Gasoline Engine	(1) Principle of 2-cycle gasoline engine operation and its overall structure	0.5	*		*	*		*	*		*	indoor	
		(2) How to start 2-cycle gasoline engine	0.5	*		*	*		*	*		*	indoor practice	
		(3) How to stop 2-cycle gasoline engine	0.5	*		*	*		*	*		*	indoor practice	
		(4) Structure, inspection and cleaning of fuel filter	0.5	*		*	*		*	*		*	indoor practice	
		(5) Structure & cleaning of air filter	0.5	*		*	*		*	*		*	indoor practice	
		(6) How to clean ignition device	0.5	*		*	*		*	*		*	indoor practice	
		(7) Lubrication oil	0.5	*		*	*		*	*		*	indoor practice	
		Sub-Total	3.5	-	-	-	-	-	-	-	-	-	-	-
3.-2	4-cycle Gasoline Engine	(1) Principle of 4-cycle gasoline engine operation and its overall structure	0.5				*			*	*		*	indoor
		(2) How to start 4-cycle gasoline engine	0.5				*			*	*		*	indoor practice
		(3) How to stop 4-cycle gasoline engine	0.5				*			*	*		*	indoor practice
		(4) Structure & cleaning of fuel filter	0.5				*			*	*		*	indoor practice
		(5) Cleaning of air cleaner	0.5				*			*	*		*	indoor practice
		(6) Cleaning of ignition device	0.5				*			*	*		*	indoor practice
		(7) Inspection & exchange of lubrication oil	0.5				*			*	*		*	indoor practice
		(8) How to adjust valves	0.5				*			*	*		*	indoor practice
		(9) How to adjust points	0.5				*			*	*		*	indoor practice
Sub-Total	4.5	-	-	-	-	-	-	-	-	-	-	-		
3.-3	Diesel Engine	(1) Principle of diesel engine operation and its overall structure	0.5	*	*	*	*	*	*	*	*	*	*	indoor
		(2) How to start diesel engine	0.5	*	*	*	*	*	*	*	*	*	*	indoor practice
		(3) How to stop diesel engine	0.5	*	*	*	*	*	*	*	*	*	*	indoor practice
		(4) Cleaning of fuel filter	0.5	*	*	*	*	*	*	*	*	*	*	indoor practice
		(5) Cleaning of oil filter	0.5	*	*	*	*	*	*	*	*	*	*	indoor practice
		(6) Exchange of lubrication oil	0.5	*	*	*	*	*	*	*	*	*	*	indoor practice
		(7) How to drain air	0.5	*	*	*	*	*	*	*	*	*	*	indoor practice
		(8) Briefing on fuel injector	0.5	*	*	*	*	*	*	*	*	*	*	indoor practice
		(9) Structure & inspection of air cleaner	0.5	*	*	*	*	*	*	*	*	*	*	indoor practice
		(10) Adjustment of fan belt	0.5	*	*	*	*	*	*	*	*	*	*	indoor practice
		(11) Adjustment of chains	0.5	*	*	*	*	*	*	*	*	*	*	indoor practice
Sub-Total	5.5	-	-	-	-	-	-	-	-	-	-	-		
Total	13.5	-	-	-	-	-	-	-	-	-	-	-		
4.	Hand Tractor & Major Implement	(1) Structure of hand tractor and principle of its operation	0.5	*	*	*	*	*	*	*	*	*	indoor lecture	
		(2) How to start hand tractor	0.5	*	*	*	*	*	*	*	*	*	operation field	
		(3) How to stop hand tractor	0.5	*	*	*	*	*	*	*	*	*	operation field	
		(4) How to operate hand tractor	1.0	*	*	*	*	*	*	*	*	*	operation field	

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Table K-18. TRAINING CURRICULUM FOR LOWLAND FARM MECHANIZATION (2/9)

Course No.	Training Unit	Training Contents	Hours	Pilot Project			Medium Term Development Plan			Long Term Development Plan			Remarks
				Extension Officers	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	
		(5) Kinds of hand tractor works	0.5	*	*	*	*	*	*	*	*	indoor lecture	
		(6) Tilling methods	0.5	*	*	*	*	*	*	*	*	training/field	
		(7) Puddling methods	0.5	*	*	*	*	*	*	*	*	training/field	
		(8) Mounting and dismounting of mouldboard plow	0.5	*	*	*	*	*	*	*	*	training field	
		(9) Mounting and dismounting of rotary	0.5	*	*	*	*	*	*	*	*	training field	
		(9) Replacement of rotary blades	0.5	*	*	*	*	*	*	*	*	training field	
		(10) Mounting/dismounting of leveler and its operation	0.5	*	*	*	*	*	*	*	*	training field	
		(11) Hitching/dishitching of trailer and its operation	0.5	*	*	*	*	*	*	*	*	training field	
		(12) How to replace wheels	0.5	*	*	*	*	*	*	*	*	training field	
		(13) Inspection & maintenance of hand tractor	0.5	*	*	*	*	*	*	*	*	garage	
		Total	7.5	-	-	-	-	-	-	-	-	-	
5.	4-Wheel Tractor & Major implement	(1) Structure of 4-wheel tractor and principle of its operation	0.5	*	*	*	*	*	*	*	*	indoor lecture	
		(2) How to start 4-wheel tractor	0.5	*	*	*	*	*	*	*	*	training canvas	
		(3) How to stop 4-wheel tractor	0.5	*	*	*	*	*	*	*	*	training canvas	
		(4) How to drive 4-wheel tractor	1.0	*	*	*	*	*	*	*	*	training/field	
		(5) Mounting/dismounting of mouldboard plow and its operation	1.0	*	*	*	*	*	*	*	*	training/field	
		(6) Mounting/dismounting of rotary plow and its operation	1.0	*	*	*	*	*	*	*	*	training/field	
		(7) Mounting/dismounting of disc harrow and its operation	1.0	*	*	*	*	*	*	*	*	training/field	
		(8) Mounting/dismounting of rotary harrow and its operation	1.0	*	*	*	*	*	*	*	*	training/field	
		(9) Mounting/dismounting of disc plow and its operation	1.0	*	*	*	*	*	*	*	*	training/field	
		(10) Mounting/dismounting of drill and its operation	1.0	*	*	*	*	*	*	*	*	training/field	
		(11) How to replace wheels	1.0	*	*	*	*	*	*	*	*	training canvas	
		(12) Maintenance & management of 4-wheel tractor	0.5	*	*	*	*	*	*	*	*	garage	
		Total	10.0	-	-	-	-	-	-	-	-	-	
6.	Operation of Pump and Maintenance Equipment												
6.-1	Operation of Weeder	(1) Structure of weeder and principle of its operation	0.5				*	*	*	*	*	indoor lecture	
		(2) How to operate weeder	0.5				*	*	*	*	*	canvas/field	
		(3) Inspection & maintenance of weeder	0.5				*	*	*	*	*	garage	
		Sub-Total	1.5	-	-	-	-	-	-	-	-	-	
6.-2	Operation of Hand Sprayer	(1) How to blend chemicals	0.5	*	*	*	*	*	*	*	*	indoor lecture	
		(2) Structure of hand sprayer and principle of its operation	0.5	*	*	*	*	*	*	*	*	indoor lecture	
		(3) How to operate hand sprayer	0.5	*	*	*	*	*	*	*	*	canvas/field	
		(4) Inspection and maintenance of hand sprayer	0.5	*	*	*	*	*	*	*	*	garage	
		Sub-Total	2.0	-	-	-	-	-	-	-	-	-	
6.-3	Operation of Pump	(1) Structure of pump and its principle of operation	0.5						*	*	*	indoor lecture	
		(2) How to install pump	0.5						*	*	*	field	
		(3) How to operate pump	0.5						*	*	*	field	
		(4) Inspection & maintenance of pump	0.5						*	*	*	field	
		(5) How to measure volume of water	0.5						*	*	*	indoor lecture	
		Sub-Total	2.5	-	-	-	-	-	-	-	-	-	
6.-4	Operation of Power Scythe (Bush Cutter)	(1) Structure of power scythe and its principle of operation	0.5						*	*	*	indoor lecture	
		(2) How to start power scythe	0.5						*	*	*	canvas/field	
		(3) How to stop power scythe	0.5						*	*	*	canvas/field	
		(4) How to operate power scythe	1.0						*	*	*	canvas/field	
		(5) Inspection and maintenance of power scythe	0.5						*	*	*	canvas/field	

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Table K-18. TRAINING CURRICULUM FOR LOWLAND FARM MECHANIZATION (3/9)

Course No.	Training Unit	Training Contents	Hours	Pilot Project			Medium Term Development Plan			Long Term Development Plan			Remarks
				Extension Officers	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	
		Sub-Total	3.0	-	-	-	-	-	-	*	*	*	garage
		Total	9.0	-	-	-	-	-	-	-	-	-	-
7.	Operation of Harvesting Machine												
7-1	Operation of Reaper	(1) Structure of reaper and its principle of operation	0.5				*	*	*	*	*	*	indoor lecture
		(2) How to start reaper	0.5				*	*	*	*	*	*	canvas
		(3) How to stop reaper	0.5				*	*	*	*	*	*	canvas
		(4) How to operate reaper	1.0				*	*	*	*	*	*	canvas/field
		(5) Inspection and maintenance of reaper	0.5				*	*	*	*	*	*	garage
		Sub-Total	3.0	-	-	-	-	-	-	-	-	-	-
7-2	Operation of Reaper-Binder	(1) Structure of reaper-binder and its principle of operation	0.5						*	*	*	*	indoor lecture
		(2) How to start reaper-binder	0.5						*	*	*	*	canvas
		(3) How to stop reaper-binder	0.5						*	*	*	*	canvas
		(4) How to operate reaper-binder	1.0						*	*	*	*	canvas/field
		(5) Inspection and maintenance of reaper-binder	0.5						*	*	*	*	garage
		Sub-Total	3.0	-	-	-	-	-	-	-	-	-	-
7-3	Operation of Combine	(1) Structure of combine and its principle of operation	1.0						*	*	*	*	indoor lecture
		(2) How to start combine	1.0						*	*	*	*	canvas
		(3) How to stop combine	1.0						*	*	*	*	canvas
		(4) How to operate combine	2.0						*	*	*	*	canvas/field
		(5) Inspection and maintenance of combine	1.0						*	*	*	*	garage
		Sub-Total	6.0	-	-	-	-	-	-	-	-	-	-
		Total	12.0	-	-	-	-	-	-	-	-	-	-
8.	Operation of Post-Harvest Machine												
8-1	Operation of Pre-Cleaner	(1) Structure of pre-cleaner and its principle of operation	0.5				*	*	*	*	*	*	indoor lecture
		(2) How to start pre-cleaner	0.5				*	*	*	*	*	*	canvas
		(3) How to stop pre-cleaner	0.5				*	*	*	*	*	*	canvas
		(4) How to operate pre-cleaner	1.0				*	*	*	*	*	*	canvas
		(5) Inspection and maintenance of pre-cleaner	0.5				*	*	*	*	*	*	garage
		Sub-Total	3.0	-	-	-	-	-	-	-	-	-	-
8-2	Operation of Thresher	(1) Structure of thresher and its principle of operation	0.5	*	*	*	*	*	*	*	*	*	indoor lecture
		(2) How to start thresher	0.5	*	*	*	*	*	*	*	*	*	canvas
		(3) How to stop thresher	0.5	*	*	*	*	*	*	*	*	*	canvas
		(4) How to operate thresher	1.0	*	*	*	*	*	*	*	*	*	canvas/field
		(5) Inspection and maintenance of thresher	0.5	*	*	*	*	*	*	*	*	*	garage
		Sub-Total	3.0	-	-	-	-	-	-	-	-	-	-
8-3	Operation of Dryer	(1) Paddy drying characteristics (sun and mechanical drying)	1.0						*	*	*	*	indoor lecture
		(2) Structure of dryer and its principle of operation	0.5						*	*	*	*	indoor lecture
		(3) How to start dryer	0.5						*	*	*	*	process store
		(4) How to stop dryer	0.5						*	*	*	*	process store
		(5) How to operate dryer	1.0						*	*	*	*	process store
		(6) Inspection and safety of dryer	0.5						*	*	*	*	process store
		Sub-Total	4.0	-	-	-	-	-	-	-	-	-	-
8-4	Operation of Rice Milling Machine	(1) Paddy structure and theory of rice milling	1.0	*	*	*	*	*	*	*	*	*	indoor lecture
		(2) Structure of rice milling unit and its principle of operation	0.5	*	*	*	*	*	*	*	*	*	indoor lecture
		(3) How to start rice milling unit	0.5	*	*	*	*	*	*	*	*	*	process store

Table K-18. TRAINING CURRICULUM FOR LOWLAND FARM MECHANIZATION (4/9)

Course No.	Training Unit	Training Contents	Hours	Pilot Project			Medium Term Development Plan			Long Term Development Plan		
				Extension Officers	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics
		(4) How to stop rice milling unit	0.5	*	*	*	*		*	*	*	pre
		(5) How to operate rice milling unit	1.0	*	*	*	*		*	*	*	pre
		(6) Inspection and maintenance of rice milling unit	0.5	*	*	*	*		*	*	*	pre
		Sub-Total	4.0	-	-	-	-	-	-	-	-	-
		Total	14.0	-	-	-	-	-	-	-	-	-
9.	Orientation for Repair Workshop	(1) Specifications, capacity and performance of major farm machinery	1.5			*			*			pre
		(2) Major engines mounted on farm machinery	1.0			*			*			
		Total	2.5	-	-	-	-	-	-	-	-	-
10.	Handling of Repair & Measuring Tools	(1) Names and usage of tools and measuring devices required for repair and maintenance of farm machinery	2.0			*	*		*	*		pre
		(2) Operation of repair tools and measuring devices	3.0			*	*		*	*		
		Total	5.0	-	-	-	-	-	-	-	-	-
11.	Operation of Processing Machines	(1) Names and usages of processing machines required for repair and maintenance of farm machinery	2.0						*			pre
		(2) Operation of processing machines	3.0						*			
		Total	5.0	-	-	-	-	-	-	-	-	-
12.	Repair & Maintenance of Hand Tractor Structure and Performance	(1) Engine unit										
12-1		(a) Engine body	0.5			*			*			pre
		(b) Fuel injector	0.5			*			*			pre
		(2) Tractor unit										
		(a) Power transmission (main clutch, torque converter, final drive)	0.5			*			*			pre
		(b) Steering	0.5			*			*			pre
		(c) Brake	0.5			*			*			pre
		(d) Running base	0.5			*			*			pre
		(3) Electric system										
		(a) Guideline for electricity	1.0			*			*			pre
		(b) Current for start	0.5			*			*			pre
		(c) Current for charge	0.5			*			*			pre
		Sub-Total	11.0	-	-	-	-	-	-	-	-	-
12-2	Training for Operation	Cautions before start and how to operate	1.0			*			*			d
		Sub-Total		-	-	-	-	-	-	-	-	-
12-3	Training for Maintenance	(1) Inspection of operation manual	0.5			*			*			pre
		(2) Key points for maintenance	0.5			*			*			pre
		Sub-Total	1.0	-	-	-	-	-	-	-	-	-
12-4	Training for Assembly & Disassembly	(1) Engine unit										
		a. Body	2.0			*			*			tice
		b. Fuel Injection pump	1.0			*			*			tice
		c. Turbo-Charger	1.0			*			*			tice
		d. Water-cooling pump	1.0			*			*			tice
		(2) Power transmission system										
		a. Torque converter, main clutch etc.	1.5			*			*			tice
		b. Transmission	1.5			*			*			tice
		c. Steering clutch	1.0			*			*			tice

Table K-8. TRAINING CURRICULUM FOR LOWLAND FARM MECHANIZATION (5/9)

Course No.	Training Unit	Training Contents	Hours	Pilot Project			Medium Term Development Plan			Long Term Development Plan			Remarks
				Extension Officers	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	
		d. Running case	1.0			*			*			*	indoor practice
		(3) Electric system											
		a. Starting motor	1.0			*			*			*	indoor practice
		b. Alternator	1.0			*			*			*	indoor practice
		Sub-Total	12.0	-	-	-	-	-	-	-	-	-	-
12.-5	Training for Performance and Quality Control	(1) Engine	1.0			*			*			*	indoor lecture
		(2) Fuel Injection pump	0.5			*			*			*	indoor lecture
		(3) Transmission	0.5			*			*			*	indoor lecture
		(4) Piston, pump and motor	0.5			*			*			*	indoor lecture
		(5) Electric system	0.5			*			*			*	indoor lecture
		Sub-Total	3.0	-	-	-	-	-	-	-	-	-	-
12.-6	Repairshop	(1) Cautions for breakdown and order of repair	0.5			*			*			*	indoor lecture
		(2) Inspection of breakdown, kinds of repair tools and repair	1.0			*			*			*	indoor practice
		(3) Case study	1.0			*			*			*	indoor practice
		Sub-Total	2.5	-	-	-	-	-	-	-	-	-	-
		Total	30.5	-	-	-	-	-	-	-	-	-	-
13.	Repair & Maintenance of 4-wheel Tractor Structure and Performance	(1) Objectives of usage of 4-wheel farm tractor and series of related attachments	1.0			*			*			*	indoor lecture
13.-1		(2) Engine											
		a. Engine unit	1.0			*			*			*	indoor lecture
		b. Fuel Injection device	1.0			*			*			*	indoor lecture
		(3) Body unit											
		a. Power transmission device (main clutch, torque converter, final drive etc.)	1.0			*			*			*	indoor lecture
		b. Steering (hydraulic mechanism)	1.0			*			*			*	indoor lecture
		c. Brake	1.0			*			*			*	indoor lecture
		d. Running case (suspension, tire etc.)	1.0			*			*			*	indoor lecture
		(4) Electric system											
		a. Starting circuit	1.0			*			*			*	indoor lecture
		b. Charging circuit	1.0			*			*			*	indoor lecture
		Sub-Total	9.0	-	-	-	-	-	-	-	-	-	-
13.-2	Training for Steering	(1) Previous cautions on steering	2.0			*			*			*	canvas/field
13.-3	Training for Maintenance	(1) Inspection of operation manual	1.0			*			*			*	indoor lecture
		(2) Key points for maintenance	1.0			*			*			*	indoor lecture
		Sub-Total	2.0	-	-	-	-	-	-	-	-	-	-
13.-4	Disassembling & Assembling	(1) Engine unit											
		a. Engine body	2.0						*			*	indoor practice
		b. Fuel injection pump	1.0						*			*	indoor practice
		c. Turbocharger	1.0						*			*	indoor practice
		d. Water cooling pump	1.0						*			*	indoor practice
		(2) Power transmission system											
		a. Torque converter, main clutch etc.	1.0						*			*	indoor practice
		b. Transmission	1.0						*			*	indoor practice
		c. Steering clutch	1.0						*			*	indoor practice
		d. Differential lock	1.0						*			*	indoor practice

Table K-18. TRAINING CURRICULUM FOR LOWLAND FARM MECHANIZATION (6/9)

Course No.	Training Unit	Training Contents	Hours	Pilot Project			Medium Term Development Plan			Long Term Development Plan			Remarks
				Extension Officers	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	
		e. Final drive	1.0							*		indoor practice	
		f. Brake	1.0							*		indoor practice	
		g. Piston, pump, motor etc.	1.0							*		indoor practice	
		h. Running base	1.0							*		indoor practice	
		(3) Hydraulic system											
		a. Gear pump	1.0							*		indoor practice	
		b. Hydraulic cylinder	1.0							*		indoor practice	
		c. Hydraulic valve	1.0							*		indoor practice	
		(4) Electric system											
		a. Starting motor	1.0							*		indoor practice	
		b. Alternator	1.0							*		indoor practice	
		c. Attachments	2.0							*		indoor practice	
		Sub-Total	20.0	-	-	-	-	-	-	-	-	-	
13-5	Training for Performance and Quality Control	(1) Engine unit	1.0							*		indoor lecture	
		(2) Fuel Injection pump	1.0							*		indoor lecture	
		(3) Transmission	1.0							*		indoor lecture	
		(4) Piston, pump and motor	1.0							*		indoor lecture	
		(5) Hydraulic valve	1.0							*		indoor lecture	
		(6) Electric line	1.0							*		indoor lecture	
		(7) Attachments	2.0							*		indoor lecture	
		Sub-Total	8.0	-	-	-	-	-	-	-	-	-	
13-6	Repair of breakdown	(1) Repair and order of repair	1.0							*		indoor practice	
		(2) Agnosis of breakdown, repair tools and repair	2.0							*		indoor practice	
		(3) Case study	2.0							*		indoor practice	
		Sub-Total	5.0							-		-	
		Total	47.0	-	-	-	-	-	-	-	-	-	
14.	Repair & Maintenance of Maintenance Equipment												
14-1	Structure and Performance	(1) Utilizing objectives of manual weeder, hand sprayer, pump and power scythe	1.0							*		indoor lecture	
		(2) Engine unit for power scythe	0.5							*		indoor lecture	
		(3) Body unit											
		a. Manual weeder	0.5							*		indoor lecture	
		b. Hand sprayer	0.5							*		indoor lecture	
		c. Pump	0.5							*		indoor lecture	
		d. Power scythe	0.5							*		indoor lecture	
		(4) Electric line for power scythe	0.5							*		indoor lecture	
		Sub-Total	4.0	-	-	-	-	-	-	-	-	-	
14-2.	Training for Operation	(1) Previous cautions and operation											
		a. Manual weeder	0.5							*		canvas/field	
		b. Hand sprayer	0.5			*				*		canvas/field	
		c. Pump	0.5							*		canvas/field	
		d. Power scythe	1.0							*		canvas/field	
		Sub-Total	2.5	-	-	-	-	-	-	-	-	-	
14-3	Training for Maintenance	(1) Inspection of operation manual											
		a. Manual weeder	0.5							*		indoor lecture	

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Table K-18. TRAINING CURRICULUM FOR LOWLAND FARM MECHANIZATION (7/9)

Course No.	Training Unit	Training Contents	Pilot Project Hours	Under Pilot Project			Medium Term Development Plan			Long Term Development Plan			Remarks
				Extension Officers	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	
		b. Hand sprayer	0.5			*					*	indoor lecture	
		c. Pump	0.5			*					*	indoor lecture	
		d. Power scythe	0.5			*					*	indoor lecture	
		(2) Key points for maintenance											
		a. Manual weeder	0.5								*	indoor lecture	
		b. Hand sprayer	0.5			*					*	indoor lecture	
		c. Pump	0.5			*					*	indoor lecture	
		d. Power scythe	1.0			*					*	indoor lecture	
		Sub-Total	4.5	-	-	-	-	-	-	-	-	-	
14-4	Disassembling & Assembling Training	(1) Engine of power scythe	1.0								*	indoor practice	
		(2) Body unit									*		
		a. Manual weeder	0.5								*	indoor practice	
		b. Hand sprayer	1.0			*					*	indoor practice	
		c. Pump	1.0			*					*	indoor practice	
		d. Power scythe	1.0			*					*	indoor practice	
		Sub-Total	4.5	-	-	-	-	-	-	-	-	-	
14-5	Training for Performance and Quality Control	(1) Manual weeder	0.5								*	indoor lecture	
		(2) Hand sprayer	0.5			*					*	indoor lecture	
		(3) Pump	1.0			*					*	indoor lecture	
		(4) Power scythe	1.0			*					*	indoor lecture	
		Sub-Total	3.0	-	-	-	-	-	-	-	-	-	
14-6	Repair of breakdown	(1) Manual weeder	0.5								*	indoor practice	
		(2) Hand sprayer	1.0			*					*	indoor practice	
		(3) Pump	1.0			*					*	indoor practice	
		(4) Power scythe	1.0			*					*	indoor practice	
		Sub-Total	3.5	-	-	-	-	-	-	-	-	-	
		Total	22.0	-	-	-	-	-	-	-	-	-	
15.	Repair and Maintenance of Reaper												
15-1	Structure and Performance	(1) Engine	0.5								*	indoor lecture	
		(2) Power transmission system	1.0								*	indoor lecture	
		(3) Reaping system	1.0								*	indoor lecture	
		Sub-Total	2.5	-	-	-	-	-	-	-	-	-	
15-2	Training for Operation	(1) Previous cautions and operation	1.0								*	canvas/field	
15-3	Training for Maintenance	(1) Inspection of operation manual	1.0								*	indoor lecture	
		(2) Key points for maintenance	1.0								*	indoor lecture	
		Sub-Total	2.0	-	-	-	-	-	-	-	-	-	
15-4	Disassembling & Assembling Training	(1) Engine unit	1.0								*	indoor practice	
		(2) Power transmission line	1.0								*	indoor practice	
		(3) Reaping unit	1.0								*	indoor practice	
		Sub-Total	3.0	-	-	-	-	-	-	-	-	-	
15-5	Training for Performance and Quality Control	(1) Engine unit	0.5								*	indoor lecture	
		(2) Reaping unit	1.0								*	indoor lecture	
		Sub-Total	1.5	-	-	-	-	-	-	-	-	-	
15-6	Repair of breakdown	(1) Previous cautions and operation	0.5								*	indoor practice	
		(2) Agnosis of breakdown, repair tools and repair	0.5								*	indoor practice	
		(3) Case study	0.5								*	indoor practice	

Table K-18. TRAINING CURRICULUM FOR LOWLAND FARM MECHANIZATION (8/9)

Course No.	Training Unit	Training Contents	Hours	Pilot Project			Medium Term Development Plan			Long Term Development Plan			Remarks
				Extension Officers	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	
		Sub-Total	1.5	-	-	-	-	-	-	-	-	-	-
		Total	11.5	-	-	-	-	-	-	-	-	-	-
16	Repair and Maintenance of Reaper-Binder Structure and Performance	(1) Engine (2) Power transmission system (3) Reaping unit (4) Binding unit	0.5 0.5 0.5 0.5									*	indoor lecture
		Sub-Total	2.0	-	-	-	-	-	-	-	-	-	-
16-2	Training for Operation	(1) Previous cautions and operation	1.0									*	canvas/field
16-3	Training for Maintenance	(1) Inspection of operation manual (2) Key points for maintenance	1.0 1.0									*	indoor lecture
		Sub-Total	2.0	-	-	-	-	-	-	-	-	-	-
16-4	Disassembling & Assembling Training	(1) Engine unit (2) Power transmission line (3) Reaping unit (4) Binding unit	1.0 1.0 1.0 0.5									*	indoor practice
		Sub-Total	3.5	-	-	-	-	-	-	-	-	-	-
16-5	Training for Performance and Quality Control	(1) Engine unit (2) Reaping unit (3) Binding unit	0.5 1.0 0.5									*	indoor lecture
		Sub-Total	2.0	-	-	-	-	-	-	-	-	-	-
16-6	Repair of breakdown	(1) Previous cautions and operation (2) Agnosis of breakdown, repair tools and repair (3) Case study	1.0 1.0 1.0									*	indoor practice
		Sub-Total	3.0	-	-	-	-	-	-	-	-	-	-
		Total	13.5	-	-	-	-	-	-	-	-	-	-
17	Repair & Maintenance of Thresher Structure and Performance	(1) Engine unit (2) Power transmission line (3) Threshing unit	0.5 0.5 0.5			*			*			*	indoor lecture
		Sub-Total	1.5	-	-	-	-	-	-	-	-	-	-
17-2	Training for Operation	(1) Previous cautions and operation	1.0			*			*			*	canvas/field
17-3	Training for Maintenance	(1) Inspection of operation manual (2) Key points for maintenance	0.5 0.5			*			*			*	indoor practice
		Sub-Total	1.0	-	-	-	-	-	-	-	-	-	-
17-4	Disassembling & Assembling Training	(1) Disassembling/ assembling of blower (2) Disassembling/ assembling threshing drum (3) Disassembling/ assembling screen	1.0 1.0 1.0			*			*			*	indoor practice
		Sub-Total	3.0	-	-	-	-	-	-	-	-	-	-
17-5	Training for Performance and Quality Control	(1) Engine unit (2) Threshing unit	0.5 1.0			*			*			*	indoor lecture
		Sub-Total	1.5	-	-	-	-	-	-	-	-	-	-
17-6	Repair of breakdown	(1) Inspection of breakdown and order of repair (2) Agnosis of breakdown, repair tools and repair (3) Case study	1.0 1.0 1.0			*			*			*	indoor practice
		Sub-Total	3.0	-	-	-	-	-	-	-	-	-	-

Table K-18. TRAINING CURRICULUM FOR LOWLAND FARM MECHANIZATION (9/9)

Course No.	Training Unit	Training Contents	Hours	Pilot Project			Medium Term Development Plan			Long term Development Plan			Remarks
				Extension Officers	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	
		Sub-Total	3.0	-	-	-	-	-	-	-	-	-	-
		Total	11.0	-	-	-	-	-	-	-	-	-	-
18	Repair and Maintenance of Rice Milling Unit												
18-1	Structure and Performance	(1) Structure and operation mechanism of husking unit	0.5			*			*			*	indoor lecture
		(2) Structure and operation mechanism of polishing unit	0.5			*			*			*	indoor lecture
		Sub-Total	1.0	-	-	-	-	-	-	-	-	-	-
18-2	Training for Operation	(1) Previous cautions and operation	1.0			*			*			*	process store
18-3	Training for Maintenance	(1) Inspection of operation manual	0.5			*			*			*	indoor lecture
		(2) Key points for maintenance	0.5			*			*			*	indoor lecture
		Sub-Total	1.0	-	-	-	-	-	-	-	-	-	-
18-4	Disassembling & Assembling Training	(1) To replace rubber rolls	0.5			*			*			*	process store
		(2) Rice milling unit	1.0			*			*			*	process store
		Sub-Total	1.5	-	-	-	-	-	-	-	-	-	-
18-5	Training for Performance and Quality Control	(1) Husking unit	0.5			*			*			*	indoor lecture
		(2) Polishing unit	0.5			*			*			*	indoor lecture
		Sub-Total	1.0	-	-	-	-	-	-	-	-	-	-
18-6	Repair of breakdown	(1) Previous cautions and operation	1.0			*			*			*	process store
		(2) Agnosis of breakdown, repair tools and repair	1.0			*			*			*	process store
		(3) Case study	1.0			*			*			*	process store
		Sub-Total	3.0	-	-	-	-	-	-	-	-	-	-
		Total	8.5	-	-	-	-	-	-	-	-	-	-
19	Mobile Training on Field	(1) Field training for repair and maintenance at general farmers, stations and sub-stations	7.0						*			*	General farmers, Stations and Sub-Stations

Table K-19. TRAINING CURRICULUM FOR UPLAND FARM MECHANIZATION (1/3)

Course No.	Training Unit	Training Contents	Hours	Pilot Project			Medium Term Development Plan			Long Term Development Plan			Remarks
				Extension Officers	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	
U-1.	Orientation on Upland Farming	(1) Field (Soil & Fertilizer)	0.5	*	*		*	*		*	*		indoor
		(2) Seed & Seeding	0.5	*	*		*	*		*	*		indoor
		(3) Irrigation water	0.5	*	*		*	*		*	*		indoor
		(4) Chemical application (farm management)	0.5	*	*		*	*		*	*		indoor
		(5) Selection of most suitable machinery	0.5	*	*		*	*		*	*		indoor
		Total	2.5	-	-	-	-	-	-	-	-	-	-
U-2.	Guideline for Upland Farm Mechanization	(1) Role of mechanization for improvement of upland production	0.5	*	*		*	*		*	*	*	indoor
		(2) System of upland farm mechanization	0.5	*	*		*	*		*	*	*	indoor
		Total	1.0	-	-	-	-	-	-	-	-	-	-
U-3. U-3.1	Prime Mover 2-cycle Gasoline Engine	(1) Principle of 2-cycle gasoline engine operation and its overall structure	0.5	*		*	*		*	*		*	indoor
		(2) How to start 2-cycle gasoline engine	0.5	*		*	*		*	*		*	indoor practice
		(3) How to stop 2-cycle gasoline engine	0.5	*		*	*		*	*		*	indoor practice
		(4) Structure, inspection and cleaning of fuel filter	0.5	*		*	*		*	*		*	indoor practice
		(5) Structure & cleaning of air filter	0.5	*		*	*		*	*		*	indoor practice
		(6) How to clean ignition device	0.5	*		*	*		*	*		*	indoor practice
		(7) Lubrication oil	0.5	*		*	*		*	*		*	indoor practice
		Sub-Total	3.5	-	-	-	-	-	-	-	-	-	-
U-3.2	4-cycle Gasoline Engine	(1) Principle of 4-cycle gasoline engine operation and its overall structure	0.5				*		*	*		*	indoor
		(2) How to start 4-cycle gasoline engine	0.5				*		*	*		*	indoor practice
		(3) How to stop 4-cycle gasoline engine	0.5				*		*	*		*	indoor practice
		(4) Structure & cleaning of fuel filter	0.5				*		*	*		*	indoor practice
		(5) Cleaning of air cleaner	0.5				*		*	*		*	indoor practice
		(6) Cleaning of ignition device	0.5				*		*	*		*	indoor practice
		(7) Inspection & exchange of lubrication oil	0.5				*		*	*		*	indoor practice
		(8) How to adjust valves	0.5				*		*	*		*	indoor practice
		(9) How to adjust points	0.5				*		*	*		*	indoor practice
		Sub-Total	4.5	-	-	-	-	-	-	-	-	-	-
U-3.3	Diesel Engine	(1) Principle of diesel engine operation and its overall structure	0.5	*	*	*	*	*	*	*	*	*	indoor
		(2) How to start diesel engine	0.5	*	*	*	*	*	*	*	*	*	indoor practice
		(3) How to stop diesel engine	0.5	*	*	*	*	*	*	*	*	*	indoor practice
		(4) Cleaning of fuel filter	0.5	*	*	*	*	*	*	*	*	*	indoor practice
		(5) Cleaning of oil filter	0.5	*	*	*	*	*	*	*	*	*	indoor practice
		(6) Exchange of lubrication oil	0.5	*	*	*	*	*	*	*	*	*	indoor practice
		(7) How to drain air	0.5	*	*	*	*	*	*	*	*	*	indoor practice
		(8) Briefing on fuel injector	0.5	*	*	*	*	*	*	*	*	*	indoor practice
		(9) Structure & inspection of air cleaner	0.5	*	*	*	*	*	*	*	*	*	indoor practice
		(10) Adjustment of fan belt	0.5	*	*	*	*	*	*	*	*	*	indoor practice
		(11) Adjustment of chains	0.5	*	*	*	*	*	*	*	*	*	indoor practice
		Sub-Total	5.5	-	-	-	-	-	-	-	-	-	
		Total	13.5	-	-	-	-	-	-	-	-	-	
U-4.	Hand Tractor & Major Implement	(1) Structure of hand tractor and principle of its operation	0.5	*	*	*	*	*	*	*	*	*	indoor lecture
		(2) How to start hand tractor	0.5	*	*	*	*	*	*	*	*	*	operation field
		(3) How to stop hand tractor	0.5	*	*	*	*	*	*	*	*	*	operation field
		(4) How to operate hand tractor	1.0	*	*	*	*	*	*	*	*	*	operation field

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Table K-19. TRAINING CURRICULUM FOR UPLAND FARM MECHANIZATION (2/3)

Course No.	Training Unit	Training Contents	Hours	Pilot Project			Medium Term Development Plan			Long Term Development Plan			Remarks
				Extension Officers	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	
		(5) Kinds of hand tractor works	0.5	*	*	*	*	*	*	*	*	indoor lecture	
		(6) Tilling methods	0.5	*	*	*	*	*	*	*	*	training/field	
		(7) Mounting and dismounting of mouldboard plow	0.5	*	*	*	*	*	*	*	*	training field	
		(8) Mounting and dismounting of rotary	0.5	*	*	*	*	*	*	*	*	training field	
		(9) Replacement of rotary blades	0.5	*	*	*	*	*	*	*	*	training field	
		(10) Hitching and dishitching of trailer and its operation	0.5	*	*	*	*	*	*	*	*	training field	
		(11) How to replace wheels	0.5	*	*	*	*	*	*	*	*	training field	
		(12) Inspection & maintenance of hand tractor	0.5	*	*	*	*	*	*	*	*	garage	
		Total	8.5	-	-	-	-	-	-	-	-	-	
U-5.	4-Wheel Tractor & Major implement	(1) Structure of 4-wheel tractor and principle of its operation	0.5	*	*	*	*	*	*	*	*	indoor lecture	
		(2) How to start 4-wheel tractor	0.5	*	*	*	*	*	*	*	*	training canvas	
		(3) How to stop 4-wheel tractor	0.5	*	*	*	*	*	*	*	*	training canvas	
		(4) How to drive 4-wheel tractor	1.0	*	*	*	*	*	*	*	*	training/field	
		(5) Mounting/dismounting of mouldboard plow and its operation	1.0	*	*	*	*	*	*	*	*	training/field	
		(6) Mounting/dismounting of rotary plow and its operation	1.0	*	*	*	*	*	*	*	*	training/field	
		(7) Mounting/dismounting of disc harrow and its operation	1.0	*	*	*	*	*	*	*	*	training/field	
		(8) Mounting/dismounting of rotary harrow and its operation	1.0	*	*	*	*	*	*	*	*	training/field	
		(9) Mounting/dismounting of disc plow and its operation	1.0	*	*	*	*	*	*	*	*	training/field	
		(10) Mounting/dismounting of drill and its operation	1.0	*	*	*	*	*	*	*	*	training/field	
		(11) How to replace wheels	1.0	*	*	*	*	*	*	*	*	training canvas	
		(12) Maintenance & management of 4-wheel tractor	0.5	*	*	*	*	*	*	*	*	garage	
		Total	10.0	-	-	-	-	-	-	-	-	-	
U-6.	Operation of Maintenance Equipment												
U-6.1	Operation of Hand Sprayer	(1) How to blend chemicals	0.5	*	*	*	*	*	*	*	*	indoor lecture	
		(2) Structure of hand sprayer and principle of its operation	0.5	*	*	*	*	*	*	*	*	indoor lecture	
		(3) How to operate hand sprayer	0.5	*	*	*	*	*	*	*	*	canvas/field	
		(4) Inspection and maintenance of hand sprayer	0.5	*	*	*	*	*	*	*	*	garage	
		Sub-Total	2.0	-	-	-	-	-	-	-	-	-	
U-6.2	Operation of Pump	(1) Structure of pump and its principle of operation	0.5	*	*	*	*	*	*	*	*	indoor lecture	
		(2) How to install pump	0.5	*	*	*	*	*	*	*	*	field	
		(3) How to operate pump	0.5	*	*	*	*	*	*	*	*	field	
		(4) Inspection & maintenance of pump	0.5	*	*	*	*	*	*	*	*	field	
		(5) How to measure volume of water	0.5	*	*	*	*	*	*	*	*	indoor lecture	
		Sub-Total	2.5	-	-	-	-	-	-	-	-	-	
U-6.3	Operation of Power Scythe (Bush Cutter)	(1) Structure of power scythe and its principle of operation	0.5	*	*	*	*	*	*	*	*	indoor lecture	
		(2) How to start power scythe	0.5	*	*	*	*	*	*	*	*	canvas/field	
		(3) How to stop power scythe	0.5	*	*	*	*	*	*	*	*	canvas/field	
		(4) How to operate power scythe	1.0	*	*	*	*	*	*	*	*	canvas/field	
		(5) Inspection and maintenance of power scythe	0.5	*	*	*	*	*	*	*	*	canvas/field	
		Sub-Total	3.0	-	-	-	-	-	-	-	-	garage	
		Total	7.5	-	-	-	-	-	-	-	-	-	
U-7.	Operation of Maize Sheller	(1) Maize structure and theory of maize shelling	0.5	*	*	*	*	*	*	*	*	indoor lecture	
		(2) Structure of maize sheller and its principle of operation	0.5	*	*	*	*	*	*	*	*	indoor lecture	
		(3) How to start maize sheller	0.5	*	*	*	*	*	*	*	*	process store	
		(4) How to stop maize sheller	0.5	*	*	*	*	*	*	*	*	process store	
		(5) How to operate maize sheller	1.0	*	*	*	*	*	*	*	*	process store	

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Table K-19. TRAINING CURRICULUM FOR UPLAND FARM MECHANIZATION (3/3)

Course No.	Training Unit	Training Contents	Hours	Pilot Project			Medium Term Development Plan			Long Term Development Plan			Remarks
				Extension Officers	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	Extension Officer	Leading Farmers	Mechanics	
		(6) Inspection and maintenance of maize sheller Total	0.5 3.5	*	*	*	*	*	*	*	*	process store -	
U-8.	Operation of Maize Storage Bin	(1) Cleaning of shelled maize storage bin (2) How to load shelled maize into bin (3) How to unload shelled maize from bin Total	0.5 0.5 0.5 1.5										
U-9.	Repair and Maintenance of Maize Sheller												
U-9.1	Structure and Performance	(1) Engine (2) Power transmission system (3) Shelling system Sub-Total	0.5 1.0 1.0 2.5						*		*	indoor lecture indoor lecture indoor lecture -	
U-9.2	Training for Operation	(1) Previous cautions and operation	1.0						*		*	canvas/field	
U-9.3	Training for Maintenance	(1) Inspection of operation manual (2) Key points for maintenance Sub-Total	0.5 0.5 1.0						*		*	indoor lecture indoor lecture -	
U-9.4	Disassembling & Assembling Training	(1) Engine unit (2) Power transmission line (3) Shelling unit Sub-Total	1.0 1.0 1.0 3.0						*		*	indoor practice indoor practice indoor practice -	
U-9.5	Training for Performance and Quality Control	(1) Engine unit (2) Shelling unit Sub-Total	0.5 1.0 1.5						*		*	indoor lecture indoor lecture -	
U-9.6	Repair of breakdown	(1) Previous cautions and operation (2) Agnosis of breakdown, repair tools and repair (3) Case study Sub-Total Total	0.5 0.5 0.5 1.5 10.5						*		*	indoor practice indoor practice indoor practice - -	
U-10.	Mobile Training on Field	(1) Field training for repair and maintenance at general farmers, stations and sub-stations	7.0						*		*	General farmers, Stations and Sub-Stations	

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Note : Mechanics will be trained in the course from 9. to 18. for "Training Curriculum for Lowland Farm Mechanization".