

Appendix 1 農業機械の裨益効果と生産費に関する資料

農業機械の利・活用による裨益効果調査に係わる参考資料

2002/09/30

1、水稲作における作業別労働時間

例一 1 水稲作業別の労働時間(人一時/10a)

田植迄		管理作業		収穫・調製	
種子予措	0.2	補植	1.4	架施設	5.1
苗代一切	6.3	除草	17.3 (10.8%)	稲刈り	30.0
本田耕起	4.4 (・歩行トラを使用)	除草剤	0.6	稲入り	6.1
畦塗(畦畔作り)	9.6 (16.5時間:10.4%)	畦除草	4.2	脱穀	15.6
元肥	5.3	道削	1.6	籾干し	3.6
碎土	2.4	中耕	7.2	籾摺り	11.0
代播	3.4	追肥	1.6		
田植	16.3 (10.2%)	水管理	2.0		
		防除	3.2		
小計	47.9		39.6		72.1 (合計:159.6)

注) 昭和36年度:福井農試経営部調査

例一 2 水稲作業別の労働時間(時間/10a)

作業別	1954 (昭29年)	1994 (平成6年)	短縮労働時間 と寄与率(%)	備考 (労働時間の短縮要因)
苗代一切	9.8	4.7	5.1 (3.4)	
耕起・整地	26.7	4.8	21.9 (14.5)	トラクターの普及
元肥	7.6	1.3	6.3 (4.2)	
田植	27.7	5.5	22.2 (14.7)	田植機の開発・普及
追肥	1.9	0.9	1.0 (0.7)	
除草	31.3	1.8	29.5 (19.5)	除草剤の使用により
灌溉排水管理	18.6	7.6	11.0 (7.3)	
刈取・脱穀	57.2	6.7	50.5 (33.4)	コンバインの開発・普及
乾燥・籾摺	5.8	2.1	3.7 (2.4)	
総労働時間	186.6	35.4	151.2(100%)	

注) 全農:機械化計画資料

例一 3 主要稲作地帯の収穫作業時間 (hr/ha)

地帯名	労働時間 hr/ha (A)	刈取	脱穀	調製	小計 (B)	(B)/(A)%	備考
表東北	1,170	240	185.3	43.1	468.4	40.0	北上川流域
裏東北	1,702	443	171.0	47.0	661.0	38.8	秋田県横手
北陸	1,620	500	100.0	60.0	660.0	40.7	新潟県蒲原
北関東	1,471	470	132.0	123.0	725.0	49.3	利根川下流
東海	1,055	259	135.0	38.0	432.0	40.9	愛知県西三河
四国	1,420	130	400.0	50.0	500.0	40.8	西讃平野
平均	1,406	340	187	60	574	41.8	

注) 昭和37年度:農林水産会議資料

例一 4 農作業におけるエネルギー代謝率 1例

作業名	使用動力	作業機具と作業	作業時間 hr/10a	エネルギー代謝率 E.M.R.		消費カロリー Cal/10a	
				実数	比率(%)	実数	比率(%)
耕畑	人力	備中鋏(4本犁)	10.25	10.3	100	7073	100
	畜力(馬)	両用犁	1.68	9.0	87.4	1030	14.5
	歩行トラクター	3HP ブラウ	1.80	5.9	57.3	909	12.8
	乗用トラクター	ブラウ	0.27	2.0	1.9	53	0.7
起田	人力	備中鋏(4本犁)	11.85	8.0	100	6541	100
	畜力(馬)	両用犁	0.9~1.58	5.0~6.9	62.5~86.3	337~770	5.2~11.7
	歩行トラクター	3HP ブラウ	1.90	5.0	62.5	353	3.4

注) 1、E.M.R(Relative or Energy Metabolic Rate)=〈作業時エネルギー〉-〈安静時エネルギー〉÷基礎代謝
2、農林省、関東東山農試:渋川

2、農業機械及び作業機の性能

表一 刈取機及び自脱コンバイン等の性能

種 別	刈幅 (刃幅) (m)	適応限界 立毛角 (度)	作業能率 (hr/ha)	燃料消費量 (L/hr)
集束刈取機	0.5~0.8(1.0)	30~40	9~15	1.0
リーバー [グ]	1.2	30~40	9~15	1.0
バインダー2条刈り	0.5~0.8(1.0)	25~35	11.1~	1.5
自脱型コンバイン2条	0.9	20~	6.1~	3.5
" 4条	1.2	20~	4.0~	4.0
普通型コンバイン2.0m	2.0~	20~	2.2~	10.0

注) 集束刈取機：1965~66年の全国試験結果

表二 トラクター用作業機の性能

種 別	作業機	作業能率 (hr/ha)	燃料消費量(L/hr)	備 考
歩行トラクター (8~12HP)	プラウ	13~15	1.0~1.5	
	ロータリーティラー(45~60cm幅)	13~15	1.5~	
乗用トラクター (45~55HP)	ディスクプラウ(26x2)	4~5	5.0~6.0	
	ボトムプラウ(14x2)	4~5	4.5~5.5	
	ロータリーティラー(1.8~2.0m)	4~5	8.0~10.0	
	パディーハロー(2.8m)	2.6(2回掛け)	7.0 (14.0)	

3、機械の利用経費

(1) 人力と農業機械使用別、単位面積当りの作業時間と必要経費

作 業 種 別	Ha 当り作業時間		概 算 必 要 経 費 (円)		
	時間	短縮率と時間 比率 (%)	年間固定費	Ha 当り変動費	計
耕 起	①人 力 (整地を含む)	120	100		
	②歩行トラクター(8~12HP)		(89~88%)	購入価格の24%	
	・プラウ	13~15		" 22%	
	・ロータリーティラー	13~15		" 24%	
	③乗用トラクター(45~55HP)		(97~94%)	購入価格の15%	
	・ディスクプラウ(26"×2)	5~7		" 22%	
	・ボトムプラウ(14"×2)	4~6		" 22%	
・ロータリーティラー(1.8~2.0m)	4~6	" 24%			
刈 取 ・ 脱	①人力	525	100		
	・刈取・集束	335~368	内訳 66%		
	・脱穀・選別	165~182	34%		
穀 ・ 選 別	②集束刈取機と自動脱穀機	55~75	(90~86%)	購入価格の23%	
	・刈 取	15~20	内訳 24%		
	・脱穀・選別 (自脱穀機)	40~55	64%		
	③コンバイン	6~7	(99%)	購入価格の23%	

注) 年間固定費率：日本の固定費率のうち車庫費、租税公課(資本利子等)除いた数値

(2) 計算に必要となる条件設定：(対象国の実態に合わせる)

① 農機の購入時価格と固定費率 (原価償却費、修理・整備費、資本利子・租税公課、車庫費など) の設定

① 労賃単価 (1時間： ___ 円) 燃料単価 (軽油 ___ 円/L, ガソリン： ___ 円/L) の設定

農業機械の機械利用経費算出式：

ア、年間固定費 (円) = 購入価格 (___) × 固定費率 (___ %)

(参考：日本における固定費率)

機械名	耐用年数	年間固定費 (%)	年間固定費の内訳 (%)			
			原価償却費	修理費	車庫費	資本利子等
乗用トラクター	8	20~21	11.3	3.7~4.7	1.5	3.5
歩行トラクター	8	28.5	15.5	8.0	1.5	3.5
ロータリー	5	31.8	18.0	6.3	4.0	3.5
プラウ(D&B)	5	31.0	18.0	4.0	5.5	3.5
ディスクハロー	5	30.5	18.0	4.0	5.0	3.5
代掻き機	5	28.2	18.0	1.7	5.0	3.5
田植機	5	31.0	18.0	5.0	3.5	3.5
自脱型コンバイン	5	28.4	18.0	5.4	1.5	3.5
普通型コンバイン	8	20.6	11.3	4.3	1.5	3.5
動力刈取機	5	22.0	12.5	5.0	1.0	3.5
トレーラー	4	31.0	22.5	2.0	3.0	3.5

イ、変動費 (円) : 燃料・潤滑油費 + 労賃

(ア) 時間当り燃料・潤滑油費 = 燃料消費量(L/hr) × 単価 (円/L) × 1.3 (潤滑油)

(イ) ha 当り燃料・潤滑油費 = 時間当り燃料・潤滑油費 × 使用機械の作業能率 (hr/ha)

(3) 乗用トラクター50HP クラス

① 単位時間、面積当り機械利用経費試算例 (Sri-Lanka)

機 種 : 乗用トラクター 50HP クラス			金 額 (円)
作業能率(ディスクプラウ 26"×2)	①	4.5 hr/ha	-
購入価格 (円)	②		1,730,000
年間固定費 (円)	③	②×固定費率 (15%)	259,500
実作業率 (55~85%)	④	(≒75%)	
時間当り 変動費	燃料・潤滑油費(円)	⑤ 燃費×単価×1.3	150 (5.5L/hr×21円×1.3)
	労 賃 (円)	⑥ 単価×人数÷④	31 (185円/日×1人÷8hr)÷75%
	小 計 (円)	⑦ ⑤+⑥	181
Ha 当り 変 動 費 (円)	⑧	①×⑦	854

注) 「固定費」計算のディスクプラウは含まず

② 年間利用時間及び利用面積当りの利用経費表

- ・時間当り利用経費 = {年間固定費 ÷ 年間利用時間} + 時間当り変動費
- ・ha 当り利用経費 = {年間固定費 ÷ 年間利用面積} + ha 当り変動費

時間当り経費		Ha 当り経費	
年間利用時間	金額 (円)	年間利用面積	金額 (円)
25	10,561	2	130,654
50	5,371	3	87,354
100	2,776	5	52,754
150	1,911	10	26,804
200	1,479	15	18,154
250	1,219	20	13,829
300	1,046	25	11,234
400	830	50	6,044
500	706	75	4,314
550	652	100	3,449

③ 機械利用経費と収益 (損益分岐点面積)

$$\begin{array}{l} \text{機械の利用規模} \\ \text{(6.2 Ha)} \\ \text{(効率利用下限面積)} \end{array} = \frac{\begin{array}{l} \text{機械の年間固定費} \\ \text{(295,500 円)} \end{array}}{\begin{array}{l} \text{Ha 当り収益} - \text{Ha 当り変動費} \\ \text{(48,510 円/Ha) } \quad \text{(815 円/Ha)} \end{array}}$$

注) Ha 収益: スリランカの 1991 から 2001 の Ha 当り収量 3,300kg に米の実勢価格から円換算下価格 14.7 円/kg 乗じた値である。

(4) 歩行トラクター8~12Hp クラス

① 単位時間、面積当り機械利用経費試算例

(Sri-Lanka)

機種: 歩行トラクター				金額 (円)
作業能率(ロータリー40~60cm 幅)	①	14.0 hr/ha		-
購入価格 (円)	②			360,000
年間固定費 (円)	③	②×固定費率 (24%)		86,472
実作業率 (55~85%)	④	(≒75%)		
時間当り変動費	燃料・潤滑油費(円)	⑤	燃費×単価×1.3	60 (2.2L/hr×21円×1.3)
	労賃 (円)	⑥	単価×人数÷④	31 (185円/日×1人÷8hr)÷75%
	小計 (円)	⑦	⑤+⑥	91
Ha 当り変動費 (円)	⑧	①×⑦		1,274

注) 「固定費」計算のロータリーティレーは含まず

② 年間利用時間及び利用面積当りの利用経費表

- ・時間当り利用経費 = {年間固定費÷年間利用時間} + 時間当り変動費
- ・ha 当り利用経費 = {年間固定費÷年間利用面積} + ha 当り変動費

時間当り経費		Ha 当り経費	
年間利用時間	金額 (円)	年間利用面積	金額 (円)
10	8,738	0.5	174,218
30	2,973	1	87,746
50	1,820	1.5	58,922
100	956	2	44,510
150	667	3	30,098
200	523	5	18,568
250	437	7	13,627
300	379	10	9,921
400	307	15	7,309
500	264	20	5,598

③ 機械利用経費と収益 (損益分岐点面積)

$$\begin{array}{l} \text{機械の利用規模} \\ \text{(1.8 Ha)} \\ \text{(効率利用下限面積)} \end{array} = \frac{\begin{array}{l} \text{機械の年間固定費} \\ \text{(86,472 円)} \end{array}}{\begin{array}{l} \text{Ha 当り収益} - \text{Ha 当り変動費} \\ \text{(48,510 円/Ha) } \quad \text{(1,274 円/Ha)} \end{array}}$$

(5) 自脱型コンバイン (3条刈)

① 単位時間、面積当り機械利用経費試算例 (Sri-Lanka)

機 種 : 自脱型コンバイン (3条刈り)			金 額 (円)
作業能率(ロータリカッター付き)	①	6.1 hr/ha	-
購入価格 (円)	②		1,500,000
年間固定費 (円)	③	②×固定費率 (23%)	345,000
実作業率 (55~85%)	④	(≒75%)	
時間当り 変動費	燃料・潤滑油費(円)	⑤ 燃費×単価×1.3	96 (3.5L/hr×21円×1.3)
	労 賃 (円)	⑥ 単価×人数÷④	62 (185円/日×2人÷8hr)÷75%
	小 計 (円)	⑦ ⑤+⑥	158
Ha 当り 変 動 費 (円)	⑧	①×⑦	964

② 年間利用時間及び利用面積当りの利用経費表

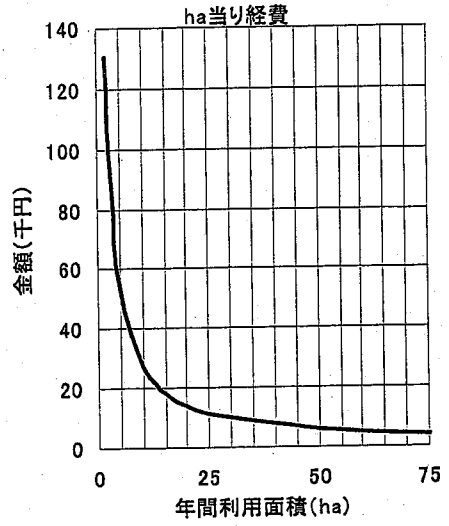
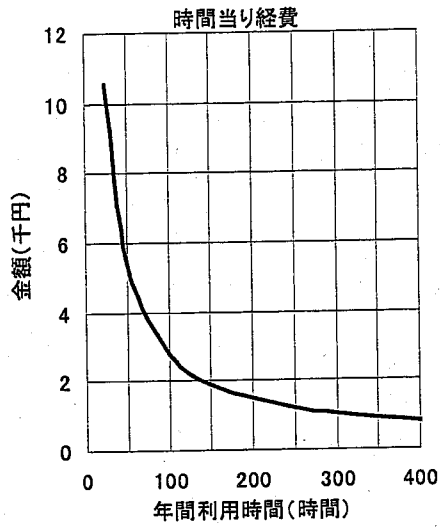
- ・時間当り利用経費 = {年間固定費÷年間利用時間} + 時間当り変動費
- ・ha 当り利用経費 = {年間固定費÷年間面積時間} + ha 当り変動費

時間当り経費		Ha 当り経費	
年間利用時間	金額 (円)	年間利用面積	金額 (円)
50	7058	5	69964
100	3608	10	35464
150	2458	15	23964
200	1883	20	18214
250	1538	25	14764
300	1308	50	7864
400	1021	75	5564
500	848	100	4414
550	785	125	3724
600	733	150	3264

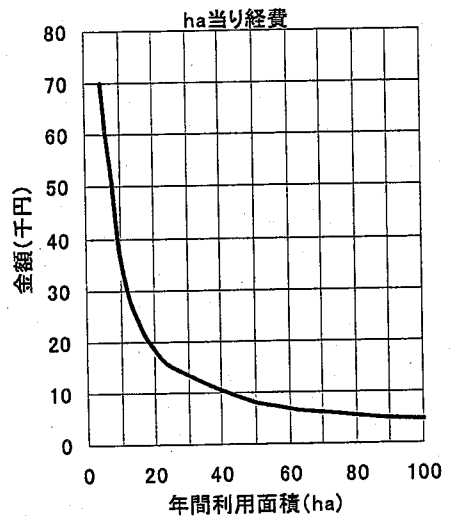
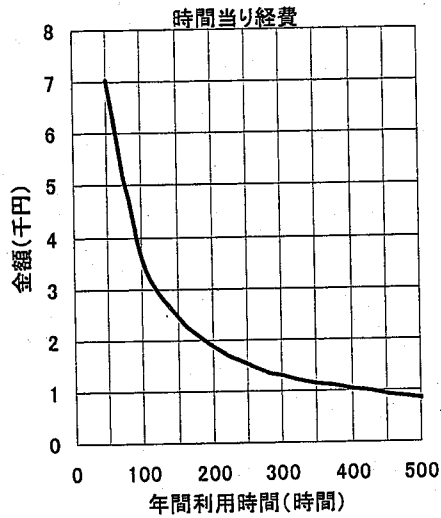
(3) ③ 機械利用経費と収益 (損益分岐点面積)

$$\begin{aligned}
 \text{機械の利用規模} &= \frac{\text{機械の年間固定費}}{\text{Ha 当り収益} - \text{Ha 当り変動費}} \\
 (7.3 \text{ Ha}) &= \frac{(345,000 \text{ 円})}{(48,510 \text{ 円/Ha}) - (964 \text{ 円/Ha})} \\
 (\text{効率利用下限面積}) &
 \end{aligned}$$

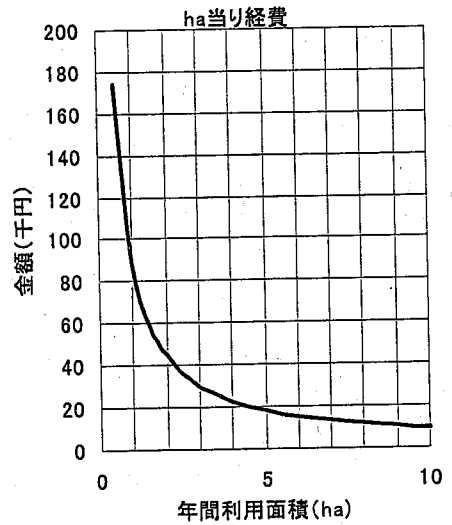
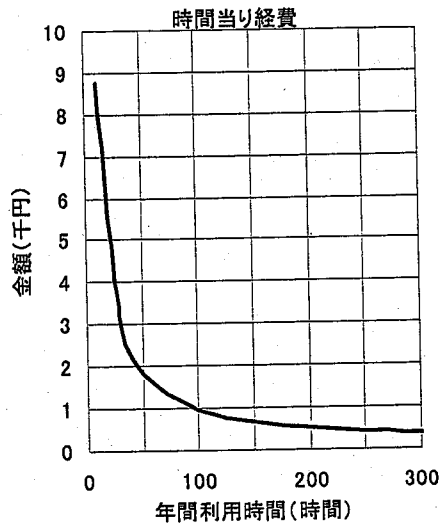
乗用トラクター



歩行トラクター



自脱型コンバイン



3、スリランカにおける水稲作エーカー当り生産費
Cost of Cultivator per acre of Paddy (Major Irrigation)

表-1 エーカー当り生産費 灌漑地区：①ANURADHAPURA ②POLONNARUWA

Operation 作業	Reporting (%)	Labour cost 労働費：Rs/ac (円)	Machinery & Equip't cost：Rs/ac 機械・作業機費(円)	Input cost (投入コスト) Rs/ac (円)	Total Cost Rs/ac (円)
圃場準備 プラウ耕(3回) (2回) 4WT	①72	104.00(133)			104.00
	②100	127.50(163)			127.50
(1回) 2WT	①100		2390.60		2390.60
	②		1950.67		1950.67
畦畔作り	①94		593.95		593.95
	②				
畦畔作り	①100	1239.81			1239.81
	②100	999.75			999.75
均平と散播	①100	754.56		800.53	1555.09
	②	590.09		844.75	1434.84
施肥	①100	188.70		1922.72	2111.42
	②100	185.13		2052.95	2238.08
除草(除草剤)	①98	232.00		676.00	908.00
	②98	150.26		806.88	957.14
病害虫防除	①81	282.00		327.00	609.00
	②88	112.01		346.61	458.62
水管理	①50	1048.00			1048.00
	②59	782.25			782.25
刈取・運搬	①100	1312.50(1,677)			2312.50
	②100	2149.40(2,746)			2149.40
脱穀	①100	710.50(908)	457.93(585)		1168.43
	②100	781.60(999)	463.72(593)		1245.32
風選別	①98	492.50(629)	194.10(248)		686.60
	②100	541.29(692)			722.27
倉庫への運搬	①91		161.00		161.00
	②8		169.68		169.68
付加原価を含めた合計コスト		①7364.57	3203.63	3726.25	14294.45
		②6419.28	3359.00	4051.19	13829.47
付加原価を除く合計コスト		①4476.96	2349.41	3318.46	10644.83
		②3771.55	1910.76	3643.66	9325.97

表-2 関連情報 Related Information
投入量と価格 Quantity and Price of Inputs

Input 投入	Unit 単位	Quantity 量	Unit price (Rs)(円)
SEED (種子)			
Broadcasting (散播)	bu	①2.14	374.08
		②2.18	387.50
LABOUR			
Hired Labour (雇用労力費)	md (人一日)	①23.07	194.06
		②20.07	187.92
Family Labour (家族労力)	md	①14.88	
		②14.09	
Total Labour (合計労力)	md	①37.59	
		②34.16	
FERTILISER (肥料)			
% Reporting			
VI	kg	①69	47.50
		②90	52.50
Urea	Kg	①98	86.50
		②100	82.50
TDM	kg	①65	48.00
		②88	55.00
			10.54
			10.67

YIELD AND RETURNS (生産高と収益)	
Average Yield (Rs/bu) 平均収益	①90.53 ②92.03
Price of Produce (Rs/bu) 生産物価格	①254.00 ②260.00
Gross Incom (Rs/bu) 全体収益	①22994.62 ②23927.80
Profit Including Imputed Cost 付加原価コストを含めた利益	①8700.17 ②10098.33
Profit Excluding Imputed Cost (Rs/acre) 付加原価コストを除いた利益	①12349.79 ②14601.83
Per Unit (Including Imputed Cost)(Rs/bu) 単位 (bu) 当り付加原価コスト	①157.90 ②150.27
Per Unit (Excluding Imputed Cost)(Rs/bu) 単位 (bu) 当り付加原価を除いたコスト	①117.58 ②101.36

換算単位 : Rs : 円 Rate、1.278
 Bushel: bu =20.5kg
 Acre: 40.47a

農業機械の利用による裨益効果

Sri-Lanka 現地調査

(1) 聞き取り調査

表一 1 コンバインと人力による稲収穫

作 業		作業時間等	経 費 概 算
① 手刈 脱穀 選別	Acre	20~30人-日 (160~240hr/acre)	Re.300/日×25日=Re.7500 (9,585円)
	Ha	49~74人-日 (395~592hr/Ha)	Re.300/日×62日=Re.18600 (23,771円)
② 自脱型 コンバイン	Acre	1.6~2.4hr/acre	Fuel:6L/hr×Rs16.5=99.0+運転者 賃金 Rs.50/hr=Rs.149 (190円)
	Ha	4~6hr/ha	Rs.368 (471円)
③=①-②	Acre	200時間(平均) -2時間=198時間	① Re.7500-②Re.149=③Re.7351 (9,395円)
	Ha	494時間(平均) -2時間=492時間	① Re.18300-②Re.368=③Re.17932 (22,917円)
備 考		・機械の経費には固定費等は含めず変動費のみの計算 ・1日8時間労働、円換算 Rate:1.278	

(農家からの機械化による効果)

- ① 適期作業が可能となり、収穫穀物の品質が上がった。
- ② 機械利用により、作業能率が上がり労働力不足がなくなってきた。また、そのため生活水準も高くなってきた。
- ③ 自脱型コンバインは排ワラを切断し圃場に撒き肥料として還元できる。
- ④ 機械の場合、上記の効果はあるが使う使はないのに関係なく耐久資材としての固定費(減価償却費等)等の経費を必要とする。

(2) 自脱型コンバイン(クボタ)の作業性能テスト結果(参考)

(農機デイラーFreudenberg Industries Limited の提供)

表一 2 圃場別作業性能(作業能率・精度、燃料消費量等) 2000/1-2

圃場数 /水稻品種	面積 Acre (Ha)	作業時 間 (hr)	作業能率 Acre/hr (Ha/hr)	燃料消費量		収 量	
				L/hr	L/acre	Bags 数 (32kg/Bag)	Kg
4枚/BG352	2.04 (0.83)	4.9	0.42 (0.17)	4.41	14.69	158	5056
6枚/BG352	2.19 (0.88)	5.9	0.37 (0.15)	4.10	11.44	190	6080
7枚/BG352	3.56 (1.44)	6.9	0.52 (0.21)	5.07	9.84	304	9728
4枚/BG352	1.40 (0.57)	2.5	0.56 (0.23)	4.00	7.14	120	3840
合計(平均)	9.19 (3.72)	20.2	0.45 (0.18)	17.58 (4.39)	43.11 (10.78)	772	24704
備 考	想定される穀粒損失 (Loss) : 729.3 kg (2.9%)						

注) Ha換算: 1 Acreを0.4047Haとして換算

(3) 人力収穫とコンバイン収穫によるコスト比較等

(クボタ PRO481 コンバイン：CIC(Pvt)Seed Ltd の報告)

ア、場所：農家圃場 Katupotha

イ、水稻品種:BG352 ウ、圃場の大きさ：0.5Acre

表-3 人力とコンバインによる水稻収穫のコスト比較

作業区分		人力	コンバイン	
刈取り作業	0.5Acre	7人×Rs.150=1,050	機械コスト (0.5Acre 圃場) ・燃料代：6L/hr×Rs.16.5 =99 (127円) ・運転者： 1人×Rs.50=50 小計：Rs.149 (190円)	
	Ha 換算	17.3人×Rs.150=2,595 (3,316円)		
収集	0.5Acre	2人×Rs.150=300		
	Ha 換算	5人×Rs.150=750 (959円)		
脱穀 ・機械の賃借料 ・作業者賃 (半日)	0.5Acre	8人×Rs.55=440 5人×Rs.75=375		
	Ha 換算	19.8人×Rs.55=1,089(1,392円) 12.4人×Rs.75=930 (1,189円) (2,581円)		
風力選別 (2時間)	0.5Acre	4人×Rs.150=600		
	Ha 換算	9.9人×Rs.150=1,485 (1,897円)		
合計コスト	0.5Acre	Rs.2,765 (3,534円)		Rs.149 (193円)
	Ha 換算	① Rs.6,849 (8,753円)		② Rs.368 (471円)
	コスト差：	{①人力(8,753円) - ②コンバイン(471円) = (8,282円)}		
推定穀粒損失		約2 bushel (41kg) ×Rs.11.5=471.5 (603円)	約0.5bushel (10.25kg) ×Rs.11.5=117.9 (151円)	
備考	機械コストには、固定費(原価償却、修理・整備費など)を除く、燃料代とオペレーター代の変動費(ランニングコスト)だけしか含まれていないため非常に安価のコストになっている。			

{他の関連データ}

(1) Govt. Seed Farm -POLONNARUWA -Per Acre	
人力刈取作業コスト	Rs. 3,000 (3834円): 約10~15%の穀粒ロス
コンバイン収穫コスト	Rs. 950 (1214円): 約2~5%の穀粒ロス
(2) CIC Seed (Pvt) Ltd	
Yala 1999 見積収量 (Estimated Crop)	43,000bushels (20.5kg/ bush) (881,500kg)
実質収量 (Actual Crop)	35,000bushels (717,500kg)
穀粒ロス (Short/Loss)	8,000bushels (164,000kg)
歳入穀粒ロス (Loss of Revenue)	8,000bushels×Rs.40,000=Rs.3,200,000 (4,089,600円)
① Acre 当たり人力による刈取り脱穀コスト (Harvesting&Threshing Cost Per Acre) =21日 (Labour days) ×Rs.145 (185円) =Rs.3045 (3,892円) Ha 当たりコスト=52日×185円=9,620円	
② Acre 当たり風力選別コスト(Winnowing costs per Acre) =70bushels (1435kg:20.5kg/bush) ×Rs.5.5=Rs.385(492円) Ha 当たりコスト=3,546kg×0.34円=1,216円	
③ コスト合計 =Rs.3430 (4,384円) Ha 当たりコスト=Rs.8,475 (10,832円)	
推定穀粒損失 (Estimated Loss) =15~20%	
備考：	

MINUTES OF DISCUSSIONS
ON THE STUDY ON THE JAPAN'S GRANT AID PROGRAM
FOR THE INCREASE OF FOOD PRODUCTION
IN THE DEMOCRATIC SOCIALIST REPUBLIC SRI LANKA

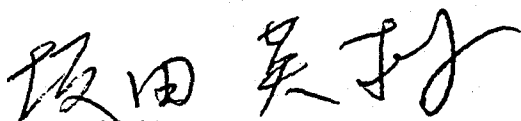
In response to a request from the Government of Democratic Socialist Republic Sri Lanka (hereinafter referred to as "Sri Lanka") for a commodity assistance under the Grant Aid Program for the Increase of Food Production (hereinafter referred to as "2KR") for fiscal year 2004, the Government of Japan decided to conduct a study and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent a Study Team (hereinafter referred to as "the Team") to Sri Lanka headed by Mr. Hideki Sakata, Deputy Director of JICA Sri Lanka Office, and conducted the study from August 28, 2004 to September 10, 2004.

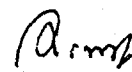
The Team held a series of discussions with the officials concerned of the Government of Sri Lanka and other stakeholders.

As a result of discussions and field survey, both parties confirmed the main items described in the ATTACHMENT.

Colombo, September 9, 2004



Mr. Hideki Sakata
Leader
Study Team
Japan International Cooperation Agency



Mr. Tissa Warnasuriya
Secretary
Ministry of Agriculture, Livestock, Land
and Irrigation
Sri Lanka



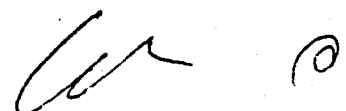
Mr. J.H.J. Jayamaha
Additional Director General
Department of External Resources
Ministry of Finance
Sri Lanka

1. Procedures of 2KR

- 1-1. The Sri Lankan side understood the objectives and procedures of 2KR explained by the Team, as described in ANNEX-I.
- 1-2. The Sri Lankan side will take the necessary measures for smooth implementation of 2KR as described in ANNEX-I.
- 1-3. The Team has explained following new conditions, to the Sri Lankan side, and Sri Lankan side understood and agreed with them.
 - (1) Both sides discussed to hold Consultative Committee Meetings and Liaison Meetings as constituted item 5 and 6 in ANNEX-I.
 - (2) The Sri Lankan side agreed to provide opportunity for stakeholders, such as representative of farmers and Farmers Organization, ASC officer, farm manager, workshop mechanics and technician, representative of fertilizer companies, etc. to participate in the process of formulating, operating and monitoring the 2KR program.
 - (3) The Team explained a new procurement system named "Procurement Agent System," which is going to be introduced to the 2KR program.
 - (4) The Sri Lankan side agreed to keep the study report open to the general people in Japan and relevant organizations.
- 1-4. The Sri Lankan side agreed to utilize the Counterpart Fund for the program for poverty reduction and sustainable development of small-scale family farmers.

2. 2KR System of Execution

- 2-1. The responsible organization for 2KR 2004 are the Ministry of Finance and Ministry of Agriculture, Livestock, Land and Irrigation (MoALLI), and the implementing organization is the MoALLI (Department of Agriculture (DOA), Department of Agrarian Service, National Fertilizer Secretariat (NFS), and Ceylon Fertilizer Co. Ltd. and Colombo Commercial Fertilizers Ltd.)
- 2-2. Distribution System is as described in ANNEX-II.
- 2-3. Maintenance System of the agricultural machinery by recipients will be as follows:
 - (1) Government Seed Farm
Maintenance will be done at their farm workshop for minor repairs, and at the private workshop for other repairs. Agent of manufacturer in Colombo will do the major repairs. Cost of maintenance is borne by the Department of Agriculture.
 - (2) Hire service use at Agrarian Service Centers (ASCs)
Maintenance will be done at private workshop for minor repairs and other repairs. Agent of the manufacturer in Colombo will do the major repairs. Cost of maintenance is borne by ASC accounts in general. Occasionally, the budget allocation is made from the Department of Agrarian Development at minimum level to assure the optimum usage of equipment.



(3) Machinery sold to farmers and Farmers Organization (F/O)

Maintenance will be done at private workshop for minor repairs. Agent of manufacturer in Colombo will do major repairs. Cost of maintenance is borne by the Farmers Organization or individual farmers who purchased by their own.

3. **Target Area(s), Target Crop(s) and Requested Item(s)**

3-1. Target areas and requested items of 2KR for fiscal year 2004 are as described in ANNEX-III. Both sides agreed that distribution of agricultural equipment and fertilizer will be agricultural area including the North and Eastern Provinces in addition to other provinces. Priority of the requested items is also mentioned in ANNEX-III.

3-2. Target crops of 2KR for fiscal year 2004 are food crops such as rice, maize, potato, onion, chili, pulses, etc.

3-3. Sri Lankan side informed that the requested quantity of Fertilizer shall be changed as following considering present stock and their sales record of previous year. The Team accepted the modification as long as it will assure utilization of requested fertilizer for the food crop.

Ammonium Sulphate 20,000MT to 7,500MT

MOP 5,000MT to 12,500MT

3-4. Sri Lankan side informed that the requested quantity of agricultural machinery does not fully accommodate the demand of farmers and ASCs. If it is acceptable for the Government of Japan to approve the full demand, Sri Lankan side is prepared to withdraw the request of fertilizer and training because the priority is much higher on the agricultural machinery than the fertilizer and training.

4. **Counterpart Fund**

4-1. The Team confirmed that Counterpart Fund is accumulated properly through budget allocation for Agricultural machinery and direct payments for fertilizer of Sri Lankan side.

4-2. The Team explained to Sri Lanka side that the obligation amount of 2KR Counterpart Fund would be the appropriate amount agreed by both governments, and The Team requested the Sri Lankan side to monitor accumulation process and amount. The Auditor General shall audit according to constitution of Sri Lanka the Counterpart fund and amount from Agricultural machinery procured under 2KR.

4-3. The Team requested the Sri Lankan side to accelerate implementation of the project under the Counterpart fund account, and the Sri Lankan side agreed to take the proper procedure promptly.

4-4. Sri Lankan side agreed to submit a quarterly report of balance of the Counterpart fund to the Embassy of Japan through formal channel.

4-5. Sri Lankan side agreed to submit Counterpart Fund project implementation report according to the form, which is attached in the Note Verbale. 7

4-6. The Sri Lankan side understood the importance of proper management and use of Counterpart Fund, and explained the executing system as follows:

- (1) Fertilizer
 - a) Deposit system: Fertilizer companies will deposit the cost of fertilizer after sales to customers within 6 months from arrival of the fertilizer at the ports. The fertilizer companies will deposit the payment from the People's bank to the Central Bank of Sri Lanka.
 - b) Responsible organization : Government Fertilizer Companies.
- (2) Agricultural Machinery (Government Seed Farm use)
 - a) Deposit system: Department of Agriculture of MoALLI (DOA) will deposit from available provision and deposit in the Counterpart fund account in Central Bank of Sri Lanka.
 - b) Responsible organization : DOA.
- (3) Agricultural Machinery (Hire service use at Agrarian Service Centers (ASCs))
 - a) Deposit system:
 - 1) Department of Agrarian Development of MoALLI (DAD) will allocate budget and deposit in the Central Bank of Sri Lanka.
 - 2) ASCs will deposit to DAD 1/3 of total CIF value plus local charge by 6 years installment.
 - b) Responsible organization : DAD.
- (4) Agricultural Machinery (Sale to farmers and Farmers Organization (F/O))
 - a) Deposit system:
 - 1) Department of Agrarian Development of MoALLI (DAD) will allocate budget and deposit in the Central Bank.
 - 2) F/O and individual farmers will pay to ASC 1/3 of total CIF value plus local charge by 6 years installment, and ASC will forward the payment to the Agrarian Development Fund of DAD.
 - b) Responsible organization : DAD.

5. Monitoring and Evaluation

- 5-1. The Sri Lankan side explained the progress of the 2KR 2002 as attached.
- 5-2. The Sri Lankan side explained the Monitoring and Evaluation system as follows;
 - a) Fertilizer : by the Fertilizer companies, analyzing their sales result, area-wise, crop-wise and customer-wise.
 - b) Agricultural Machinery (Government Seed Farm use) : by the Seed and Planting Material Development Center of DOA about working condition.
 - c) Agricultural Machinery (Hire service use at ASCs) : by DAD through each District Agrarian Development Office and ASCs about working condition, hiring status and result..
 - d) Agricultural Machinery (Sale to F/O and farmers) : by DAD through each District Agrarian Development Office and ASCs about working condition and amount of repayment recovery.

- 5-3. The Sri Lankan side agreed to submit the Monitoring Report of 2KR 2004 according to the form presented by the Team if the grant is disbursed.
- 5-4. The Sri Lankan side agreed to submit the monitoring result of equipments procured under the past 2KR by September 30, 2004 as promised at the last Consultative Committee to submit once a year.

6. Other relevant issues

- 6-1. The Team recommended that maintenance training and mechanization management training included in the request of 2KR 2004 is to seek other source including local resources. Sri Lankan side understood and informed the Team that priority of training is low compared to procurement of Agricultural machinery.
- 6-2. The Team confirmed that unutilized stock does not exist out of the products procured under the past 2KR.
- 6-3. The Team confirmed that present status of issues discussed in the last Consultative Committee between the two Governments held in February 2003 as follows:
- (1) The Sri Lanka side has applied to utilize Counterpart Fund for purchasing spare parts in order to improve situation of shortage of spare parts for Agricultural machinery. Approximately Rs. 42mil has been approved by the Government of Japan on June 14, 2004, however, the fund has not been utilized as of today due to delay in making budgetary allocation by the MoALLI, and non availability of budget provision for year 2004 estimates of MoALLI. MoALLI promised to take action to obtain allocation from the D.G.-National Budget.
 - (2) The Team confirmed that machinery to be condemned has been tendered since the last January 2003, or in the process of being auctioned for 40 units of 4 Wheel Tractor and 25 units of 2 Wheel Tractor used by DOA. 27 units of 4 Wheel Tractor and 17 units of 2 Wheel Tractor has already been disposed. Under the Government procedure, condemned equipment will be sold through tender target sales price. Tender can be held maximum two times if there is no offer for the first tender announcement. If there is no offer after the second tender announcement, public auction will be held to dispose items. DAD also has taken action to sell condemned equipment.
 - (3) Sri Lankan side explained that maintenance condition and status of Agricultural equipment under both DOA and DAD has been gradually improved by their effort to allocate resources from Farmer's Trust Fund and/or Ministry budget for maintenance purpose and purchasing of spare parts.(DOA: Rs. 10mil in 2003, Rs. 5mil in 2004. DAD : Rs1.6mil in 2003, Rs. 1mil in 2004.) In addition to that funds for purchasing spare parts from Counterpart fund has been approved and it also gives positive effect to improve maintenance condition.
- The Team requested to continue the effort.
- 6-4. Sri Lankan side expressed importance of spare parts at the procurement and requested 20% of CIF value shall be also included as a tender condition for the purchase of spare parts.

- 6-5. The Team proposed to expand eligible country of origin considering Sri Lankan market characteristics and access for spare parts. Sri Lankan side agreed and understood that it may be effective for inviting competitiveness to tender and maximizing purchasing power with limited budget.
- 6-6. The Team confirmed that handing over ceremony was held in 2002 at the delivery of Agricultural equipment and its publicity.

ANNEX-I	Japan's Grant Aid Program for Increase of Food Production (2KR)
ANNEX-II	Distribution System under 2KR 2004
ANNEX-III	Requested Items and Quantity
ANNEX-IV	Area-wise Distribution Plan

Japan's Grant Aid Program for Increase of Food Production (2KR)

1. Japan's 2KR Program

1) Main objectives of Japan's 2KR Program

Many countries in the developing world face chronic food shortages. Reduced yields due to factors such as harsh climate and harmful pests are a serious problem. A fundamental solution to the food problems in developing countries requires, above all, increase of food production through self-reliant efforts on the part of such countries.

To cooperate with the efforts of developing countries to achieve sufficient food production, the Government of Japan has been extending program for the increase of Food Production (Japan's 2KR Program) since 1977.

2KR aims at providing fertilizer, agricultural machinery & equipment and others to assist food production programs in developing countries which are striving to achieve self-sufficiency in food.

2) Counterpart fund

A recipient of 2KR is obliged to open a bank account and deposit local currency half of the FOB value of the procured equipment & materials in principle within a period of 4 years from the date of the signing of the E/N (Exchange of Notes). The fund is called the "2KR counterpart fund" and it is to be used for the purpose of economic and social development, including agricultural forestry and/or fisheries development, and for the increase of food production in the recipient country. Therefore 2KR can have double benefits; through direct procurement of agricultural input under the grant and through the counterpart fund to support local development activities.

2. Eligible Countries for 2KR

Any developing country making efforts to increase food production in order to reach self-sufficiency is potentially eligible to receive 2KR. The following factors are taken into consideration in the selection of recipient countries:

- 1) The supply and demand of staple foods and agricultural input in the country.
- 2) The existence of a well-defined plan for increase of food production, and
- 3) The past records of Japanese grant aid in the agricultural sector.

3. Procedures and Standard Implementation Schedule of 2KR

The standard procedures of 2KR are outlined in the Flow Chart.

- 1) Application (made by a prospective recipient country)
- 2) Study (Analysis of application, involving field surveys, with findings to be compiled as a report)
- 3) Appraisal and approval (appropriateness and rationale of application to be assessed and approved by the Government of Japan)
- 4) Exchange of Notes (E/N are signed by the two government concerned)
- 5) Recommendation of Procurement Management Agent by JICA
- 6) Conclusion of a procurement management contract with Procurement Management Agent and the verification of the contract
- 7) Tendering and contracting
- 8) Verification of contract
- 9) Shipment and payment
- 10) Confirmation of the arrival of goods

Detailed descriptions of the steps are as follows.

3-1. Application (Request for 2KR)

To receive 2KR, a recipient country has to submit a request to the Government of Japan. A request for 2KR is made by filling out the 2KR questionnaire which is sent annually to potential recipient countries by the Government of Japan.

3-2. Study, Appraisal and Approval

Japan International Cooperation Agency (JICA) will dispatch the preliminary study mission to countries which could be recipient country of that fiscal year. The study includes:

- 1) Confirmation of background, objectives and expected benefits of the project
- 2) Evaluation of suitability of the project for the 2KR scheme
- 3) Recommendation of project components
- 4) Estimation of program cost
- 5) Preparation of a report

The following points are given particular importance when a request is studied:

- 1) Usage of agricultural input requested
- 2) Distribution plan of agricultural input requested
- 3) External audit system on the Counterpart Fund
- 4) Holding liaison meetings
- 5) Consultation with stakeholders in the process of 2KR

The Government of Japan appraises the project to see whether or not it is suitable for 2KR based on the study report prepared by JICA and the results of its appraisals are then submitted to the Cabinet for approval.

After approval by the Cabinet, the Grant Aid becomes official with the Exchange of Notes (E/N) signed by the Government of Japan and the Government of recipient country.

3-3. Procurement Methods and Procedures after the E/N

The details of procedural steps involved after signing of the E/N and up to the payment stage are described as follows:

1) Procedural details

Procedural details on the procurement of goods under 2KR are to be agreed upon between the authorities of the two governments concerned at the time of the signing of the E/N.

Essential points to be agreed upon are outlined as follows:

- a) JICA is in a position to expedite the proper execution of the program
- b) The recipient government ("Recipient") will procure the goods in accordance with JICA's "Guidelines for Procurement Procedures under Japan's Grant Aid for Increase of Food Production"
- c) Tender documents and detailed evaluation reports are to be reviewed by JICA.

2) Focal Points of "Guidelines for Procurement Management Services under the Japan's Grant Aid for Increase of Food Production"

Handwritten initials and marks: "G/M" and "P." with a checkmark.

a) Procurement Management Agent

The Procurement Management Agent ("the Agent") is an Agent to provide the services ("the Services") of managing the procurement procedures of products and supervising the work to be undertaken by a contracted supplier.

The obligation of the Agent is to contribute to the smooth execution of 2KR by application of its technical expertise, behaving with fairness and impartiality to the Supplier on one hand and securing the confidence of the Recipient on the other.

b) Contract with the Agent

The Recipient shall conclude an employment contract with the Agent according to the recommendation by JICA for the Services described in item c) below.

The Agent will provide the Services on behalf of the Recipient after verification of the contract by the Government of Japan.

c) The Services to be provided are:

1) to prepare the tender documents necessary for tendering, with full confirmation of the Recipient's views on procurement method, supplier's contract, conditions and eligibility of the tenderers;

2) to make certain that tender is carried out fairly and appropriately;

3) to provide appropriate supervision of and give guidance to the Supplier ;and

4) to assist in the reporting of the counterpart fund.

d) Verification of contract

The contract concluded between the Recipient and the Agent shall become effective only after verification of the contract by the Government of Japan in accordance with the E/N.

Prior to the verification of the contract by the Government of Japan, JICA shall examine the contract.

e) Period of Execution

The contract shall clearly state the period of execution of the Services. The period of execution shall not extend beyond the time limits of validity of the Grant as stipulated in the E/N.

f) Contract prices

The total amount of the contract price shall not exceed the 2KR amount referred to in the E/N.

g) Payment

The recipient shall conclude a Banking Arrangement (B.A) with an authorized foreign exchange bank of Japan immediately after signing the E/N in order to make payment in accordance with the verified contract.

In accordance with the E/N, the contract shall have a clause stating that "payment shall be made in Japanese Yen through an authorized foreign exchange bank in Japan under an Authorization to Pay (A/P) issued by the Recipient or its designated authority".

Payment shall be made in accordance with the criteria set forth by the Government of Japan.

3) Focal Points of "Guidelines for Procurement Procedure under Japan's Grant Aid for Increase of Food Production"

a) Procurement Method

The grant is required to be used the grant with due consideration to economy and efficiency without discrimination requiring those who are eligible to provide the needed goods.

JICA considers that Competitive Tendering is the best procedure to satisfy these principles.

b) Type of Contract

The contract should be concluded on the basis of a lump sum price.

c) Size of Contract

The size of the tender lot should be determined in a way to obtain the broadest possible scope of competition.

d) Advertising

The tender notice should be advertised in at least one newspaper in general circulation in the recipient country (or neighboring countries) or Japan and in the official gazette, if any, of the recipient country.

e) Tender Documents

The rights and obligations of the Recipient, vis-a-vis tenderers for the goods to be procured for the program, are governed by the tender documents issued by the Recipient.

Tender documents should be so worded as to permit and encourage competitive tendering. They should describe as clearly as possible the goods to be procured, qualifications required of the tenderer, eligible source countries, size of contracts, the place and timing of delivery, insurance, transportation, bonds and warranties as well as other pertinent terms.

f) Time Interval between Invitation and Submission of Tenders

Generally, not less than 30 days from the date of invitation for tenders should be allowed.

g) Opening of Tenders

Tenders shall be opened in public in the recipient country or Japan where tenderers' representatives are allowed to attend as witnesses.

h) Evaluation of Tenders

Tender evaluations should be consistent with the terms and conditions stated in the tender documents. Those tenders which substantially conform to the technical specifications, and are responsive to other stipulations of the tender documents, shall be judged on the basis of their submitted price, and the tenderer who submitted the lowest price shall be designated as the successful tenderer.

A detailed evaluation report of tenders, giving the reasons for their acceptance or rejection, shall be prepared by the recipient country.

i) Rejection of Tenders

All tenders should not be rejected nor new tenders be invited using the same specifications solely for the purpose of obtaining lower prices in the new tender, except in the case where the lowest tender bids exceed the cost estimates. Rejection of all tenders may only be justified when tenders do not comply with the tender documents.

j) Award of Contract

The contract shall be awarded, within the period specified for the validity of the tender, to the tenderer who, in compliance with the conditions and specifications stipulated in the tender documents, offers the lowest price.

k) Balance

In the event that there is an excess amount of money remaining above the bid resulting from the tender, the balance shall be considered for use in the purchase of an additional

quantity of goods, subject to consultation with the Government of Japan.

l) Verification of the Contracts

The contracts for the program shall become effective upon verification by the Government of Japan. The Recipient shall submit two originals signed contract to the Government of Japan for verification.

m) Payment

The payment for each contract shall be made at the time of shipment of the goods against the presentation of shipping documents under the Authorization to Pay (A/P), which shall be separately issued for each contract by the Recipient or its designated authority immediately after the verification of each contract.

4. Undertakings by the Recipient

The government of the recipient country will take necessary measures:

- 1) To ensure prompt unloading and customs clearance at ports of disembarkation in the recipient country and prompt internal transportation therein of the goods purchased under 2KR.
- 2) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the goods and services under the Verified Contracts.
- 3) To ensure that the goods purchased under 2KR will make an effective contribution to the increase of food production and eventually to stabilize and develop the recipient country's economy.
- 4) To bear all the expenses, other than those covered by 2KR, necessary for the execution of 2KR.
- 5) To maintain and use the goods procured under 2KR properly and effectively.
- 6) To introduce the external audit system on the Counterpart Fund.
- 7) To give priority to projects for small scale farmer and poverty reduction for the use of the Counterpart Fund.
- 8) To monitor and evaluate the progress of 2KR and to submit a report to the Government of Japan every year.

5. Consultative Committee

5-1. The purpose of establishment on the Consultative Committee

The Government of Japan and the Government of recipient country will establish a consultative committee ("Committee") in order to discuss any matter, including deposit of counterpart fund and its usage, for the purpose of effective implementation in recipient country. The Committee will meet in principal in recipient country at least once a year.

5-2. The member of the Committee

1) Principal member

Principal member shall be the representative of the Government of recipient country and the Government of Japan (Ministry of Foreign Affairs of Japan or Embassy of Japan). The number of the representatives in each Government will not be limited and not be necessary to be equal (the representative from implementing organization of the Project in recipient country shall be included as a member).

2) The chairman

The chairman shall be appointed from the representative of the Government of the Recipient Country.

5-3. Other participants

1) JICA

The representative of JICA (Headquarter of JICA or JICA local office in recipient country) will be invited to the Committee as observer and support the Government of Japan as the organization of encouraging effective implementation of 2KR.

2) JICS

The representative of JICS will be invited to the Committee provides advisory service to the Government of recipient country and work as the secretariat of the Committee. The role of the secretariat will be such as collecting information related to the 2KR, preparing the material for discussion and making the Record of Discussion on the Committee.

5-4. Term of Reference of the Committee

The subject centered on the below shall be discussed in the Committee.

- 1) To discuss the progress of distribution and utilization of the goods in the recipient country purchased under the Project.
- 2) To evaluate the effectiveness of utilization of the product in recipient country for the production of staple food.
- 3) In case there are some problems (especially the delay of distribution and utilization of the product and deposit of the counterpart fund), opinion exchanges for solving such problems, progress report of implementation of countermeasures by the recipient Government, suggestion by the Government of Japan, shall be done in the Committee.
- 4) To confirm and report the deposit of the counterpart fund
- 5) To exchange views on the effective utilization of the counterpart fund
- 6) To discuss the promotion and the publicity of the projects financed by the counterpart fund.
- 7) Others

6. Liaison Meeting

6-1. The purpose of establishment on the Liaison Meeting

The Government of Japan and the Government of recipient country will establish a Liaison Meeting in order to discuss any matter, including deposit of counterpart fund and its usage, for the purpose of effective implementation in recipient country. The Liaison Meeting will meet in recipient country at least three times a year.

6-2. Terms of Reference of the Liaison Meeting

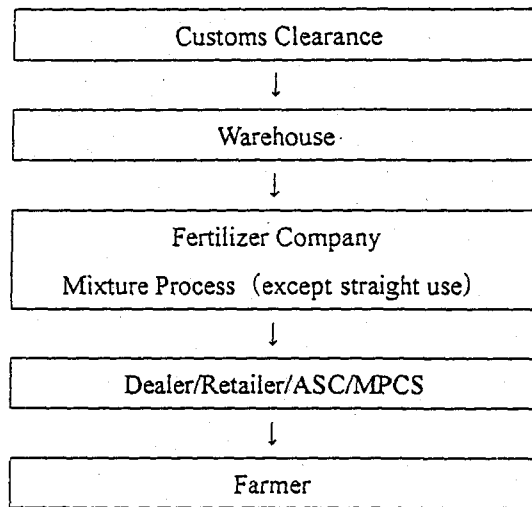
The subject centered on the below shall be discussed in the Liaison Meeting.

- 1) To discuss the progress of distribution and utilization of the goods in the recipient country purchased under the Project.
- 2) To evaluate the effectiveness of utilization of the product in recipient country for the production of staple food.
- 3) In case there are some problems (especially the delay of distribution and utilization of the product and deposit of the counterpart fund), opinion exchanges for solving such problems, progress report of implementation of countermeasures by the recipient Government, suggestion by the Japanese side, shall be done in the Liaison Meeting.
- 4) To confirm and report the deposit of the counterpart fund
- 5) To exchange views on the effective utilization of the counterpart fund
- 6) To discuss the promotion and the publicity of the projects financed by the counterpart fund.
- 7) Others

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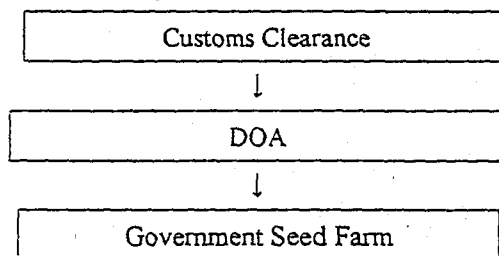
Distribution System

1. Fertilizer

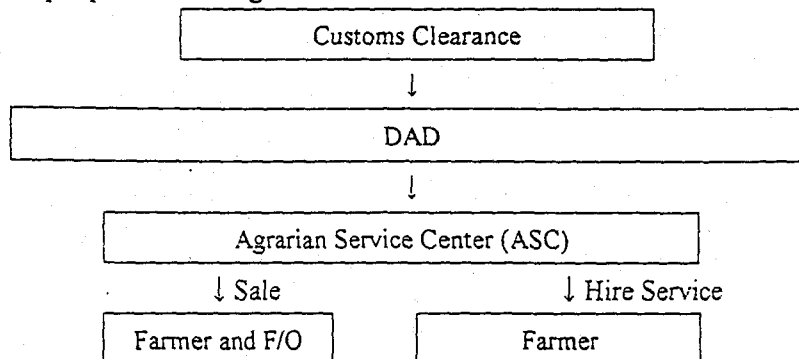


2. Agricultural Machinery

1) DOA : Government Seed Farm Use



2) DAD : Hire purpose from Agrarian Service Center and Sale to F/O



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Category	Distribution Department/ Organization	Item	Requested Qty	Amended Request Qty	Final Qty	Priority
Fertilizer	Two Government Fertilizer Companies	Ammonium Sulphate	20,000MT	7,500MT	declined	2
		MOP	5,000MT	12,500MT	to be decided	
Agricultural Machinery	Dept. of Agriculture	4-Wheel Tractor (40-47HP)	4	4	4	1(2)
		Rear Grader for 4-Wheel Tractor (40-47HP)	4	4	4	1(2)
		Rotary Tiller for 4-Wheel Tractor (40-47HP)	3	3	3	1(2)
		Paddy Driving Harrow for 4-Wheel Tractor (40-47HP)	4	4	4	1(3)
		Bottom Plow for 4-Wheel Tractor (40-47HP)	4	4	4	1(2)
		Combine Harvester (160 cm cutting width or 4 row)	2	2	2	1(1)
	Dept. of Agrarian Development	4-Wheel Tractor (40-47HP)	10	10	10	1(3)
		2-Wheel Tractor (Max output 8HP or Rated output 7.5 HP)	100	100	100	1(1)
		Combine Harvester (130 cm cutting width or 3 row)	3	3	3	1(4)
		Disc Plow for 4-Wheel Tractor (45-50HP)	50	50	50	1(2)
Training	Dept. of Agriculture	Agricultural Machinery Maintenance	2-3M·5 persons		declined	
		Agricultural Mechanization	1M·4 persons		declined	
	Dept. of Agrarian Development	Agricultural Machinery Maintenance	2-3M·5 persons		declined	
		Agricultural Mechanization	1M·5 persons		declined	

22

	District	No. of ASC	4WT attached	No of Tractors serviceable	No. of ASC without Tractor	Proposed Allocation
		a	b	c	d=a-c	e
1	Ampara	29	19	12	17	1
2	Batticaloa	17	10	5	11	1
3	Trincomalee	22	10	5	12	1
4	Hambanthota	16	25	11	4	1
5	Anuradhapura	40	42	35	2	1
6	Kurunegala	55	48	36	16	1
7	Puttalam	17	37	17	3	1
8	Vavuniya*	8	8	5	3	1
9	Killinochchi	7	-	-	8	1
10	Badulla	31	20	9	22	1
	Total	242	219	135	98	10

*No. of ASC in Vavunia District shows only number of working ASC.

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2 Wheel Tractor for DAD

No.	District	Demand	Proposed Allocation	No. of Farmer families (Ref)
1	Trincomalee	29	10	7,973
2	Anuradhaprura	20	10	3,682
3	Hambanthota	21	10	3,240
4	Badulla	15	8	4,694
5	Monaragara	21	5	4,695
6	Polonnaruwa	18	10	3,478
7	Ampara	16	10	3,077
8	Batticaloa	18	10	1,022
9	Vavuniya	17	5	n.a.
10	Jaffna	5	2	1,053
11	Kurunegala	30	15	4,049
12	Kegalle	19	5	n.a.
	Total	229	100	

Convine Harvester for DAD

No.	District	Already Allocated	Proposed Allocation
1	Kurunegala	n.a.*	1
2	Ampara	2	1
3	Hambanthota	1	1
		3	3

* One of Convine Harvester already allocated to Ampara has been re-allocated from Kurunegara due to high demand there.

2
As

4/2

4 Wheel Tractor and Combine Harvester for DOA

Province		Badulla	Anuradhpura	Polonnaruwa	Trincomalee	Ampara	Total
Seed Farm		Aluttarama	Maha Iruppallama	Polonnaruwa	Kantale	Malwatta	
1	4-Wheel Tractor (40-47HP)	1	1		1	1	4
2	Combine Harvester (160 cm cutting width or 4 row)		1	1			2
3	Rear Grader for 4-Wheel Tractor (40-47HP)	1	1	1		1	4
4	Rotary Tiller for 4-Wheel Tractor (40-47HP)	1	1			1	3
5	Paddy Driving Harrow for 4-Wheel Tractor (40-47HP)		1	1	1	1	4
6	Bottom Plow for 4-Wheel Tractor (40-47HP)	1	1	1		1	4

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2

Province	Seed Farm	Ha*	No. of Tractor	Out of Order	Working
Badulla	Aluttarama	43.1	7	0	7
Anuradhpura	Maha Iruppallama	46.8	12	5	7
Trincornalee	Kantale	57.8	10	1	9
Ampara	Malwatta	57	8	2	6

*Cultivation extent in 2003/2004 Maha season

Province		Badulla	Anuradhpura	Trincornalee	Ampara	Total
Seed Farm		Aluttarama	Maha Iruppallama	Kantale	Malwatta	
No. of Tractor	Present	7	12	10	8	37
	Repair	0	2	1	2	5
	Reserve in use*	4	5	4	4	17
	a Working	3	5	5	2	15
Working Capacity per unit (ha/hr)	b	0.2	0.2	0.2	0.2	
Working hour per day (hr/day)	c	6	6	6	6	
Working days per season (days)	d	7	7	7	7	
Working Capacity per season (ha)	e=bxcd	8.4	8.4	8.4	8.4	
Total Cultivation area (ha)	f=exa	25.2	42	42	16.8	
Target Area (ha)	g	43.1	46.8	57.8	57	204.7
Area shortage of Tractor (ha)	h=f-g	17.9	4.8	15.8	40.2	78.7
Necessary No. of Tractor	i=h/e	3	1	2	5	11
Requested Qty		1	1	1	1	4

Reserve tractors are kept in case of working tractor breakdown. In use tractors are used for other purpose such as transportation, threshing as land preparation period for Maha is duplicated with the end of previous Yara harvesting related work.

Province	Seed Farm	Ha*	No. of Combine	Out of Order	Working
Polonnaruwa	Polonnaruwa	102.4	3	1	2
Anuradhpura	Maha Iruppallama	46.8	4	2	2

*Harvest extent is based on the cultivation extent in 2003/2004 Maha season.

Province		Polonnaruwa	Anuradhpura	Total
Seed Farm		Polonnaruwa	Maha Iruppallama	
No. of Tractor	Present	3	4	7
	Repair	1	2	3
	a Working	2	2	4
Working Capacity per unit (ha/hr)*	b	0.18	0.18	
Working hour per day (hr/day)	c	6	6	
Working days per season (days)	d	15	15	
Working Capacity per season (ha)	e=bxcd	16.2	16.2	
Total Harvesting area (ha)	f=exa	32.4	32.4	
Target Area (ha)	g	102.4	46.8	149.2
Area shortage of Combine Harvester/ha	h=f-g	70	14.4	84.4
Necessary No. of Combine	i=h/e	5	1	6
Requested Qty		1	1	2

*Working capacity is calculated by average working capacity among 2, 3, 4row combine harvester.

f
as

5

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- Total Distribution of Four Wheel Tractors
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- Tractor and Agri. Equipment Distribution- 2002 (Received Under 2001 Yen Grant)
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- 02 Wheeled Tractors Instalment Recoveries (105 Units Received under 2001 Yen Grant)
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- Machinery Distribution and Condition Report
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- Future Distribution Plan - Combine Harvesters
- Future Distribution Plan for Disc Plough (50 Nos)
- Future Distribution Plan - Two Wheel Tractors
- Hire rates of 4-Wheel Tractors
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- Distribution of implements received under Food Production Grant (2004)
- Expenditure & Income Statement for the Paddy Farms -Year 2003
- Farmwise & Cropwise Cultivated Extents (ha) -2003/04 Maha & 2004 Yala
- Tractors Received under Food Production Grant and already condemned

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- Information on SA Fertilizer Supplied Under Japanese Yen Grant (2KR) (1987-2002)
- Import Prices of Major Fertilizers in 2004

NFS

- The Price List Effective From 1st July 2004
- MOP/SA Consumption

CFC/CCF

3. 対象国農業主要指標

I. 国名				
正式名称	スリランカ民主社会主義共和国 Democratic Socialist Republic of Sri Lanka			
II. 農業指標		単位	データ年	
総人口	1891.00	万人	2002年	*1
農村人口	864.10	万人	2002年	*1
農業労働人口	389.40	万人	2002年	*1
農業労働人口割合	44.90	%	2002年	*1
農業セクターGDP割合	19.00	%	2001年	*10
耕地面積/トラクター一台当たり	112.00	ha	2001年	*2
III. 土地利用				
総面積	656.10	万ha	2001年	*3
陸地面積	646.30	万ha (100%)		*3
耕地面積	89.60	万ha (13.9%)		*3
永年作物面積	101.50	万ha (15.7%)		*3
灌漑面積	59.70	万ha	2001年	*3
灌漑面積率	66.60	%	2001年	*3
IV. 経済指標				
1人当たりGNP	880.00	US\$	2001年	*10
対外債務残高	85.30	億US\$	2001年	*11
対日貿易量 輸出	225.48	億円	2003年	*12
対日貿易量 輸入	433.62	億円	2003年	*12
V. 主要農業食糧事情				
FAO食糧不足認定国	一時的		2004年	*9
穀物外部依存量	110.50	万t	2003/2004年	*9
1人当たり食糧生産指数	122.10	1989~91年 =100	2003年	*6
穀物輸入	129.30	万t	2002年	*4
食糧援助	8.10	万t	2002年	*5
食糧輸入依存率	13.22	%	2002年	*4
カロリー摂取量/人日	2,274.00	kcal	2001年	*7
VI. 主要作物単位収量				
穀物	3,725.70	kg/ha	2003年	*8
米	3,827.20	kg/ha	2003年	*8
小麦	n. a.	kg/ha	2003年	*8
トウモロコシ	1,153.80	kg/ha	2003年	*8

*1 FAOSTAT database-Population 26 February 2004

*2 FAOSTAT database-Means of Production 1 December

*3 FAOSTAT database-Land 22 August 2003

*4 FAOSTAT database-Agricultural & Food Trade 8 January 2004

*5 FAOSTAT database-Food Aid (WFP) 14 January 2004

*6 FAOSTAT database-Agricultural Production Indices 18 March 2004

*7 FAOSTAT database-Food Balance Sheets 30 June 2003

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*11 Global Development Finance 2003

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Republic of Sri Lanka*

CHAPTER XVII

FINANCE

Control of
Parliament
over public
finance.

148. Parliament shall have full control over public finance. No tax, rate or any other levy shall be imposed by any local authority or any other public authority, except by or under the authority of a law passed by Parliament or of any existing law.

Consolidated
Fund.

149. (1) The funds of the Republic not allocated by law to specific purposes shall form one Consolidated Fund into which shall be paid the produce of all taxes, imposts, rates and duties and all other revenues and receipts of the Republic not allocated to specific purposes.

(2) The interest on the public debt, sinking fund payments, the costs, charges and expenses incidental to the collection, management and receipt of the Consolidated Fund and such other expenditure as Parliament may determine shall be charged on the Consolidated Fund.

Withdrawals of
sums from
Consolidated
Fund.

150. (1) Save as otherwise expressly provided in paragraphs (3) and (4) of this Article, no sum shall be withdrawn from the Consolidated Fund except under the authority of a warrant under the hand of the Minister in charge of the subject of Finance.

(2) No such warrant shall be issued unless the sum has by resolution of Parliament or by any law been granted for specified public services for the financial year during which the withdrawal is to take place or is otherwise lawfully charged on the Consolidated Fund.

(3) Where the President dissolves Parliament before the Appropriation Bill for the financial year has passed into law, he may, unless Parliament shall have already made provision, authorize the issue from the Consolidated Fund and the expenditure of such sums as he may consider necessary for the public services until the expiry of a period of three months from the date on which the new Parliament is summoned to meet.

(4) Where the President dissolves Parliament and fixes a date or dates for a General Election the President may, unless Parliament has already made provision in that behalf, authorize the issue from the Consolidated Fund and the expenditure of such sums as he may, after consultation with the Commissioner of Elections, consider necessary for such elections.

Contingencies
Fund.

151. (1) Notwithstanding any of the provisions of Article 149, Parliament may by law create a Contingencies Fund for the purpose of providing for urgent and unforeseen expenditure.

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89.

(2) The Minister in charge of the subject of Finance, if satisfied —

- (a) that there is need for any such expenditure, and
- (b) that no provision for such expenditure exists,

may, with the consent of the President, authorize provision to be made therefor by an advance from the Contingencies Fund.

(3) As soon as possible after every such advance, a Supplementary Estimate shall be presented to Parliament for the purpose of replacing the amount so advanced.

152. No Bill or motion, authorizing the disposal of, or the imposition of charges upon, the Consolidated Fund or other funds of the Republic, or the imposition of any tax or the repeal, augmentation or reduction of any tax for the time being in force shall be introduced in Parliament except by a Minister, and unless such Bill or motion has been approved either by the Cabinet of Ministers or in such manner as the Cabinet of Ministers may authorize.

Special provisions as to Bills affecting public revenue.

153. (1) There shall be an Auditor-General who shall be appointed by the President and who shall hold office during good behaviour.

Auditor-General

(2) The salary of the Auditor-General shall be determined by Parliament, shall be charged on the Consolidated Fund and shall not be diminished during his term of office.

(3) The office of the Auditor-General shall become vacant—

- (a) upon his death;
- (b) on his resignation in writing addressed to the President;
- (c) on his attaining the age of sixty years;
- (d) on his removal by the President on account of ill health or physical or mental infirmity; or
- (e) on his removal by the President upon an address of Parliament.

(4) Whenever the Auditor-General is unable to discharge the functions of his office, the President may appoint a person to act in the place of the Auditor-General.

90

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Duties and
functions of
Auditor-
General

154. (1) The Auditor-General shall audit the accounts of all departments of Government, the Offices of the Cabinet of Ministers, the Judicial Service Commission, the Public Service Commission, the Parliamentary Commissioner for Administration, the Secretary-General of Parliament and the Commissioner of Elections, local authorities, public corporations and business or other undertakings vested in the Government under any written law.

(2) Notwithstanding the provisions of paragraph (1) of this Article, the Minister in charge of any such public corporation or business or other undertaking may, with the concurrence of the Minister in charge of the subject of Finance, and in consultation with the Auditor-General, appoint a qualified auditor or auditors to audit the accounts of such public corporation or business or other undertaking. Where such appointment has been made by the Minister, the Auditor-General may, in writing, inform such auditor or auditors that he proposes to utilize his or their services for the performance and discharge of the Auditor-General's duties and functions in relation to such public corporation, business or other undertaking and thereupon such auditor or auditors shall act under the direction and control of the Auditor-General.

(3) The Auditor-General shall also perform and discharge such duties and functions as may be prescribed by Parliament by law.

(4) (a) The Auditor-General may for the purpose of the performance and discharge of his duties and functions engage the services of a qualified auditor or auditors who shall act under his direction and control.

(b) If the Auditor-General is of opinion that it is necessary to obtain assistance in the examination of any technical, professional or scientific problem relevant to the audit, he may engage the services of —

(i) a person not being an employee of the department, body or authority the accounts of which are being audited, or

(ii) any technical or professional or scientific institution not being an institution which has any interest in the management of the affairs of such department, body or authority.

and such person or institution shall act under his direction and control.

(5) (a) The Auditor-General or any person authorized by him shall in the performance and discharge of his duties and functions be entitled —

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Republic of Sri Lanka.*

91

- (i) to have access to all books, records, returns and other documents ;
 - (ii) to have access to stores and other property ; and
 - (iii) to be furnished with such information and explanations as may be necessary for the performance of such duties and functions.
- (b) Every qualified auditor appointed to audit the accounts of any public corporation, or business or other undertaking, or any person authorized by such auditor shall be entitled to like access, information and explanations in relation to such public corporation, or business or other undertaking.
- (6) The Auditor-General shall within ten months after the close of each financial year and as and when he deems it necessary report to Parliament on the performance and discharge of his duties and functions under the Constitution.
- (7) Every qualified auditor appointed under the provisions of paragraph (2) of this Article shall submit his report to the Minister and also submit a copy thereof to the Auditor-General.
- (8) In this Article, "qualified auditor" means —
- (a) an individual who, being a member of the Institute of Chartered Accountants of Sri Lanka, or of any other Institute established by law, possesses a certificate to practise as an Accountant issued by the Council of such Institute ; or
 - (b) a firm of Accountants each of the resident partners of which, being a member of the Institute of Chartered Accountants of Sri Lanka or of any other Institute established by law, possesses a certificate to practise as an Accountant issued by the Council of such Institute.