Table I.4-4 Economic Price of Fertilizer (DAP)

(Unit: K£, '000)

Table I.4-6 Standard Conversion Factor

1 World Bank Draisated Drice to the year 2010 for DAP					i		un)	(Unit: K& '000)
(1) Would Dalin Flogocock i loc to die jour Edie 15: 5: 5: 4: 10: 10: 10: 10: 10: 10: 10: 10: 10: 10	155.5	Item	1993/94	1994/95	1995/96	1996/97	1997/98 Average	Werage
(004/301) (300 price)	1610	(1) Imports	5,056,418	5,753,988	7,758,424	8,424,308	9,533,676	7,305,363
2. Adjusted to 1888 piroe (1985) (0.04) con.	40	(2) Exports	3,625,206	4,170,724	4.656.184	5,696,299	5,722,973	4,774,277
3, Freignt and Insurance (COA/ COI)	2 5	(a) 1 (b)	000000	110000	1 059 784	1 129 703	1 197 487	1 011 105
4. CIF Monbasa (US\$/ton)	[02	(3) Import Duties	800'807	252,314	10000	1,140,700) () () () () () () () () () () () () ()	2.
5. Unloading and port handling (US\$/ton)	6	(4) Export Duties	130	0	0	0	0	5.6
6 Value at Kenya horder (IIS\$/ton)	210	(5) Subsidy on Exports	0	0	0	0	0	0
3. Value at I (Colly a policy) $(2.34)^{\circ}$ (1.5.4) $(1.5.4)^{\circ}$	15,414	(6)=(1)+(2)	8,681,624	9,924,712	12,414,608	9,924,712 12,414,608 14,120,607 15,256,649	15,256,649	12,079,640
8 Domestic handling and transport cost (to Marigat)*	1.200	(7)=(1)+(2)+(3)-(4)+(5)	9,421,133	10,854,626	13,473,392	15,250,310	16,454,136	13,090,719
Wholecale mice in Marigat (Ksh/ton)	16,614	(8)SCF=(6)/(7)	0.922	0.914	0.921	0.926	0.927	0.923
10 Tangard to from from (Keb/ton)**	5.5	Source: Statistical Abstract 1998	act 1998					
10. Iralispote to/ Ironi Janii (NSti/ toli/mi) ·							
11. Farmgate price (Ksh/ton)	15,999							
12. Farmgate price (Ksh/kg)	16							
Source: World Bank Global Commodity Markets July 1999, and JICA Stu-	ICA Study team							
Note: * 1300Ksh*SCF, ** 666Ksh*SCF								

Table I.4-5 Economic Price of Fertilizer (SA)

 World Bank Projected Price to the year 2010 for Urea 	
(US\$/ton in 1990 price)	111.0
2. Adjusted to 1999 price (103.56%) (US\$/ton)	115.0
3. Freight and insurance (US\$/ton)	40
4. CIF Monbasa (US\$/ton)	155
5. Unioading and port handling (US\$/ton)	6
6. Value at Kenya border (US\$/ton)	164
7. Converted to Ksh (US\$1=73.40Ksh)	12,038
8. Domestic handling and transport cost (to Marigat)*	1,200
9. Wholesale price in Marigat (Ksh/ton)	13,238
10. Transport to/from farm (Ksh/ton)**	615
11. Farmgate price (Ksh/ton)	12,623
12. Farmgate price (Ksh/kg)	13
13. Adjustment of N content: SA/Urea = (21%/46%)	9

Source: World Bank Global Commodity M Note: * 1300Ksh*SCF, ** 666Ksh*SCF

Table I.4-7 Cost and Return by Crop (Financial Price)

Crop: Maize (Irrigated Farm) With Project Without Project Value (Yield Increase) Unit Unit item Quantity 2nd year 3rd year 4th year 5th year Quantity Value 1st year Price 40% 60% 80% 90% 100% Ksł Ksł 1. Gross Income 45,630 46,800 2,700 3,600 39,780 42,120 44,460 35,100 Main Product kg 13 in the 5th year 35,100 39,780 42,120 44,460 45,630 46,800 Total 1 2. Production Cost 2,275 25 2,275 2.275 2,275 2,275 2,275 kg 91 25 1) Seeds 2) Fertilizer 125 3,750 3,750 3,750 3,750 3,750 30 0 DAP kg 1,750 1,300 0 125 1,750 1,750 1,750 1,750 14 SA kg 1,300 650 0 2 1,300 1,300 1,300 liter 3) Insecticides 4) Land Preparation 3,500 3,500 3,500 3,500 3,500 3.500 Prowing by Tractor rent 3,500 0 Harrowing by Tractor rent 1.400 0 1,400 ō ō 0 0 0 0 0 0 Ridging by Tractor rent 5) Labor (Non Yield Dependent) 1,680 1,680 1,680 1,680 1.680 30 man-day 56 30 1.680 Planting 1,680 1,680 1,680 1,680 1,680 1,680 30 Weeding man-day 56 30 280 280 280 280 280 5 Watering man-day 56 0 0 3 168 168 168 168 56 0 Spraying man-day (Yield Dependent) 56 30 1,680 40 1.904 2.016 2.128 2.184 2.240 man-day Harvesting 482 493 504 459 Transporting man-day 56 392 9 437 1,904 2,016 2,128 2,184 2,240 1.680 40 Threshing/Shelling man-day 56 30 8,053 8,299 8,546 8,669 8,792 7,112 Total Labor 2,845 3,221 3,320 3,418 3,468 3,517 % 40 Hired Labor 20,628 20,874 21,121 21.244 21,367 Total 2 (with total labor) 16,092 Total 3 (with hired labor) 8,620 15,796 15,895 15,993 16,043 21,246 23,339 24,386 25,433 22,213 19,152 Net Return 48 50 52 53 54 Net Return Ratio 63 30,708 23,984 26,225 28,467 29,587 Net Income 75 60 62 64 65 66 Net Income Ratio

Table I.4-8 Cost and Return by Crop (Economic Price)

Crop :	Maize (Irrig	ated Farm								
-	· ·		Without	Project			With P			
Item .	Unit	Unit						(Yield Incr		
		Price	Quantity	Value	Quantity	ist year	2nd year	3rd year	4th year	5th year
	l .					40%	60%	80%	90%	100%
		Ksh		Ksh		Kş <u>h</u>	Ksh	Ksh	Ksh	Ksh
1. Gross Income										
Main Product	kg	11	2,700	29,700			35,640	37,620	38,610	39,600
					(in the 5th ye					
Total 1	L			29,700		33,660	35,640	37,6 <u>20</u>	38,610	39,600
0 D 1 1/2 0 0 0 0										
2. Production Cost		84	25	2,100	25	2,100	2,100	2,100	2.100	2,100
1) Seeds	kg	04	[23	2,100	-3	2,100	2,100	2,,00	2,100	-,
2) Fertilizer		16	0	0	125	2.000	2.000	2,000	2.000	2,000
DAP	kg		1 - 1	0	l .		750	750	750	750
SA	kg	6	0	0	123		1,200	1,200	1,200	1,200
3) Insecticides	liter	600	0	U	²	1,200	1,200	1,200	1,200	1,200
4) Land Preparation					l .			0.000		0.00
Prowing by Tractor	rent	3,230		3,230		3,230	3,230	3,230	3,230	3,23
Harrowing by Tractor	rent	1,290		. 0	0	_	0	0	0	
Ridging by Tractor	rent	1,290	0	0	0	0	0	0	0	1
5) Labor	!				1		1			
(Non Yield Dependent)			j							
Planting	man-day	28	30	840			840	840	840	846
Weeding	man-day	28	30	840				840	840	84
Watering	man-day	28	0	0	5	140	140	140	140	14
Spraying	man-day	28	o	0	3	84	84	84	84	8-
(Yield Dependent)			l i			ľ				
Harvesting	man-day	28	30	840	40	952	1,008	1,064	1,092	
Transporting	man-day	28	7	196	9	218	230	241	246	25.
Threshing/Shelling	man-day	28	30	840	40	952	1,008	1,064	1,092	1,12
Total Labor				3,556		4,026	4,150	4,273	4,334	4,39
Hired Labor	%	40		1,422	1	1,610	1,660	1,709	1,734	1,75
Total 2 (with total labor)	1 7			8,886		13,306	13,430	13,553	13,614	13,67
Total 3 (with hired labor)	1		1	6,752		10,890	10,940	10,989	11,014	11,03
. Stat V (High him es labor)	1		· · · · · ·		Γ					
Net Return	T			20,814		20,354		24,067		
Net Return Ratio			<u> </u>	70		60				
Net Income				22,948		22,770			27,596	
Net Income Ratio				77	'	68	69	71	71	7:

Table I.4-9 Cost and Return by Crop (Financial Price)

Crop : Maize (Rainfed Farm) Without Project With Project Value (Yield Increase) Unit Unit Quantity 1st year 2nd year 3rd year 4th year Quantity Value 5th year Price 40% 80% 60% 1. Gross Income Main Product kg 13 800 10,400 1,800 15,600 18,200 20.800 22,100 23,400 (in the 5th year 10,400 15,600 18,200 20,800 22,100 23,400 Total 1 2. Production Cost 2,275 2,275 2,275 91 25 2,275 25 2,275 2,275 kg 1) Seeds 2) Fertilizer 1,500 1,500 1,500 30 50 1,500 1,500 DAP Đ ō 50 700 700 700 700 700 0 SA 650 Ö 0 0 3) Insecticides liter 4) Land Preparation 3,500 3,500 3,500 3,500 3,500 3,500 3,500 Prowing by Tractor rent 0 Harrowing by Tractor 1,400 0 0 0 0 rent Õ 0 ō 0 0 0 0 Ridging by Tractor rent 1,400 5) Labor (Non Yield Dependent)
Planting 30 1,680 30 1,680 1,680 1,680 1.680 1 680 man-day 30 0 0 Weeding man-day 56 1,680 30 1,680 1,680 1,680 1,680 1,680 Watering man-day 56 56 0 D 0 0 0 0 0 0 0 0 Spraying man-day 0 (Yield Dependent) 56 20 1,120 45 1,680 1,960 2,240 2,380 2,520 man-day Harvesting 56 392 16 594 694 795 846 896 Transporting man-day 2 240 2.380 2.520 Threshing/Shelling man-day 56 20 1,120 45 1,680 1.960 8,635 7,974 9,296 Total Labor 5,992 7,314 8,966 797 864 930 Hired Labor 10 599 731 897 15,289 15,949 16,610 16,941 17,271 11,767 Total 2 (with total labor) 6,374 8,706 8,772 8,839 8,872 8,905 Total 3 (with hired labor) 6,129 2,251 5,159 Net Return -1,367 311 4,190 12 26 Net Return Ratio -1320 6,894 9,428 11,961 13,228 4,026 Net Income 62 39 Net Income Ratio

Table I.4-10 Cost and Return by Crop (Economic Price)

Crop:	Maize (Rair	fed Farm))							
			Without	Project			With P			
Ītem	Unit	Unit						(Yield Incr		
	1 1	Price	Quantity	Value	Quantity	1st year	2nd year	3rd year	4th year	5th year
						40%	60%	80%	90%	100%
		Ksh		Ksh		Ksh	Ksh	Ksh	K sh	Ksh
1. Grass Income										
Main Product	kg	11	800	8,800	1,800	13,200	15,400	17,600	18,700	19,800
					(in the 5th ye	ear)				
Total 1				8,800		13,200	15,400	17,600	18,700	19,800
2. Production Cost					ŀ			·		
1) Seeds	kg	84	25	2,100	25	2,100	2,100	2,100	2,100	2,100
2) Fertilizer				·	ļ		,			
DAP	kg	16	0	0	50	800	800	800	800	800
SA	kg	6	l o	0	50	300	300	300	300	300
3) Insecticides	liter	600	e!	0	0	0	0	0	0	0
4) Land Preparation			i							
Prowing by Tractor	rent	3,230	1	3,230	1	3,230	3,230	3,230	3,230	3,230
Harrowing by Tractor	rent	1.290		0	. 0	0	0	0	0	0
Ridging by Tractor	rent	1,290	0	0] 0	0	0	0	0	0
5) Labor										
(Non Yield Dependent)	1									
Planting	man-day	28	30	840	30	840	840	840	840	840
Weeding	man-day	28	30	840	30	840	840	840	840	840
Watering	man-day	28) 0	0	0	0	0	0	0	(
Spraying	man-day	28	0	0	0	0	0	, 0	0	(
(Yield Dependent)	·									
Harvesting	man~day	28	20	560	45	840	980	1,120	1,190	1,260
Transporting	man-day	28	7	196			347	398	423	448
Threshing/Shelling	man-day	28	20	560	45	840	980	1,120	1,190	1,260
Total Labor				2,996		3,657	3,987	4,318	4,483	4,648
Hired Labor	%	10		300	<u></u>	366	399	432	448	468
Total 2 (with total labor)				8,326		10,087	10,417	10,748	10,913	
Total 3 (with hired labor)				5,630		6,796	6,829	6,862	6,878	6,895
				ļ					<u> </u>	
Net Return				474		3,113		6,852	7,787	8,722
Net Return Ratio				5		24		39	42	44
Net Income			<u> </u>	3,170		6,404		10,738		12,90
Net Income Ratio				36		49	56	61	63	6!

Table I.4-11 Cost and Return by Crop (Financial Price)

Crop: Sorghum (Rainfed Farm)

Огор :			Without	Project				roject		
Item	Unit	Unit			ļ			(Yield Incr		
		Price	Quantity	Value	Quantity	1st year	2nd year	3rd year	4th year	5th year
	1					40%	60%	80%	90%	100%
\$145.000		Ksh		Ksh		Ksh	Ksh	Ksh	Ksh	Ksh
1. Gross Income										
Main Product	kg	38	400	15,200	1 ' '		47,120	57,760	63,080	68,400
					(in the 5th ye			· ·		
Total 1	ļ			15,200		36,480	47,120	57,760	63,080	68,400
2. Production Cost										
1) Seeds	kg	35	10	350	10	350	350	350	350	350
2) Fertilizer										
DAP	kg	. 30	0	0	50	1,500	1,500	1,500	1,500	1,500
SA	kg	14	0	0	50	700	700	700	700	700
3) Insecticides	liter	650	a	0	0	0	0	o	0	0
4) Land Preparation										
Prowing by Tractor	rent	3,500	1	3,500	1	3,500	3,500	3,500	3,500	3,500
Harrowing by Tractor	rent	1,400	o	0	0	0	0	0	0	0
Ridging by Tractor	rent	1,400	0	0	o	0	0	0	0	0
5) Labor	1		!							
(Non Yield Dependent)	1									
Planting	man-day	56	25	1,400	25	1,400	1,400	1,400	1,400	1,400
Weeding	man-day	56	30	1,680	30	1,680	1,680	1,680	1,680	1,680
Watering	man-day	56	0	0	0	0	0	0	0	0
Spraying	man-day	56	0	0	0	0	0	0	0	0
(Yield Dependent)					1					
Harvesting	man-day	56	25	1,400	113	3,371	4,357	5,342	5,835	6,328
Transporting	man~day	56		280	23	683	885	1,086	1,187	1,288
Threshing/Shelling	man~day	56	25	1,400	113	3,371	4,357	5,342	5,835	6,328
Total Labor				6,160	ļ	10,505	12,679	14,850	15,937	17,024
Hired Labor	- %	10		616		1,051	1,268	1,485	1,594	1,702
Total 2 (with total labor)				10,010		16,555	18,729	20,900	21,987	23,074
Total 3 (with hired labor)	ļ			4,466		7,101	7,318	7,535	7,644	7,752
Net Return				5,190		19,925	28,391	36,860	41.093	45.326
	 			3,190		19,925	28,391	36,860	41,093	45,326 66
Net Return Ratio	-		 	10,734		29,379	39,802		55.436	- 00
Net Income	-		 	71	-		39,802	50,225 87	55,436 88	60,648
Net Income Ratio					L	81	84	8/	88	89

Table I.4-12 Cost and Return by Crop (Economic Price)

Crop : Sorghum (Rainfed Farm)

			Without	Project			With F	roject		
ltem .	Unit	Unit					Value	(Yield Incr	ease)	
	i	Price	Quantity	Value	Quantity	1st year	2nd year	3rd year		5th year
						40%	60%	80%	90%	100%
		Ksh		Ksh		Ksh	Ksh	Ksh	Ksh	Ksh
1. Gross Income			ĺ							
Main Product	kg	35	400	14,000	1,800	33,600	43,400	53,200	58,100	63,000
					(in the 5th ye	ear)			<u> </u>	
Total 1				14,000		33,600	43,400	53,200	58,100	63,000
2. Production Cost										
1) Seeds	kg	32	10	320	10	320	320	320	320	320
2) Fertilizer	"									
DAP	kg	16	0	. 0	50	800	800	800	800	800
l sa	kg	6	Ō	Ō	50	300	300	300	300	300
3) Insecticides	liter	600	Ö	ō	ا	0	1 0	0	l 0	0
4) Land Preparation	""		•		•	_	•	_	•	,
Prowing by Tractor	rent	3,230	1	3,230	l 1	3,230	3,230	3,230	3,230	3,230
Harrowing by Tractor	rent	1,290	Ġ	0	ا o	0	0	0	0	0
Ridging by Tractor	rent	1,290	l ö	Ö	ا آ	o o	ā	ā	0	o l
5) Labor		.,	,					-	_	
(Non Yield Dependent)										
Planting	man-day	28	25	700	25	700	700	700	700	700
Weeding	man-day	28	30	840	30	840	840	840	840	840
Watering	man-day	28	0	0	ا	0	0	0.0	0,0	0
Spraying	man-day	28	ŏ	o	ة ا	n	آ آ	n	n	ň
(Yield Dependent)	1					Ĭ		·	·	*
Harvesting	man-day	28	25	700	113	1,686	2,178	2,671	2,918	3,164
Transporting	man-day	28	5	140			442	543	594	644
Threshing/Shelling	man-day	28	25	700			2,178	2,671	2.918	3,164
Total Labor	inan aay			3,080		5,254		7,425	7,970	8,512
Hired Labor	%	10		308		525	634	743	797	851
Total 2 (with total labor)				6,630		9,904	10,988	12,075	12,620	13,162
Total 3 (with hired labor)	 			3,858		5,175		5,393	5,447	5,501
Total o (Marinos Issor)						31,7,7			,,,,,	3,55.
Net Return	<u> </u>			7,370		23,696	32,412	41,125	45,480	49,838
Net Return Ratio				53		71	75	77	78	79
Net Income	1			10,142		28,425	38,116	47,807	52,653	57,499
Net Income Ratio				72		85		90		91

Table I.4-13 Cost and Return by Crop (Financial Price)

Crop: Millet (Rainfed Farm) Without Project With Project Unit Value (Yield Increase) İtem Unit Quantity 1st year 2nd year 3rd year 4th year 5th year Quantity Value Price 80% 40% 60% Ksh Ksł Ksl 1. Gross Income 23,100 Main Product kg 33 400 13,200 700 17,160 19,140 21.120 22,110 in the 5th year 17,160 23,100 13,200 19,140 21,120 22,110 Total 1 2. Production Cost 150 150 150 30 5 150 5 150 150 kg 1) Seeds 2) Fertilizer 1,500 1,500 1,500 1,500 1,500 30 0 50 DAP kg 700 700 700 700 700 0 50 0 SA 14 0 0 650 3) Insecticides liter 4) Land Preparation 3,500 3,500 Prowing by Tractor 3,500 3,500 3,500 3,500 3.500 rent Harrowing by Tractor 1,400 0 0 Ð 0 ŏ Õ Ō 0 ō 0 Ridging by Tractor rent 1,400 5) Labor (Non Yield Dependent)
Planting 56 30 1,680 30 1,680 1.680 1 680 1.680 1 680 man-day 1,680 1,680 Weeding man-day 56 30 1,680 30 1,680 1,680 1,680 Watering man-day 56 Ω O 0 0 0 0 0 ō 0 0 0 0 0 56 0 Spraying man-day (Yield Dependent) 56 25 1,400 44 1,826 2,038 2,251 2,358 2,464 Harvesting man-day 56 280 9 370 414 459 482 504 Transporting man-day 2,464 2,038 2.251 2.358 Threshing/Shelling man-day 56 1,400 1,826 8,558 8,321 8,792 6,440 7,382 7,850 Total Labor 785 879 Hired Labor % 10 644 738 832 856 13,232 13,700 14,171 14,408 14,642 10,090 Total 2 (with total labor) 4,294 6,588 6,635 6,682 6,706 6,729 Total 3 (with hired labor) 8,458 5,440 6,949 3,928 7,702 Net Return 3,110 28 33 37 35 Net Return Ratio 24 10,572 12,505 14,438 16,371 8,906 Net Income 68 70 Net Income Ratio 67

Table I.4-14 Cost and Return by Crop (Economic Price)

Crop :	Millet (Rain	ifed Farm)								
	T		Without	Project			With P	roject		
Item	Unit	Unit					Value	(Yield Incr	rease)	
ļ		Price	Quantity	Value	Quantity	1st year	2nd year	3rd year	4th year	5th year
						40%	60%	80%	90%	100%
1		Ksh		Ksh		Ksh	Ksh	Ksh	Ksh	Ksh
1. Gross Income										
Main Product	kg	30	400	12,000	700	15,600	17,400	19,200	20,100	21,000
					(in the 5th ye	ar)				
Total 1				12,000		15,600	17,400	19,200	20,100	21,000
2. Production Cost										
1) Seeds	kg	28	5	140	5	140	140	140	140	140
2) Fertilizer	~								i	
DAP	kg	16	O	0	50	800	800	800	800	800
SA	kg	6	o	0	50	300	300	300	300	300
3) Insecticides	liter	600	0	0	0	0	0	0	0	0
4) Land Preparation										
Prowing by Tractor	rent	3,230	1	3,230	1	3,230	3,230	3,230	3,230	3,230
Harrowing by Tractor	rent	1,290	i o	0	0	0	0	0	0	0
Ridging by Tractor	rent	1,290	o	0	0	o	о	0	0	0
5) Labor					ŀ		ļ		ļ	
(Non Yield Dependent)			l		1		1			
Planting	man-day	28	30	840	30	840	840	840	840	840
Weeding	man-day	28	30	840	30	840	840	840	840	840
Watering	man-day	28	O	0	l o	0	0	0	} o	0
Spraying	man-day	28		0	l o	0	0	0	0	0
(Yield Dependent)							l .			
Harvesting	man-day	28	25	700	44	913	1,019	1,126	1,179	1,232
Transporting	man-day	28	5	140	9	185	207	230	241	252
Threshing/Shelling	man-day	28	25	700	44	913	1,019	1,126	1,179	1,232
Total Labor				3,220		3,691	3,925	4,162	4,279	4,396
Hired Labor	%	10		322		369	393	416	428	440
Total 2 (with total labor)				6,590		8,161	8,395	8,632	8,749	8,866
Total 3 (with hired labor)				3,692		4,839	4,863	4,886	4,898	4,910
Net Return				5,410		7,439		10,568	11,351	12,134
Net Return Ratio				45		48		55		58
Net Income				8,308		10,761		14,314		16,090
Net Income Ratio				69	l	69	72	75	76	77

Table I.4-15 Cost and Return by Crop (Financial Price)

Crop: Beans (Irrigated Farm) With Project Without Project Value (Yield Increase) Unit Unit Item Quantity Value Quantity 1st year 2nd year 3rd year 4th year 5th year Price 60% 90% Ksł 1. Gross Income 1,300 52,200 55,350 58,500 Main Product kg 45 600 27,000 39,600 45,900 (in the 5th year 45,900 52,200 55,350 58,500 27,000 39,600 Total 1 2. Production Cost 50 2,750 2,750 2,750 2,750 2.750 kg 55 50 2,750 1) Seeds 2) Fertilizer 3,000 100 3,000 3,000 3,000 3,000 30 0 DAP kg 0 100 1,400 1,400 1,400 1,400 1,400 0 14 SA kg 650 2 1,300 1,300 1,300 1,300 1,300 3) Insecticides liter 4) Land Preparation 3.500 3.500 3.500 3.500 3,500 Prowing by Tractor rent 3,500 1 3,500 0 Harrowing by Tractor rent 1,400 0 0 õ Ô 0 0 0 0 0 0 1,400 Ridging by Tractor rent 5) Labor (Non Yield Dependent) 1,400 Planting 56 25 1,400 25 1.400 1 400 1.400 1.400 man-day 30 30 4 3 1,680 224 1,680 1,680 56 56 1,680 224 1,680 Weeding man-day 1,680 224 224 224 Watering man-day 0 168 168 56 0 0 168 168 168 Spraying man-day (Yield Dependent) Harvesting 56 15 840 33 1,243 1,445 1,646 1,747 1,848 man-day 414 1,635 Transporting man-day 56 5 280 11 482 549 582 616 2,150 2,279 2,408 1,893 Threshing/Shelling man-day 56 20 1.120 43 7,817 8,080 8,344 5,320 6,764 7,292 Total Labor 1,616 1,669 20 1,064 1,458 1,563 Hired Labor 1,353 11,570 18,714 19,242 19,767 20,030 20,294 Total 2 (with total labor) Total 3 (with hired labor) 7,314 13,303 13,408 13,513 13,566 13,619 26,658 15,430 20,886 32,433 35,320 38,206 Net Return 62 64 65 Net Return Ratio 58 53 19,686 26,297 32,492 Net Income 66 74 75 Net Income Ratio

Table 1.4-16 Cost and Return by Crop (Economic Price)

Grop :	Beans (Irrig	ated Farm								
			Without	Project		,	With F			
Item	Unit	Unit						(Yield Incr		
		Price	Quantity	Value	Quantity	1st year	2nd year		4th year	5th year
	i 1				 	40%	60%	80%	90%	100%
	1 1	Ksh		Ksh		Ksh	Ksh	Ksh	Ksh	Ksh
1. Gross Income										
Main Product	kg	42	600	25,200			42,840	48,720	51,660	54,600
					(in the 5th ye					
Total 1				25,200	ļ	36,960	42,840	48,720	51,660	54,600
2. Production Cost										
1) Seeds	kg	51	50	2,550	50	2,550	2,550	2,550	2,550	2,550
2) Fertilizer	1,5	٠.		-,000	1	,	_,,,,,	_,	_,	_,
DAP	kg	16	o	0	100	1,600	1.600	1,600	1,600	1,600
SA SA	kg	6	ő	Õ	1		600	600	600	600
3) Insecticides	liter	600	ő	ñ	2		1,200	1,200	1,200	1,200
4) Land Preparation	"601	000		·	~	1,200	1,200	1,200	,,	.,===
Prowing by Tractor	rent	3,230	1	3,230	1 1	3,230	3,230	3,230	3,230	3,230
Harrowing by Tractor		1,290	اهٔ	3,230	ن ا	-,	0,250	0,200	0,200	0,200
	rent	1,290	۱ ۴۱	o o	ا م		ő	ő	ه ا	ة ا
Ridging by Tractor 5) Labor	rent	1,290	ľ	U	, ,	"	"		١ ،	١
(Non Yield Dependent)]		}	1				
	l	28	25	700	25	700	700	700	700	700
Planting	man-day	28	30	840			840	840	840	840
Weeding	man-day		30				112	112	112	112
Watering	man-day	28		0			84	84	84	84
Spraying	man-day	28	0	0] 3	84	84	84	04	64
(Yield Dependent)							722	823	874	924
Harvesting	man-day	28	15	420						308
Transporting	man-day	28	5				241	274	291	
Threshing/Shelling	man-day	28	20	560			946	1,075		1,204
Total Labor	<u> </u>			2,660		3,383	3,645	3,908	4,041	4,172
Hired Labor	%	20		532		677	729	782	808	834
Total 2 (with total labor)				8,440		12,563	12,825		13,221	13,352
Total 3 (with hired labor)		-		6,312	 	9,857	9,909	9,962	9,988	10,014
Net Return				16,760		24,397	30,015		38,439	41,248
Net Return Ratio				67		66	70		74	
Net Income				18,888		27,103	32,931	38,758	41,672	44,586
Net Income Ratio			·	75		73	77	80	81	82

Table L4-17 Cost and Return by Crop (Financial Price)

Crop: Beans (Rainfed Farm) With Project Without Project Unit Value (Yield Increase) Unit İtem Quantity Value Quantity 1st year 2nd year 3rd year 4th year 5th year Price 80% 90% 100% Ksł Ks Ks 1. Gross Income 40,500 900 31,500 36,000 38,250 18,000 27,000 Main Product kg 45 400 (in the 5th year 18,000 27,000 31,500 36,000 38,250 40,500 Total 1 2. Production Cost 2,750 2,750 2,750 2.750 2,750 50 2.750 kg 55 50 1) Seeds 2) Fertilizer 1,500 1,500 1,500 50 1,500 1,500 30 0 DAP kg 0 50 700 700 700 700 700 14 0 SA kg 650 0 0 0 0 3) Insecticides liter 4) Land Preparation 3,500 3,500 3,500 3,500 3,500 Prowing by Tractor rent 3,500 3,500 0 0 0 Harrowing by Tractor rent 1,400 1,400 ō ō 0 0 0 Ridging by Tractor rent 5) Labor (Non Yield Dependent) 1,400 1.400 1.400 1.400 1.400 Planting man-day 56 25 1 400 25 1,680 1,680 1,680 1,680 30 0 0 1,680 1,680 30 Weeding man-day 56 0 0 0 0 Watering man-day 56 0 56 0 0 0 0 Spraying man-day (Yield Dependent) Harvesting 56 15 840 34 1,266 1,478 1,691 1,798 1.904 man~day 582 616 Transporting man-day 56 5 280 11 414 482 549 1,680 1,960 2,240 2,380 2,520 1.120 Threshing/Shelling man-day 56 7,840 8,120 6,440 7,000 7,560 Total Labor 5,320 644 700 756 784 812 10 Hired Labor 532 11,570 14,890 15,450 16,010 16,290 16,570 Total 2 (with total labor) Total 3 (with hired labor) 6,782 9,094 9,150 9,206 9,234 9,262 6,430 16,050 19,990 23,930 12,110 21,960 Net Return 45 56 59 Net Return Ratio 36 11,218 17,906 22,350 26,794 31,238 Net Income 66 71 74 76 Net Income Ratio

Table 1.4-18 Gost and Return by Crop (Economic Price)

Cran : Beans (Bainfed Farm)

Crop :	Beans (Rai	nted Farm	<u> </u>							
			Without	Project			With P			
Item	Unit	Unit						(Yield Incr		
1		Price	Quantity	Value	Quantity		2nd year	3rd year	4th year	5th year
						40%	60%	80%	90%	100%
		Ksh		Ksh		Ksh	Ksh	Ksh	<u>Ksh</u>	Ksh
1. Gross Income										
Main Product	kg	42	400	16,800	900	25,200	29,400	33,600	35,700	37,800
	_				(in the 5th ye					
Total 1				16,800		25,200	29,400	33,600	35,700	37,800
2. Production Cost								l		İ
1) Seeds	kg	51	50	2,550	50	2,550	2,550	2,550	2,550	2,550
2) Fertilizer	"					,				
DAP	kg	16	l ol	0	50	800	800	800	800	800
SA	kg k	6	l ol	0	50	300	300	300	300	300
3) Insecticides	liter	600	0	0	0	0	0	0	0	0
4) Land Preparation					!				İ	
Prowing by Tractor	l rent	3,230	1 1	3,230	1	3,230	3,230	3,230	3,230	3,230
Harrowing by Tractor	rent	1,290		. 0	0	0	0	0	0	0
Ridging by Tractor	rent	1,290	0	0	o	0	0	0	0	0
5) Labor					ļ					
(Non Yield Dependent)										
Planting	man-day	28	25	700	25	700	700	700	700	700
Weeding	man-day	28	30	840	30	840	840	840	840	840
Watering	man-day	28	0	0	0	0	0	0	0	0
Spraying	man-day	28) 0	0	0	0	0	0	0	0
(Yield Dependent)			ĺ				!		ĺ	
Harvesting	man-day	28	15	420	34	633	739	846	899	952
Transporting	man-day	28		140		207	241	274	1	308
Threshing/Shelling	man-day	28	20	560	45			1,120		1,260
Total Labor				2,660		3,220		3,780	3,920	4,060
Hired Labor	%	10		266		322		378		406
Total 2 (with total labor)	:			8,440		10,100				10,940
Total 3 (with hired labor)				6,046		7,202	7,230	7,258	7,272	7,286
]		<u> </u>	<u> </u>				
Net Return				8,360		15,100		22,940	24,900	26,860
Net Return Ratio	<u></u>		ļ	50		60		68		71
Net Income				10,754		17,998	22,170	26,342		30,514
Net Income Ratio	1			64		71	75	78	80	81

Table 1.4-19 Cost and Return by Crop (Financial Price)

Crop: Groundnuts (Rainfed Farm)

56

56

10

man-day

man-day

Without Project With Project Item Unit Unit Value (Yield Increase) Quantity 1st year 2nd year 3rd year 4th year 5th year Price Quantity Value 40% 90% 100% 60% 80% Ksl 1. Gross Income Main Product kg 50 500 25,000 700 29,000 31,000 33,000 34,000 35,000 (in the 5th yea 25.000 29,000 31,000 33,000 34,000 35,000 Total 1 2. Production Cost 60 50 3,000 50 3,000 3,000 3,000 3,000 3,000 1) Seeds kg 2) Fertilizer 100 3.000 3.000 3.000 3.000 3.000 DAP kg 30 Ω 1,400 1,400 1,400 14 0 0 100 1.400 1,400 SA kg 0 650 0 3) Insecticides liter 4) Land Preparation 3,500 3,500 3,500 3,500 3,500 3,500 3,500 Prowing by Tractor rent Harrowing by Tractor 1,400 0 n n n n rent 0 Ridging by Tractor rent 1,400 0 0 0 0 0 0 5) Labor (Non Yield Dependent) 25 1,400 25 1,400 1,400 1,400 1,400 1.400 **Planting** man-day Weeding man-day 56 30 1,680 30 1,680 1,680 1,680 1,680 1,680 Watering man-day 56 n Ð n 0 0 0 0 56 0 0 0 Spraying man-day 0 D 0 0 0 (Yield Dependent) 56 30 1,680 42 1,949 2,083 2,218 2,285 2,352 Harvesting man-day

392

840

599

5,992

12,492

7,099

12,508

17,901

50

10

459

974

646

6,462

17,362

11,546

11,638

17,454

40

60

493

1.042

6,698

17,598

11,570

13,402

19,430

43

63

670

526

1.109

6,933

17,833

11,593

15,167

21,407

46

65

693

543

1.142

7,050

17,950

11,605

16,050

22,395

47

66

705

560

1,176

7,168

717

18,068

11,617

16,932

48 23,383

Table 1.4-20 Cost and Return by Crop (Economic Price)

Transporting

Threshing/Shelling

Total Labor

Hired Labor

Total 2 (with total labor)

Total 3 (with hired labor)

Net Return

Net Income

Net Return Ratio

Net Income Ratio

Crop: Groundnuts (Rainfed Farm) Without Project With Project Unit Value (Yield Increase) Item Price Quantity Value Quantity 1st year 2nd year 3rd year 4th year 5th year 40% 60% 80% 100% Κş 1. Gross Income Main Product kg 14 500 7,000 700 8,120 8,680 9,240 9.520 9,800 9,800 7,000 8,120 8,680 9,240 9,520 Total 1 2. Production Cost. 55 2,750 50 2,750 2,750 2,750 2,750 2,750 50 kg 1) Seeds 2) Fertilizer 1,600 100 1.600 1,600 1.600 1.600 DAP kg 16 Ð 600 SA Ð Ð 100 600 600 600 600 600 0 0 liter 0 3) Insecticides 4) Land Preparation rent 3,230 3,230 3,230 3,230 3,230 3,230 3,230 Prowing by Tractor Harrowing by Tractor 1,290 0 0 O 0 ۵ rent 0 Ridging by Tractor rent 1,290 0 0 0 0 0 0 0 5) Labor (Non Yield Dependent) 700 25 700 700 700 700 700 man-day Planting 28 30 840 30 840 840 840 840 840 Weeding man-day Watering man~day 28 0 n Ð n n 0 O Ω Spraying Ω a α man-day 28 n Ω n 0 Ð (Yield Dependent) 840 42 974 1,042 1,109 1,176 28 30 1,142 man-day Harvesting 28 196 10 230 246 263 272 280 man-day Transporting Threshing/Shelling 28 420 487 521 554 571 588 man-day 2,996 3,231 3,349 3,466 3,525 3,584 Total Labor Hired Labor % 10 300 323 335 11,529 347 353 358 11,705 11,764 11.411 11,646 Total 2 (with total labor) 8.976 6,280 8,503 8,515 8,527 8,533 8,538 Total 3 (with hired labor) -1,976 3,291 2,849 -2,406 -2,185 1,964 Net Return Net Return Ratio -41 -20 713 1,262 Net Income 720 -383 165 987 Net Income Ratio 10 10

Table 1.4-21 Cost and Return by Crop (Financial Price)

Crop: Onion (Irrigated Farm) With Project Without Project Unit Unit. Value (Yield Increase) Item 5th year Quantity Value Quantity 1st year 2nd year 3rd year 4th year Price 80% 100% Ksh 1. Gross Income 4,700 110,320 125,160 132,580 140,000 10,000 95,480 Main Product kg 14 65,800 (in the 5th year) 95,480 110,320 125,160 132,580 140,000 65,800 Total 1 2. Production Cost 9,400 9.400 9.400 9.400 9.400 kg 2,350 9,400 4 1) Seeds 2) Fertilizer 6,000 6,000 6,000 6,000 200 6,000 30 0 DAP kg 0 100 1,400 1,400 1,400 1,400 1,400 14 SA κg 650 0 10 6,500 6,500 6,500 6,500 6,500 3) Insecticides liter 4) Land Preparation 3,500 3,500 3,500 3.500 3.500 Prowing by Tractor rent 3,500 3.500 1,400 1.400 1,400 1,400 1,400 1.400 Harrowing by Tractor rent 1,400 1,400 1,400 1 1,400 1,400 1,400 1,400 1,400 Ridging by Tractor rent 5) Labor (Non Yield Dependent) 1,680 1.680 1.680 1.680 1.680 man-day 56 30 1.680 30 Planting 1,680 1,680 1,680 1,680 1.680 Weeding man-day 56 30 1,680 30 392 392 392 392 392 Watering man-day 56 0 0 504 504 504 56 0 0 Spraying man-day (Yield Dependent) 56 30 1,680 64 2,442 2.822 3,203 3.394 3.584 man-day Harvesting 840 571 750 795 man-day 56 392 15 661 Transporting 3,203 3,394 3,584 2.822 64 2,442 Threshing/Shelling man-day 56 30 1.680 11,412 12,264 10,561 11,839 9,711 7,112 Total Labor 4,565 4,906 % 40 2,845 3,884 4,224 Hired Labor 22,812 39,311 40,161 41,012 41,439 41,864 Total 2 (with total labor)
Total 3 (with hired labor) 18,545 33,484 33,824 34,165 34,336 34,506 98,136 42,988 56,169 70,159 84,148 91,141 Net Return 65 67 69 70 59 Net Return Ratio 47,255 76,496 98,244 105,494 Net Income 72 65 69 73 74 75 Net Income Ratio

Table I.4-22 Cost and Return by Crop (Economic Price)

Crop :	Onion (Irrig	ated Farm	1)							
· · · · · · · · · · · · · · · · · · ·			Without	Project				roject		
Item	Unit	Unit					Value	(Yield Incr	ease)	
		Price	Quantity	Value	Quantity	1st year	2nd year	3rd year	4th year	5th year
	1					40%	60%	80%	90%	100%
		Ksh		Ksh		Ksh	Ksh	Ksh	Ksh	Ksh
1. Gross Income										
Main Product	kg	13	4,700	61,100	10,000	88,660	102,440	116,220	123,110	130,000
	•				(in the 5th ye	ar)				
Total 1				61,100		88,660	102,440	116,220	123,110	130,000
2. Production Cost										
1) Seeds	kg	2,169	4	8,676	4	8,676	8,676	8,676	8,676	8,676
2) Fertilizer					1					
DAP	kg	16	o	0	200	3,200	3,200	3,200	3,200	3,200
SA	kg	6	0	0	100	600	600	600	600	600
3) Insecticides	liter	600	0	0	10	6,000	6,000	6,000	6,000	6,000
4) Land Preparation										
Prowing by Tractor	rent	3,230	1	3,230	1	3,230	3,230	3,230	3,230	3,230
Harrowing by Tractor	rent	1,290	1	1,290] 1	1,290	1,290	1,290	1,290	1,290
Ridging by Tractor	rent	1,290	1 1	1,290	1	1,290	1,290	1,290	1,290	1,290
5) Labor										
(Non Yield Dependent)										
Planting	man-day	28	30	840	30	840	840	840	840	840
Weeding	man-day	28	30	840	30	840	840	840	840	840
Watering	man-day	28	o	0	7	196	196	196	196	196
Spraying	man-day	28	1 0	0	9	252	252	252	252	252
(Yield Dependent)										
Harvesting	man-day	28	30	840	64	1,221	1,411	1,602	1,697	1,792
Transporting	man-day	28	7	196	15	286	330	375	398	420
Threshing/Shelling	man-day	28	30	840	64	1,221	1,411	1,602	1,697	1,792
Total Labor				3,556		4,856	5,280	5,707	5,920	6,132
Hired Labor	%	40	i	1,422		1,942	2,112	2,283		2,453
Total 2 (with total labor)				18,042		29,142				30,418
Total 3 (with hired labor)				(5,908		26,228	26,398	26,569	26,654	26,739
									<u></u>	
Net Return				43,058		59,518			92,904	99,582
Net Return Ratio				70		67				77
Net Income				45,192		62,432		89,651	96,456	103,261
Net Income Ratio	-			74		70	74	77	78	79

Table I.4-23 Cost and Return by Crop (Financial Price)

Crop: Watermelon (Irrigated Farm) With Project Without Project Value (Yield Increase) Unit Unit Item 3rd year 4th year 5th year Quantity Value Quantity İst year 2nd year Price 40% 60% 80% 90% 100% Ks Ksł Ksh 1. Gross Income 150,000 10,000 126,600 134,400 142,200 146,100 111,000 Main Product kg 15 7,400 in the 5th year 126,600 134,400 142,200 146,100 150,000 111,000 Total 1 2. Production Cost 1,000 1,000 1,000 1.000 1,000 1,000 2 500 2 1) Seeds kg 2) Fertilizer 200 6,000 6,000 6,000 6,000 6,000 30 0 DAP kg 0 100 1,400 1,400 1,400 1,400 1,400 14 SA kg 2,600 650 0 2,600 2,600 2.600 2,600 liter 3) Insecticides 4) Land Preparation 3,500 3,500 3,500 3 500 3.500 3.500 Prowing by Tractor rent 3,500 1 1,400 1,400 1,400 1,400 1,400 1.400 Harrowing by Tractor rent 1,400 1,400 1,400 1,400 1,400 1,400 1,400 1,400 Ridging by Tractor rent 5) Labor (Non Yield Dependent) 1.680 1,680 1,680 1.680 1.680 56 30 1.680 30 **Planting** 1,680 1,680 1,680 1,680 1,680 30 1,680 Weeding man-day 56 30 392 392 392 392 392 Watering man-day 56 0 0 0 280 280 280 280 56 Spraying man-day (Yield Dependent) 56 30 1,680 41 1,926 2.050 2.173 2.234 2.296 man-day Harvesting 493 504 459 482 man-day 56 392 9 437 Transporting 1,926 2,050 2,173 2,234 2,296 1.680 Threshing/Shelling man-day 56 30 41 8,591 8,860 8,993 9,128 8,321 7,112 Total Labor 2,845 3,436 3,544 3,597 3,651 40 3,328 Hired Labor % 14,412 25,621 25,891 26,160 26.293 26,428 Total 2 (with total labor) Total 3 (with hired labor) 10,145 20,628 20,736 20,844 20,897 20,951 116,040 119,807 123,572 96,588 100,979 108,509 Net Return 80 81 82 82 82 Net Return Ratio 87 100,855 105,972 121,356 125,203 129,049 Net Income 91 84 85 85 86 86 Net Income Ratio

Table I.4-24 Cost and Return by Crop (Economic Price)

Cron : Matermalon (Irrigated Farm)

Crop:	Watermelo	n (irrigate					140.7			
	1 1		Without	Project			With F			
Item	Unit	Unit						(Yield Incr		
		Price	Quantity	Value	Quantity	1st year	2nd year	3rd year	4th year_	5th year
	l i					40%	60%	80%	90%	100%
		Ksh		Ksh		Ksh	Ksh	Ksh	Ksh	Ksh
1. Gross Income]									
Main Product	kg	14	7,400	103,600	10,000	118,160	125,440	132,720	136,360	140,000
					(in the 5th ye					
Total 1	<u> </u>			103,600		118,160	125,440	132,720	136,360	140,000
2. Production Cost										
1) Seeds	kg	462	2	924	2	924	924	924	924	924
2) Fertilizer	Ng.	702	_		_	~-,				
DAP	kg	16	0	0	200	3,200	3,200	3,200	3.200	3.200
I SA	kg kg	6	ة ا	ő	100	600	600	600	600	600
3) Insecticides	liter	600		ñ	1 4	2,400	2,400	2,400	2,400	2.400
4) Land Preparation	l life!	000	١ ٠	. •	1	_,	_,,,,,	_,		
Prowing by Tractor	rent	3,230	1 1	3,230	1 1	3,230	3,230	3,230	3,230	3,230
Harrowing by Tractor	rent	1,290		1,290		1,290	1,290	1,290	1,290	1,290
	rent	1,290		1,290		1,290	1,290		1,290	1,290
Ridging by Tractor 5) Labor	Leur	1,230	'	1,200	'	1,200	',=""	1,200	,,	.,= .
(Non Yield Dependent)	i l						!	ļ		
Planting	man-day	28	30	840	30	840	840	840	840	840
Weeding	man-day	28		840				840	840	840
Watering	man-day	28		0	_	196		196	196	196
Spraying	man-day	28		ິດ	1 '	140		140	140	140
	IIIaii-uay	20	ľ		ľ	, , , ,	'''			
(Yield Dependent) Harvesting	man-day	28	30	840	41	963	1,025	1.086	1,117	1,148
Transporting	man-day	28 28		196					246	25
Threshing/Shelling	man-day	28				963			1,117	1,148
Total Labor	Illaii Gay	2.0	1	3,556		4,160			4,496	4,564
Hired Labor	%	40	†	1,422		1.664			1.798	1,826
Total 2 (with total labor)	- AU	- - 4 0	 	10,290		17.094				17,498
Total 3 (with hired labor)	+		<u> </u>	8.156		14,598				14,760
Total 3 (with filled lagor)			<u> </u>	0,100		. 1,000		,		
Net Return				93,310		101,066			118,930	122,502
Net Return Ratio				90	L	86			87	88
Net income				95,444		103,562				125,240
Net Income Ratio	1			92	:	88	88	89	89	89

Table I.4-25 Cost and Return by Crop (Financial Price)

Crop: Kale (Irrigated Farm) With Project Without Project Value (Yield Increase) Unit Unit Item 5th year Quantity Value Quantity 1st year 2nd year 3rd year 4th year Price 60% 90% 100% Ks Ksl Ksł Ksh 1. Gross Income 100,280 107,640 111,320 115,000 5,000 92,920 Main Product kg 23 3,400 78,200 (in the 5th year) 92,920 100,280 107,640 111,320 115,000 78,200 Total 1 2. Production Cost 46 46 2 46 46 46 23 2 46 1) Seeds Κg 2) Fertilizer 6,000 6,000 6,000 6,000 6,000 0 200 30 0 DAP kg 0 0 100 1.400 1,400 1,400 1,400 1,400 14 SA kg 650 0 0 1,300 1,300 1,300 1,300 1,300 3) Insecticides liter 4) Land Preparation 3,500 3,500 3,500 1 3.500 3.500 Prowing by Tractor rent 3,500 3.500 1,400 1,400 1,400 1,400 1,400 1,400 Harrowing by Tractor rent 1,400 1 1,400 1,400 1,400 1,400 1,400 1,400 1,400 Ridging by Tractor rent 5) Labor (Non Yield Dependent) 1.680 1.680 1.680 1.680 1.680 Planting man-day 56 30 1.680 30 1.680 1,680 1,680 1,680 30 0 0 1,680 1,680 30 Weeding man-day 56 10 560 560 560 560 560 Watering man-day 56 0 0 168 168 56 3 168 168 Spraying man-day (Yield Dependent) 56 30 1,680 44 1,994 2.150 2,307 2.386 2,464 man~day Harvesting 560 526 543 man-day 56 392 10 459 493 Transporting 2,150 2,307 2,386 2,464 1.994 44 Threshing/Shelling man-day 56 30 1,680 9,576 8,881 9,228 9,403 7,112 8,535 Total Labor 3,552 3,691 3,761 3,830 40 2,845 3,414 Hired Labor 13,458 23,581 23,927 24,274 24,449 24,622 Total 2 (with total l<u>abor)</u> Total 3 (with hired labor) 9,191 18,460 18,598 18,737 18,807 18,876 90,378 64,742 69,339 76,353 83,366 86,871 Net Return 76 79 83 75 Net Return Ratio 69,009 74,460 81,682 88,903 92,513 96,124 Net Income 88 80 81 83 83 84 Net Income Ratio

Table I.4-26 Cost and Return by Crop (Economic Price)

Out - Kala (Imiauta d Fauna)

Crop:	Kale (Irrigat	ed Farm)								
			Without	Project			With P			
l ltem	Unit	Unit					Value	(Yield Incr	ease)	
1	1	Price	Quantity	Value	Quantity	1st year	2nd year		4th year	5th year
						40%	60%	80%	90%	100%
		Ksh		Ksh		Ksh	Ksh	Ksh	Ksh	Ksh
1. Gross Income	Ι'''		ĺ							
Main Product	ke l	21	3,400	71,400	5,000	84,840	91,560	98,280	101,640	105,000
					(in the 5th ye					
Total 1				71,400		84,840	91,560	98,280	101,640	105,000
2. Production Cost										
1) Seeds	kg	21	2	42	2	42	42	42	42	42
2) Fertilizer	i i				1					
DAP	l kg	16	0	0	200	3,200	3,200	3,200	3,200	3,200
l sa	kg	6	0	0	100	600	600	600	600	600
3) Insecticides	liter	600	o	0	2	1,200	1,200	1,200	1,200	1,200
4) Land Preparation					ļ					
Prowing by Tractor	rent	3,230	1	3,230	1	3,230	3,230	3,230		3,230
Harrowing by Tractor	rent	1,290	1	1,290	1	1,290	1,290	1,290	1,290	
Ridging by Tractor	rent	1,290	1	1,290	1	1,290	1,290	1,290	1,290	1,290
5) Labor								1		
(Non Yield Dependent)							į			
Planting	man-day	28		840		840	840	840		840
Weeding	man-day	28	30	840		840	840	840		840
Watering	man-day	28	0	0	1	280	280	280		280
Spraying	man-day	28	0	0	3	84	84	84	84	84
(Yield Dependent)										
Harvesting	man-day	. 28		840			1,075			1,232
Transporting	man-day	28		196			246	263		
Threshing/Shelling	man-day	28	30	840			1,075			
Total Labor				3,556		4,268		4,615		
Hired Labor	%	40	+	1,422		1,707		1,846		1,915
Total 2 (with total labor)			<u> </u>	9,408		15,120		15,467		
Total 3 (with hired labor)			<u> </u>	7,274		12,559	12,628	12,698	12,733	12,767
			1					<u> </u>		
Net Return				61,992		69,720				
Net Return Ratio	1			87		82				
Net Income				64,126		72,281				
Net Income Ratio	1		<u> </u>	90		85	86	87	87	88

Table I.4–27 Benefit for Agricultural Project (Financial Price)

	IW	Without Droiset	1					\$	Vith Project					
	٧	Mot Drofit Drofit	Drof!t	Area	1st Year	aar	2nd Year	ear	3rd Year	ear	4th Year	ear	5th Year	∋ar
<u>e</u>	Z G	אפר ב וסוונ	2	2	Net Profit Profit	rofit	Net Profit Profit		Net Profit Profit		Net Profit Profit		Net Profit Profit	rofit
	25	Keh/ha	Kch	L C	Ksh/ha	Ksh		Ksh	Ksh/ha	Ksh	Ksh/ha	Ksh		Ksh
	2 0		17	0 75		14.364	21 246	15.935	23.339	17,504	24,386	20		19,075
Maize	0.70		_	9 1		0			00 400	7 065	25 290	5 20g		5 731
Beans	0.15	15,430	2,315	0.15		3,133			32,433	4,000	020,00	0,2,0		5 6
Watermelon	0.03		2 898	0.05	100.979	5,049	108,509	5,425	116,040	5,802	119,807	2,890		0, 1
Kolo	000			0.05		3.467		3,818	83,366	4,168	86,871	4,344	90,378	4,519
Total	0.02		5	100		26.013		29,177		32,339		33,922		35,504

enefit	1ha	240 ha
Year	2,179	522,960
2nd Year	5,343	1,282,320
3rd Year	8,505	2,041,200
4th Year	10,088	2,421,120
5th Year	11,670	11,670 2,800,800

	3	Without Project	to					≤	With Project					
Crop	Area	Net Profit Profit	Profit	Area	1st Year),r	2nd Year		3rd Year		4th Year		5th Year	ear
d D	Ç B	-	2	3	Net Profit Profit		Net Profit Pr		Net Profit Profit		<u> </u>		->1	Profit
	l ed	Keh/ha	Ksh	ha		X Sh	Ksh/ha	(sh	Ksh/ha	Sh	Ksh/ha	Ksh	Ksh/ha	Ksh
Moize	97.0	•	-1 080	09 0	311	187	2.251	1.351	4,190			3,095		
Maize				0.10		1 993	28 391	2,839				4.109		•
Sorgnum	0.02		100	9 6		100	5,000	880 -				1.540		
Millet	0.10	3,110		0.20	,	700	0110	2 6		000		9 108		
Beans	0.02		129	0.0	12,110	117,1	000'01	200, 8		1	ΙĹ	10 940		12.286
otal	0.33		1648	20.		+		000.0	,	,		2		

Benefit	Ina	4na
1st Year	4,526	18,104
2nd Year	7,232	28,928
3rd Year	9,938	39,752
4th Year	11,289	45,156
5th Year	12,635	50,540

Table I.4–28 Benefit for Agricultural Project (Economic Price)

(Sallaai)											i			
	M	Without Project	ţ					S	With Project					
(70 67 0 74	17	V	10+ Voor	,00	2nd Vear	'par	3rd Year	aar	4th	4th Year	5th Year	ear
CZC	Area			אבמ	20	da	0117	-	5	l				
<u>L</u>					Net Profit Profit	Profit	Net Profit Profit		Net Profit Profit		Net Profit	Profit	Ž۱	Profit
	4	Keh/ha	X S	had	Ksh/ha	Ksh	Ksh/ha	(sh	Ksh/ha	Ksh	Ksh/ha Ksh	Ksh		Ksh
	<u> </u>			5					1	L (7		47.04
Maizo	0.78	20.814	16.235	0.75		15,266		16,658	790,72	18,050	24,990	18,747	478,02	19,440
Make	;		•	, ,		0000		001	0000	2702	00 450	ממר ת		7212
Beans	0 15			0.15	24.39	3,660		4,502	35,032	0,040	20,400	00/10		5
2			000	100	*	5 0 5 9		F 711	115 257	7 7 A	118 930	5 947		6 125
Watermelon	0.03			0.00	101,000	0,000		+ 5	20,0	5	•			
1/2/2	000	61 002		0.05	69 720	3.486	76.268	3.813	82.813	4.141	86,086		89,360	4,468
Nate	0.02				١		١		Ì	1	Ĺ			000
Total	86 U		22 788	1.00		27.465		30,384		33,304		34,764		30,223
יייי) i											

1 240 ha	1,122,480	1,823,040	10,516 2,523,840	3 2,874,240	3,224,400
1ha	4,677	7,596	10,516	11,976	13,435
Benefit	1st Year	2nd Year	3rd Year	4th Year	5th Year

	-Mi-	Vithout Project						≥	Vith Project					
Cro	Area	Net Profit Profit	ofit	Area	Ist Year	ear	2nd Year	ar	3rd Year	ear	4th Year	ar	5th Year	ar
)			·		Net Profit Profit		Net Profit Profit		Net Profit Profit	Profit	Net Profit Profit		Net Profit Profit	rofit
	e C	Ksh/ha	Ksh	Т	¥	Ksh	Ksh/ha	Ksh	Ksh/ha	Ksh	¥	Ksh	Ksh/ha	Ksł
Maize	0.79		374	09.0		1,868	4,983	2,990	6,852	4,111		4,672	8,722	5,233
Sorahim	000		147	0.10	6	2,370	32,412	3,241	41,125	4,113		4,548	49,838	4,98
Millet	0.16	5.410	866	0.20		1 488	9,005	1.801	10,568	2,114		2,270	12,134	2,42
Beans	0.02	_	167	0.10	_	1,510	19,020	1,902	22,940	2,294	24,900	2,490	26,860	2,68
Total	66 0		1.554	1 00		7.236		9 934		12.632		13.980		15,330

Benefit	Ina	4ha
1st Year	5,682	22,728
2nd Year	8,380	33,520
3rd Year	11,078	44,312
4th Year	12,426	49,704
5th Year	13,776	55,104

Table I.4-29 Benefit for Livestock Improvement

	Without Project	With Project	
Aniaml	Local Goat	Crossbred	(00%LID)
Breeding cycle	1.6 times/year, 1.5 heads/time	2 times/year, 1.5 heads/time	(20%UP)
Mortality Rate	20%	16%	(20%Down)
Birth rate	2.4 heads/female/year	3.0 heads/female/year	
Weight at birth	1.8kg	2.16kg	(20%UP)
Growth period	15 months	12 months	(20%UP)
Wholesale price (Financial)	900 Ksh/head	1,170 Ksh/head	(30%UP)
Wholesale price (Economic)	831 Ksh/head	1,081 Ksh/head	
No. of sale	1.9 heads/year	3.0 heads/year	
Gross income (Financial)	1,710 Ksh/year/female	3,510Ksh/year/female	·
Gross income (Economic)	1,579 Ksh/year/female	3,243Ksh/year/female	

(Benefit)				
Year	Financi	al Price	Econom	ic Price
	per female	Total	per female	Total
	1.5	(100 heads)		(100 heads)
	(ksh)	(Ksh)	(ksh)	(K sh)
1st Year (0%)	0	0	0	0
2nd Year (50%)	900	90,000	832	83,200
3rd Year (100%)	1,800	180,000	1,664	166,400

Table I.4-30 Benefit for Improved Jiko + Bee-keeping

	Without Project	With Project	
Unit Yield (Crude) (kg/hive)	17.5 (Log Hive)	25.0 (KTBH)	43% UP
Unit Yield (Refined) (kg/hive)	8.75	12.5	
Unit Price (Refined)(Ksh/kg)	160	240 **	50% UP
Gross Profit (Ksh/hive)	1,400	3,000	
Total Profit (20 hive)	28,000	60,000	
Benefit (Financial) (Ksh)		32,000 (1)	
Benefit (Economic) (Ksh)		29,536 (1)*SCF	

Note: ** Expected by better equipment and better packaging

Table I.4-31 Benefit for Improved Jiko + Fish Processing

	Without Project	With Project	t
Firewood Consumption(Kg/1kg fish)	1.5	0.75	50% Down
Price of Firewood (Ksh/kg)	2.5	2.5	
Annual Fish Processing (kg/jiko)	300	300	
Cost of Firewood (Ksh)	1.125	563	
Total Profit (20 sets of JIko)	22,500	11,250	
Benefit (Financial) (Ksh)		11,250 (1)	
Benefit (Economic) (Ksh)		10,384 (1)*SCF	

Table I.5-1 Project Cost for Evaluation (Financial Price)

		F.	Project Cost (Ksh)	<u>-</u>			Adjusted oc	Agusted Cost for Evaluation (NSI)	CION (NSII)				
Project	E/C		2/1		Total	E/C		1/0		Tota	O&M	Replacement	Kenark
200			1 ahor	2				Labor	or			Cost	
		•	Skilled	Unskilled			<u> </u>	Skilled	Unskilled				
mproved Jiko	2,701,014	1,291,830		23,389	4,161,400	0	226,958	145,167	23,389	395,514	395,514 Jiko: 5% of cost Jiko: 5 years	Jiko: 5 years	Jiko: 5% of cost Jiko: 5 years
+ Small-scale Industry				_							15,000 Ksh	5 years	Total O&M=15,300 Ksh
Sommunal Resource Mnagement			T NG 900 T	1 259 039	5 605 325	5 084 747	5 107 410	3518 726	1.641.024 16.251.907 1% of cost	16.251.907	1% of cost	Land leveling : 5 years	Land leveling: 5 years Concerted to the cost for 600 acres
FIM	200,130	005,001,1			2000		,				!		Exclude study & purchasing tour
Livestock Improvement	445,946	134,728	54,245	2,772	637,691	204,622	140,333	1,637	2,888	349,480	349,480 5% of cost	Equipment: 5 years	Exclude study tour
-												Pump: 20 years	
Total	1014084	1 923 636	1.950.492	1.354,804	6,243,016	6,189,369	5,247,743	3,520,363	1,643,912	16,601,387			
Food Security	445 946	134.728	54.245	2.772	637.691	204,622	140,333	1,637	2,888		349,480 5% of cost	Equipment: 5 years	Exclude study tour
	2			<u> </u>	-							Pump: 20 years	
Rainfad Acriculture	60.933	171.112	545,453	248,155	1,025,653	349,099	167,157	433,131	249,393	1,198.780	,198,780 0.5% of cast		Exclude study tour
Total	506,879	305,840	599,698	250,927	1.663,344	553,721	307,490	434,768	252,281	1,548,260			

Table 1,5-2 Project Cost for Evaluation (Economic Price)

							-		(1-7/				
		à	Project Cost (Ksh)	(sh)			Agusted Co	Agusted Cost for Evaluation (NSI)	(LION (NSN)				ć
Project	F/C		0/7		Total	F/C		٦/٥		Total	O&M	Replacement	Тепатк
200				Labor				Labor	or			Cost	
			Skilled	Flaskilled	_		·	Skiled	Unskilled				
Improved like				+		0	209,482	133,989	11,695	355,166	355,166 Jiko: 5% of cost Jiko: 5 years	Jiko: 5 years	
+ Small-scale Industry									•		Jars and Label Bee hive 15,000 Ksh*SCF 5 years	Jars and Label Bee hive + equipment Exclude study tour 15,000 Ksh*SCF 5 years	Exclude study tour
Communal Resource Mnagement PIM						5,984,747	4,714,139 3,247,784	3,247,784	820,512	820,512 14,767,182 1% of cost		Land leveling: 5 years	Land leveling: 5 years Concerted to the cost for 600 acres Exclude study & purchasing tour
Livestock Improvement						204,622	129,527	1,511	1,444		337,104 5% of cost	Equipment: 5 years Pump: 20 years	Exclude study tour
Total						6,189,369	4,843,666	3,249,295	821,956	821,956 15,104,286			
Food Security Livestock Improvement						204,622	129,527	1,511	1,444		337,104 5% of cost	Equipment: 5 years Pump: 20 years	Exclude study tour
Bainfed Agriculture						349,099	154,286	399,780	124,697	1,027,862	1,027,862 0.5% of cost		Exclude study tour
100 Policies 100 Po						553 791	283,813	401.291	126,141	1,364,966			

Table I.6-1 FIRR for Improved Jiko + Small-scale Industry in Salabani

	(9)	Difference	-329,604	27,232	24,755	22,505	20,460	-11,318	16,908	15,371	13,974	12,704	7,027	10,499	9,544	8,677	7,888	-4,364	6,519	5,926	5,388	4,898	-2,710	4,048	3,680	3,345	3,041	-1,682	2,513	2,285	2,077	1,889	-120,579
	10.0 %	Benefit	39,318	35,744	32,494	29,540	26,855	24,413	22,194	20,176	18,342	16,675	15,159	13,781	12,528	11,389	10,354	9,412	8,557	7,779	7,072	6,429	5,844	5,313	4,830	4,391	3,992	3,629	3,299	2,999	2,726	2,479	407,713
	= I)	Cost	368,922	8,512	7,739	7,035	6,395	35,731	5,286	4,805	4,368	3,971	22,186	3,282	2,984	2,712	2,466	13,776	2,038	1,853	1,684	1,531	8,554	1,265	1,150	1,046	951	5,311	786	714	649	590	528,292
(sh)		Difference	-345,203	29,870	28,440	27,078	25,781	-14,936	23,371	22,252	21,186	20,172	-11,687	18,287	17,410	16,577	15,783	-9,144	14,307	13,623	12,971	12,350	-7,155	11,195	10,659	10,149	9,663	-5,598	8,759	8,340	7,941	7,561	2
Net Present Value (Ksh.	5.0 %	Benefit [41,179	39,207	37,330	35,542	33,840	32,220	30,677	29,208	27,809	26,478	25,210	24,003	22,853	21,759	20,717	19,725	18,780	17,881	17,025	16,210	15,433	14,694	13,991	13,321	12,683	12,076	11,497	10,947	10,423	9,924	662,642
Net Pre	= ()	Cost	386,382	9,337	8,890	8,464	8,059	47,156	7,306	6,956	6,623	908'9	36,897	5,716	5,443	5,182	4,934	28,869	4,473	4,258	4,054	3,860	22,588	3,499	3,332	3,172	3,020	17,674	2,738	2,607	2,482	2,363	662,640
		Difference	-345,300	29,887	28,463	27,108	25,818	-14,961	23,417	22,302	21,240	20,229	-11,723	18,348	17,474	16,642	15,850	-9,185	14,376	13,691	13,039	12,418	-7,197	11,264	10,728	10,216	9,730	-5,639	8,825	8,406	8,005	7,624	1,095
	50 %)	Benefit [41,190	39,229	37,361	35,582	33,888	32,274	30,737	29,273	27,879	26,552	25,287	24,083	22,936	21,844	20,804	19,813	18,870	17,971	17,115	16,300	15,524	14,785	14,081	13,410	12,772	12,164	11,584	11,033	10,507	10,007	664,855
	= I)	Cost	386,490	9,342	868'8	8,474	8,070	47,235	7,320	6,971	6,639	6,323	37,010	5,735	5,462	5,202	4,954	28,998	4,494	4,280	4,076	3,882	22,721	3,521	3,353	3,194	3,042	17,803	2,759	2,627	2,502	2,383	663,760
Difference		(Keb)	-362,564	32,950	32,950	32,950	32,950	-20,050	32,950	32,950	32,950	32,950	-20,050	32,950	32,950	32,950	32,950	-20,050	32,950	32,950	32,950	32,950	-20,050	32,950	32,950	32,950	32,950	-20,050	32,950	32,950	32,950		327,986
Benefit		(Ksh)	43.250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	43,250	1,297,500
		Total Cost	405.814	10,300	10,300	10,300	10,300	63,300	10,300	10,300	10,300	10,300	63,300	10,300	10,300	10,300	10,300	63,300	10,300	10,300	10,300	10,300	63,300	10,300	10,300	10,300	10,300	63,300	10,300	10,300	10,300	10,300	969,514
Cost (Ksh)	(10)	O&M	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	10,300	309,000
		Investment	395 514					53,000					53,000					53.000					53,000	<u>.</u>				53,000					660,514
	I	Year	-	. 2	(n)	4	· LC	9	1	· ca	တ	10	Ξ	12	1.5	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total

Table I.6-2 EIRR for Improved Jiko + Small-scale Industry in Salabani

EIRR

		Cost (Ksh)		Benefit	Difference				Net Pr	Net Present Value (Ksh	(Ksh)			
					1	= I)	5.0 %	(1	= ()	5.3	(%)	= ()	10.0 %)	()
Year	Investment	O&M	Total Cost	(Ksh)	(Ksh)	Cost	Benefit	Difference	Cost	Benefit	Difference	Cost	Benefit	Difference
-	355,166	9,507	364,673	39,920	-324,753	347,308	38,019	-309,289	346,284	37,907	-308,377	331,521	36,291	-295,230
2		9,507	9,507	39,920	30,413	8,623	36,209	27,586	8,572	35,996	27,424	7,857	32,992	25,135
ന		9,507	9,507	39,920	30,413	8,213	34,484	26,271	8,140	34,181	26,041	7,143	29,992	22,849
4		9,507	9,507	39,920	30,413	7,821	32,842	25,021	7,730	32,457	24,727	6,493	27,266	20,773
гo		9,507	9,507	39,920	30,413	7,449	31,278	23,829	7,340	30,820	23,480	5,903	24,787	18,884
9	48,919	9,507	58,426	39,920	-18,506	43,598	29,789	-13,809	42,833	29,266	-13,567	32,980	22,534	-10,446
7		9,507	9,507	39,920	30,413	6,756	28,370	21,614	6,618	27,790	21,172	4,879	20,485	15,606
∞		9,507	9,507	39,920	30,413	6,435	27,019	20,584	6,285	26,389	20,104	4,435	18,623	14,188
6		9,507	9,507	39,920	30,413	6,128	25,733	19,605	5,968	25,058	19,090	4,032	16,930	12,898
10		9,507	9,507	39,920	30,413	5,836	24,507	18,671	5,667	23,795	18,128	3,665	15,391	11,726
Ξ	48,919	9,507	58,426	39,920	-18,506	34,160	23,340	-10,820	33,070	22,595	-10,475	20,478	13,992	-6,486
12		9,507	9,507	39,920	30,413	5,294	22,229	16,935	5,110	21,456	16,346	3,029	12,720	9,691
13		9,507	9,507	39,920	30,413	5,042	21,170	16,128	4,852	20,374	15,522	2,754	11,563	8,809
14		9,507	9,507	39,920	30,413	4,802	20,162	15,360	4,607	19,346	14,739	2,503	10,512	8,009
15		9,507	9,507	39,920	30,413	4,573	19,202	14,629	4,375	18,371	13,996	2,276	9,557	7,281
16	48,919	9,507	58,426	39,920	-18,506	26,766	18,288	-8,478	25,531	17,445	980'8-	12,715	8,688	-4,027
17		9,507	9,507	39,920	30,413	4,148	17,417	13,269	3,945	16,565	12,620	1,881	7,898	6,017
18		9,507	9,507	39,920	30,413	3,950	16,588	12,638	3,746	15,730	11,984	1,710	7,180	5,470
19		9,507	9,507	39,920	30,413	3,762	15,798	12,036	3,557	14,936	11,379	1,554	6,527	4,973
20		9,507	9,507	39,920	30,413	3,583	15,045	11,462	3,378	14,183	10,805	1,413	5,934	4,521
2.1	48,919	9,507	58,426	39,920	-18,506	20,972	14,329	-6,643	19,712	13,468	-6,244	7,895	5,394	-2,501
22		9,507	9,507	39,920	30,413	3,250	13,647	10,397	3,046	12,789	9,743	1,168	4,904	3,736
23		9,507	9,507	39,920	30,413	3,095	12,997	9,902	2,892	12,144	9,252	1,062	4,458	3,396
24		9,507	9,507	39,920	30,413	2,948	12,378	9,430	2,746	11,532	8,786	965	4,053	3,088
25		9,507	9,507	39,920	30,413	2,807	11,788	8,981	2,608	10,950	8,342	877	3,684	2,807
26	48,919	9,507	58,426	39,920	-18,506	16,432	11,227	-5,205	15,218	10,398	-4,820	4,902	3,350	-1,552
27		9,507	9,507	39,920	30,413	2,546	10,693	8,147	2,351	9,874	7,523	725	3,045	2,320
28		9,507	9,507	39,920	30,413	2,425	10,183	7,758	2,233	9,376	7,143	629	2,768	2,109
29		9,507	9,507	39,920	30,413	2,310	869'6	7,388	2,120	8,903	6,783	599	2,517	1,918
99 90		9,507	9,507	39,920	30,413	2,200	9,237	7,037	2,013	8,454	6,441	545	2,288	1,743
Total	599,761	285,210	884,971	1,197,600	312,629	603,232	613,666	10 434	592,547	592,548	-	478.618	376.323	-102.295
									•					

Table I.6-3 FIRR for PIM in Sandai

O&M Total Cost (Ksh) (Ksh) O&M Total Cost (Ksh) (Ksh) 162,519 16,414,426 522,960 -15,891,466 15,6 162,519 162,519 1,119,801 1,119,801 1,16,801 162,519 162,519 2,041,200 2,258,601 1,119,801 1,119,801 162,519 162,519 2,2421,120 2,258,601 1,119,801 1								
Total Cost (Ksh) (Ksh) 719 16,414,426 522,960 -15,891,466 15, 16,519 16,519 1,282,320 1,119,801 162,519 1,282,320 1,119,801 162,519 2,041,200 1,878,681 162,519 2,041,200 2,258,601 162,519 2,800,800 2,638,281 162,519 2,800,800	(% 05)		=0	9.2 %)		= 1)	10.0 %)	
(Ksh) 16,414,426 162,519 1,282,320 1,119,801 162,519 2,041,200 1,878,681 162,519 2,041,200 1,878,681 162,519 2,800,800 2,638,281 1,800,800 2,638,281 1,800,800 2,638,281 1,800,800 2,638,281 1,800,800 2,638,281 1,800,800 2,638,281 1,800,800 2,638,281 1,800,800 2,638,281 1,800,800 2,638,281 1,800,800 2,638,281 1,800,800 2,638,281 1,800,800 2,638,281 1,800,800 2,638,281 1,800,800 2,638,281 1,800,800 2,638,281 1,800,800 2,638,281 1,800,800 2,638,281 1,800,800 2,638,281 1,800,800	Benefit	Difference C	Cost Ber	Benefit Diff	Difference	Cost	Benefit D	Difference
16,414,426	11000	ľ		- 1	14 540 061	14 922 205	475 418 -	-14 446 787
162,519 1,119,801 162,519 2,041,200 1,1878,681 162,519 2,800,800 1,258,601 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	498,057		5,028,774 4	4/8,813 -14,	038 701	134.313	692	925.456
162,519 2,041,200 1,878,681 162,519 2,421,120 2,258,601 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	- ·		- +		441 020	199 103	1 533 584	1411481
162,519 2,421,120 2,258,601 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	- -			- ,	000,144,	122,103	010 010	1 510 655
5.262,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	133,705 1,991,861	-	- -	_	181,180	500,111	000,500,1	1,042,000
5,262,519 2,800,800 -2,461,719 3, 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 2,800,800 2,638,281 2,800,800 2,638,281 3,62,519 2,800,800 2,638,281 3,62,519 2,800,800 2,638,281 3,62,519 2,800,800 2,638,281 4,62,519 2,800,800 2,638,281 4,62,519 2,800,800 2,638,281 4,62,519 2,800,800 2,638,281 4,62,519 2,800,800 2,638,281 4,62,519 2,800,800 2,638,281 4,62,519 2,800,800 2,638,281 4,62,519 2,800,800 2,638,281 4,62,519 2,800,800 2,638,281 4,62,519 2,800,800 2,638,281 4,62,519 2,800,800 2,638,281 4,62,519 2,800,800 2,638,281 4,62,519 2,800,800 2,638,281 4,62,519 2,800,800 2,638,281 4,62,519 2,800,800 2,638,281 4,62,519 2,800,800 2,638,281 4,62,519 2,800,800 2,638,281	127,338 2,194,500		7	_	,697,502	100,912	1,739,076	1,638,164
162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	3,926,973 2,090,000	-1,836,973 3,1	3,100,137 1,6	١.	-1,450,193	2,970,555	1,580,979	1,389,576
162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	115,499 1,990,476	1,874,977	87,658 1,5	_	423,003	83,398	1,437,253	1,353,855
162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	109,999 1,895,692	1,785,693	80,258 1,3	_	,302,878	75,816	1,306,594	1,230,778
5.262,519 2.800,800 2.638,281 162,519 2.800,800 2.638,281	104.761 1,805.421	1,700,660	73,483 1,2	_	,192,894	68,924	1,187,813	1,118,889
5,262,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281		1,619,675		1,159,473 1	1,092,193	62,658	1,079,830	1,017,172
162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	_		,994,666 1,0	•	-933,072	1,844,481	981,663	-862,818
162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	_	1,469,093	56,400 9	971,978	915,578	51,784	892,421	840,637
162,519 2.800,800 2.638,281 162,519 2.800,800 2.638,281	_		51,639 8	889,927	838,288	47,076	811,292	764,216
5,262,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	82,083 1,414,594	1,332,511		814,802	767,522	42,796	737,538	694,742
5,262,519 2,800,800 -2,461,719 2, 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 -2,461,719 1 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	_	1,269,059	43,288 7	746,019	702,731	38,906	670,489	631,583
162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	_	_	,283,392 6	683,043 -	-600,349	1,145,277	609,536	-535,741
162,519 2,800,800 2,638,281 162,519 2,800,800 -2,461,719 1 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	70,907 1,221,980	1,151,073		625,383	589,095	32,154	554,123	521,969
162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 -2,461,719 1 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 -2,461,719 1 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	67,530 1,163,790	1,096,260	33,225 5	572,590	539,365	29,230	503,748	474,518
162,519 2,800,800 2,638,281 162,519 2,800,800 -2,461,719 1 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 -2,461,719 1 162,519 2,800,800 -2,461,719 1 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	64,314 1,108,372	1,044,058	30,420 5	524,254	493,834	26,573	457,953	431,380
5,262,519 2,800,800 -2,461,719 1. 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 -2,461,719 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	-	994,340	27,852 4	479,998	452,146	24,157	416,321	392,164
162.519 2.800,800 2.638,281 162,519 2.800,800 2.638,281 162,519 2.800,800 2.638,281 162,519 2.800,800 2.638,281 5,262,519 2.800,800 -2.461,719 1 162,519 2.800,800 2.638,281 162,519 2.800,800 2.638,281 162,519 2.800,800 2.638,281 162,519 2.800,800 2.638,281	· —	-883,615	825,750 4	439,478	-386,272	711,127	378,474	-332,653
162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 -2,461,719 1 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	·	901,896	23,348 4	402,379	379,031	19,965	344,067	324,102
162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 5,262,519 2,800,800 -2,461,719 1 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	52.912 911,860	858,948		368,411	347,034	18,150	312,788	294 638
162,519 2,800,800 2,638,281 5,262,519 2,800,800 -2,461,719 1 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	50,392 868,438	818,046	19,573 3	337,311	317,738	16,500	284,353	267,853
5,262,519 2,800,800 -2,461,719 1 1,62,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 169,519 2,800,800 2,638,281		779,092		308,837	290,916	15,000	258,503	243,503
162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281 162,519 2,800,800 2,638,281	1,480,035 787,699	-692,336	531,298 2	282,766 -	-248,532	441,554	235,002	-206,552
162,519 2,800,800 2 162,519 2,800,800 2 163,519 2,800,800 2	43,530 750,190	_	•	258,895	243,872	12,397	213,639	201,242
162,519 2,800,800 2	41,458 714,466	673,008	_	237,040	223,286	11,270	194,217	182,947
162519 2800800 2	39,483 680,444	640,961	12,593	217,030	204,437	10,245	176,561	166,316
17 000,000,000,000,000,000	37,603 648,042	610,439	11,530	98,709	187,179	9,314	160,510	151,196
4875570 46697477 79088400 39460993 303	30.365.189 38.539.948	8 174 759 24 (24.013.959 24.0	24,013,958	-	23,199,843	22,247,172	-952,671

Table I.6-4 FIRR for Livestock Improvement in Sandai and Arabai

	35.0 %)	fit Difference		-5		_			'				_,			3,639 3,286	,695 2,433		1,479 –513					1			_		74 –25	54 49	40 36	30 27	22 20	
) = ()	Cost Benefit			9,588 49,			_		2,138 22,			8 698		_				1,992		79	58	160	444	24	18	13	10	66	ഹ	4	က	2	
sh)		Difference (41,754	70,994	53,867	40,872	-11,913	23,530	17,853	13,547	10,278	-2,996	5,918	4,490	3,407	2,585	-753	1,488	1,129	857	461	-190	374	283	216	163	-48	94	71	54	42	
Net Present Value (Ksh.	31.8 %)	Benefit D	1	0	51,814	78,627	59,659	45,266	34,346	26,060	19,773	15,003	11,383	8,637	6,554	4,973	3,773	2,863	2,172	1,648	1,250	949	720	546	414	314	239	181	137	104	42	09	46	
Net Pre	= 1)	Cost		278,427	10,060	7,633	5,792	4,394	46,259	2,530	1,920	1,456	1,105	11,633	636	483	366	278	2,925	160	121	92	259	736	40	31	23	20	185	10	80	9	4	
		Difference		-319,090	54,840	106,864	92,925	80,804	-26,992	61,100	53,130	46,200	40,174	-13,420	30,377	26,415	22,969	19,974	-6,672	15,103	13,133	11,420	7,046	-3,317	7,509	6,529	5,678	4,937	-1,649	3,734	3,246	2,823	2,455	
	15.0 %)	1		0	68,053	118,353	102,916	89,492	77,819	69,69	58,842	51,167	44,493	38,690	33,643	29,255	25,439	22,121	19,236	16,727	14,545	12,648	10,998	9,564	8,316	7,231	6,288	5,468	4,755	4,135	3,595	3,126	2,719	
	=0	Cost		319,090	13,213	11,489	9,991	8,688	104,811	6,569	5,712	4,967	4,319	52,110	3,266	2,840	2,470	2,147	25,908	1,624	1,412	1,228	3,952	12,881	807	702	610	531	6,404	401	349	303	264	
Difference		•	(Ksh)	-366,954	72,526	162,526	162,526	162,526	-62,435	162,526	162,526	162,526	162,526	-62,435	162,526	162,526	162,526	162,526	-62,435	162,526	162,526	162.526	115,326	-62,435	162,526	162,526	162,526	162,526	-62,435	162,526	162,526	162,526	162,526	
190000			(Ksh)		90,000	180,000	180,000	180,000	180,000	180.000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180.000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180,000	180.000	180,000	180,000	180,000	180,000	180,000	
		Total Cost		366.954	17.474	17 474	17 474	17 474	242 435	17.474	17.474	17.474	17.474	242.435	17.474	17 474	17.474	17.474	242 435	17.474	17.474	17 474	64674	242.435	17.474	17.474	17,474	17,474	242,435	17.474	17,474	17.474	17,474	
(1-7/)	Cost (Nsn)	O&M		17 474	17 474	17 474	17 474	17 474	17 474	17.474	17 474	17.474	17.474	17.474	17 474	17.474	17.474	17 474	17.474	17,474	17.474	17 474	17.474	17.474	17 474	17.474	17 474	17.474	17.474	17.474	17.474	17.474	17,474	
		Investment		349 480) - - - - -				224 961	00,1277				224 961					224 961	1			47 200	224 961	1				224.961	1				
		Year		-		1 (**	9	rur	שכ) r	~ α	0	, C	2 =	12	<u> </u>	2- 1	ιt	5 4	17	. ~	<u> </u>	2.0	2.5	22	23 1	24	25	96	27	28	53	308	

Table 1.6-5 FIRR for Communal Resource Management in Sandai

	_	Cost (Ksh)		Benefit	Difference				Net 13	Net Present Value (Ksh,	(NSII)			
		1000 N 1000			' !	= I)	5.0	(%	= I)	9.6	(%	= D)	15.0 %	()
Year	Investment	0&M	Total Cost		-	Cost	Benefit	Difference	Cost	Benefit	Difference	Cost	Benefit	Difference
				- 1	(Ksh)								- 1	107
1	16,601,387	179,993	16,781,380	522,960	-16,258,420	15,982,267	498,057	-15,484,210	15,287,598	476,409	-14,811,189	14,592,504	ω.	-14,13/,/5b
2	0	179,993	179.993	1,372,320	1,192,327	163,259	1,244,735	1,081,476	149,375	1,138,882	989,507	136,101	1,037,671	901,570
i m	0	179,993	179,993	2,221,200	2,041,207	155,485	1,918,756	1,763,271	136,079	1,679,277	1,543,198	118,348	1,460,475	1,342,127
4	O	179,993	179,993	2,601,120	2,421,127	148,081	2,139,948	1,991,867	123,966	1,791,459	1,667,493	102,912	1,487,199	1,384,287
- u.		179 993	179,993	2,980,800	2,800,807	141,029	2,335,535	2,194,506	112,931	1,870,212	1,757,281	89,488	1,481,984	1,392,496
· (C	5324.961	179,993	5.504.954	2,980,800	-2.524.154	4.107.881	2,224,319	-1,883,562	3,146,468	1,703,736	-1,442,732	2,379,944	1,288,682	-1,091,262
· r		179,993	179.993	2 980 800	2,800,807	127,918	2,118,399	1,990,481	93,721	1,552,080	1,458,359	67,666	1,120,593	1,052,927
- 00		179.993	179 993	2.980.800	2,800,807	121.826	2,017,523	1,895,697	85,378	1,413,922	1,328,544	58,840	974,429	915,589
0) C	179 993	179,993	2,980,800	2,800,807	116,025	1,921,450	1,805,425	977,77	1,288,063	1,210,284	51,165	847,329	796,164
9	· C	179 993	179 993	2.980.800	2,800,807	110,500	1,829,953	1,719,453	70,855	1,173,407	1,102,552	44,492	736,808	692,316
? =	5 324 961	179 993	5 504 954	2.980.800	-2.524.154	3.218,633	1,742,812	-1,475,821	1,974,155	1,068,957	-905,198	1,183,253	640,703	-542,550
: 6	0	179 993	179.993	2,980,800	2.800,807	100,227	1,659,821	1,559,594	58,802	973,805	915,003	33,642	557,133	523,49
1 5		179.993	179.993	2,980,800	2.800,807	95,454	1,580,782	1,485,328	53,568	887,122	833,554	29,254	484,463	455,209
. 4		179.993	179.993	2,980,800	2.800.807	606'06	1,505,507	1,414,598	48,800	808,156	759,356	25,438	421,272	395,834
. 4:		179,993	179,993	2,980,800	2,800,807	86,580	1,433,816	1,347,236	44,456	736,219	691,763	22,120	366,324	344,204
2	5 5324 961	179,993	5 504 954	2,980,800	-2.524.154	2.521,883	1,365,539	-1,156,344	1,238,623	670,685	-567,938	588,286	318,543	-269,740
1	0	179,993	179,993	2,980,800	2,800,807	78,530	1,300,513	1,221,983	36,894	610,984	574,090	16,726	276,993	260,26
138	0	179,993	179,993	2,980,800	2,800,807	74,791	1,238,584	1,163,793	33,610	556,598	522,988	14,544	240,864	226,320
6	0	179,993	179,993	2,980,800	2,800,807	71,229	1,179,604	1,108,375	30,618	507,053	476,435	12,647	209,447	196,800
20	47.200	179,993	227,193	2,980,800	2,753,607	85,627	1,123,432	1,037,805	35,207	461,918	426,711	13,882	182,128	168,246
21	5,	179,993	5.504,954	2,980,800	-2,524,154	1,975,961	1,069,935	-906,026	777,136	420,801	-356,335	292,482	158,372	-134,110
22		179,993	179,993	2,980,800	2,800,807	61,531	1,018,986	957,455	23,148	383,343	360,195	8,316	137,715	129,399
23	0	179,993	179,993	2,980,800	2,800,807	58,601	970,463	911,862	21,087	349,220	328,133	7,231	119,752	112,521
24	0	179,993	179,993	2,980,800	2,800,807	55,810	924,250	868,440	19,210	318,135	298,925	6,288	104,132	97,844
25	0	179,993	179,993	2,980,800	2,800,807	53,152	880,239	827,087	17,500	289,816	272,316	5,468	90,550	85,082
26	5.324.961	179,993	5,504,954	2,980,800	-2.524,154	1,548,217	838,322	-709,895	487,590	264,018	-223,572	145,415	78,739	-66,676
27		179,993	179,993	2,980,800	2,800,807	48,211	798,402	750,191	14,523	240,517	225,994	4,134	68,469	64,335
78	0	179,993	179,993	2,980,800	2,800,807	45,915	760,383	714,468	13,231	219,108	205,877	3,595	59,538	55,943
59	0	179,993	179,993	2,980,800	2,800,807	43,729	724,174	680,445	12,053	199,604	187,551	3,126	51,772	48,646
99	0	179,993	179,993	2,980,800	2,800,807	41,646	069,689	648,044	10,980	181,836	170,856	2,718	45,019	42,301
Total	43.273.392	5.399.790	48.673.182	84.218.400	35.545.218	31,530,907	41,053,929	9,523.022	24,235,341	24.235.342	-	20,060,025	15,501,846	-4,558,179
3	1 2 2 2	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	2, 4,	1 1 1		200201						L	1	

Table I.6-6 EIRR for PIM in Sandai

Cost (RSB)		700000	Difference Officers				Net Pr	Net Present Value (Ksh.	(Ksh)			
				= ()	10.0 %		= I)	14.6 9	(%	= I)	20.0 %)	
70	Total Cost	:	' :	Cost		Difference	Cost	Benefit	Difference	Cost	Benefit D	Difference
		- 1	(Ksh)	0.00	١.	40 500	12010 550	070 184	-12 031 394	12 429 045	935 400 -	-11 493.645
14,91	14,914,854		-13,792,374	13,558,958		-12,538,522	13,010,538	1 387 235	1 274 865	102 550		1,163,450
4	147,672	1,823,040	1,6/5,368	122,043	1,306,643	1,304,002	08.033	1675300	1,577,277	85 458	1,460,556	1,375,098
14	147,672	2,523,840	2,3/0,108	100,946	1,630,130	1 862 283	85.508	1,674,296	1.578.788	71.215	1.386,111	1,314,896
7 7	2/0,/41 678/7/1	3 2 2 4 400	3.076.728	91.693	2,002,099	1.910.406	74,590	1,628,671	1,554,081	59,346	1,295,814	1,236,468
505	5,0,75	3 224 400	-1 826.922	2.851,340	1.820,090	-1,031,250	2,225,699	1,420,726	-804,973	1,691,678	1,079,845	-611,833
5,0	147,672	3 224,400	3.076.728	75.779	1,654,627	1,578,848	56,759	1,239,331	1,182,572	41,213	899,871	858,658
147.672	147.672	3.224.400	3.076,728	08,890	1,504,206	1,435,316	49,512	1,081,096	1,031,584	34,344	749,892	715,548
147.672	147,672	3.224.400	3,076,728	62,627	1,367,460	1,304,833	43,191	943,064	899,873	28,620	624,910	596,290
	147,672	3.224.400	3,076,728	56,934	1,243,146	1,186,212	37,676	822,655	784,979	23,850	520,759	496,909
5.05	5.051.322	3,224,400	-1,826,922	1,770,458	1,130,133	-640,325	1,124,219	717,621	-406,598	679,847	433,966	-245,881
	147.672	3.224.400	3.076,728	47,053	1,027,393	980,340	28,670	625,996	597,326	16,562	361,638	345,076
147.672 14	147.672	3,224,400	3.076.728	42,775	933,994	891,219	25,009	546,070	521,061	13,802	301,365	287,563
	147.672	3,224,400	3,076,728	38,887	849,085	810,198	21,816	476,349	454,533	11,502	251,137	239,635
47.672 14	147,672	3,224,400	3,076,728	35,352	771,896	736,544	19,031	415,530	396,499	9,585	209,281	199,696
ις.	5,051,322	3,224,400	-1,826,922	1,099,315	701,723	-397,592	567,853	362,476	-205,377	273,215	174,401	-98,814
	147,672	3,224,400	3,076,728	29,216	637,930	608,714	14,481	316,196	301,715	6,656	145,334	138,678
	147 672	3,224,400	3,076,728	26,560	579,937	553,377	12,632	275,825	263,193	5,547	121,112	115,565
	147,672	3,224,400	3,076,728	24,146	527,215	503,069	11,019	240,608	229,589	4,622	100,927	96,305
	147,672	3,224,400	3,076,728	21,951	479,287	457,336	9,612	209,888	200,276	3,852	84,105	80,253
ις	5.051,322	3,224,400	-1,826,922	682,588	435,715	-246,873	286,827	183,090	-103,737	109,799	70,088	-39,711
	147,672	3,224,400	3,076,728	18,141	396,105	377,964	7,315	159,713	152,398	2,675	58,407	55,732
	147.672	3,224,400	3,076,728	16,492	360,095	343,603	6,381	139,321	132,940	2,229	48,672	46,443
	147.672	3,224,400	3,076,728	14,992	327,359	312,367	5,566	121,533	115,967	1,858	40,560	38,702
	147,672	3,224,400	3,076,728	13,630	297,599	283,969	4,855	106,016	101,161	1,548	33,800	32,252
гC	5.051,322	3,224,400	-1.826,922	423,833	270,545	-153,288	144,879	92,480	-52,399	44,126	28,167	-15,959
	147,672	3,224,400	3.076,728	11,264	245,950	234,686	3,695	80,672	76,97	1,075	23,472	22,397
	147,672	3,224,400	3,076,728	10,240	223,591	213,351	3,223	70,372	67,149	968	19,560	18,664
,	147,672	3,224,400	3,076,728	9,309	203,264	193,955	2,811	61,387	58,576	747	16,300	15,553
672 14	47,672	3,224,400	3,076,728	8,463	184,786	176,323	2,452	53,550	51,098	622	13,583	12,961
4,430,160 43,71	43,715,592	92,178,000	48,462,408	21,444,739	26,561,654	5,116,915	18,096,232	18,096,231	1	15,758,084	12,755,033	-3,003,051

Table I.6-7 EIRR for Livestock Improvement in Sandai and Arabal

EIRR

		Coet (Keh)		Renefit	Difference				Net Pre	Net Present Value (Ksh)	(Ksh)			
		0035 (1531)				= 1)	10.0 %	(%	=[)	30.0	(%)	= I)	30.0 %	
Year In	Investment	O&M	Total Cost		I	Cost	Benefit	Difference	Cost	Benefit	Difference	Cost	Benefit	Difference
				(Ksh)	(Ksh)	:								
1	337.104	16.855	353,959		-353,959	321,781	0	-321,781	272,304	0	-272,304	272,276	0	-2/2/2/6
~		16.855	16,855	83,200	66,345	13,930	68,760	54,830	9,975	49,241	39,266	9,973	49,231	39,258
l cc		16,855	16,855	166,400	149,545	12,663	125,019	112,356	7,674	75,763	68,089	7,672	75,740	890'89
4		16.855	16.855	166,400	149.545	11,512	113,653	102,141	5,904	58,285	52,381	5,901	58,261	52,360
r un		16.855		166,400	149,545	10,466	103,321	92,855	4,542	44,839	40,297	4,540	44,816	40,276
യ	217.646	16.855	7	166,400	-68,101	132,370	93,928	-38,442	48,613	34,495	-14,118	48,583	34,474	-14,109
۰,	2	16.855		166,400	149,545	8,649	85,390	76,741	2,688	26,538	23,850	2,686	26,519	23,833
- 00		16,855	16.855	166.400	149,545	7,863	77,627	69,764	2,068	20,416	18,348	2,066	20,399	18,333
0 0		16.855	16.855	166.400	149,545	7,148	70,570	63,422	1,591	15,706	14,115	1,589	15,691	14,102
, <u>c</u>		16.855		166.400	149,545	6.498	64,154	57,656	1,224	12,083	10,859	1,223	12,070	10,847
? =	217 646	16,855		166.400	-68,101	82,191	58,322	-23,869	13,100	9,295	-3,805	13,085	9,285	-3,800
- 6	2	16.855		166,400	149,545	5,371	53,020	47,649	724	7,151	6,427	723	7,142	6,419
1 5		16.855		166,400	149,545	4,882	48,200	43,318	557	5,501	4,944	557	5,494	4,937
4		16,855		166,400	149,545	4,438	43,818	39,380	429	4,232	3,803	428	4,226	3,798
<u>. rc</u>		16.855		166,400	149,545	4,035	39,835	35,800	330	3,256	2,926	329	3,251	2,922
9	217,646	16,855	.,	166,400	-68,101	51,034	36,213	-14,821	3,530	2,505	-1,025	3,524	2,501	-1,023
17	<u> </u>	16,855		166,400	149,545	3,335	32,921	29,586	195	1,927	1,732	195	1,924	1,729
8		16.855		166,400	149,545	3,032	29,929	26,897	150	1,482	1,332	150	1,480	1,330
19		16,855		166,400	149,545	2,756	27,208	24,452	116	1,140	1,024	115	1,138	1,023
20	47,200	16,855		166,400	102,345	9,521	24,734	15,213	338	877	539	337	876	539
21	217 646	16,855		166,400	68,101	31,688	22,486	-9,202	951	675	-276	949	674	-275
22	· -	16,855		166,400	149,545	2,071	20,442	18,371	53	519	466	52	518	466
23		16,855		166,400	149,545	1,882	18,583	16,701	40	399	359	40	399	359
24		16,855		166,400	149,545	1,711	16,894	15,183	31	307	276	31	307	276
25		16,855		166,400	149,545	1,556	15,358	13,802	24	236	212	24	236	212
26	217.646	16,855	7	166,400	-68,101	19,676	13,962	-5,714	256	182	-74	256	181	-75
27	-	16,855		166,400	149,545	1,286	12,693	11,407	14	140	126	14	140	126
28		16,855		166,400	149,545	1,169	11,539	10,370	=	108	97	Ξ	107	96
29		16,855	Ţ	166,400	149,545	1,063	10,490	9,427	8	83	75	∞	83	75
30		16,855	-	166,400	149,545	996	9,536	8,570	9	64	28	9	64	58
Total	1,472,534	505,650	1,978,184	4,742,400	2,764,216	766,543	1,348,605	582,062	377,446	377,445	-1	377,343	377,227	-116

Table I.6-8 EIRR for Communal Resource Management in Sandai

Total Cost (Keh) (Ksh) (Ksh) (Ksh) (Ksh) (Ksh) (Ksh) (Ksh) (Ksh) (Ksh) (Ksh) (Ksh) (Ksh) (Ksh) (Ksh) (Ksh) (Ksh) (Ksh) (Ksh) (Ti-2268 813 1,122460 -14,146,333 13.880,739 1,020,436 -12,880,330 13.274,080 15.64,527 1,906,240 1,741,713 125,973 1,575,405 1,439,432 124,347 1,164,527 3,390,800 3,226,273 102,188 2,105,420 2,003,262 81,702 1,164,527 3,390,800 3,226,273 102,188 2,105,420 2,003,262 81,702 1,164,527 3,390,800 3,226,273 16,438 11,604,944 46,669 1,64,527 3,390,800 3,226,273 185,183 1,581,833 1,505,089 161,749 1,164,527 3,390,800 3,226,273 185,183 1,007,300 1,388,254 46,669 1,64,527 3,390,800 3,226,273 185,249 1,1027,390 30,664 164,527 3,390,800 3,226,273 185,249 1,1027,390 30,664 164,527 3,390,800 3,226,273 185,249 1,1027,390 30,664 164,527 3,390,800 3,226,273 1,593,86 811,731 172,345 20,148 164,527 3,390,800 3,226,273 1,503,80 177,245 20,148 164,527 3,390,800 3,226,273 2,551 670,852 638,301 15,527 11,509 11,64,527 3,390,800 3,226,273 2,551 670,852 638,301 15,527 11,509 11,64,527 3,390,800 3,226,273 2,551 670,852 638,301 15,527 11,509 11,64,527 3,390,800 3,226,273 14,276 45,250 11,509 11,64,527 3,390,800 3,226,273 14,276 45,267 164,527 3,390,800 3,226,273 14,276 45,267 11,509 11,64,527 3,390,800 3,226,273 14,276 45,267 11,509 11,64,527 3,390,800 3,226,273 11,4276 45,820 11,509 11,64,527 3,390,800 3,226,273 11,4276 45,820 11,509 11,64,527 3,390,800 3,226,273 11,4276 45,820 11,509 11,64,527 3,390,800 3,226,273 11,4276 45,820 11,509 11,64,527 3,390,800 3,226,273 11,4276 45,820 11,509 11,64,527 3,390,800 3,226,273 11,429 12,500,800 3,226,273 11,429 12,500,800 3,226,273 11,409 12,500,800 3,226,273 11,409 12,500,800 3,226,273 11,409 12,500,800 3,226,273 11,409 12,500,800 3,226,273 11,409 12,500,800 3,226,273 11,409 12,500,800 3,226,273 11,409 12,500,800 3,226,273 11,409 12,500,800 3,226,273 11,409 12,500,800 3,226,273 11,409 12,500,800 3,226,273 11,409 12,500,800 3,226,273 11,409 12,500,800 3,226,273 11,409 12,500,800 3,226,273 11,409 12,500,800 3,226,273 11,409 12,500,800 3,226,273 11,409 12,500,800 3,226,273 11					Benefit	Unterence				Net Pr	Net Present Value (NSR)	(NSI)			
15,104,206 164,527 15,286 813 1,122,480 -14,146,333 13,880,739 1,020,436 -12,860,303 13,274,080 164,527		Linear						10.0	(%	= 1)	15.0	(%)	= ()	20.0 %	()
(Keh)	Year	Investment	0&M	Total Cost			Cost	Benefit	Difference	Cost	Benefit	Difference	Cost	Benefit	Difference
15.104,286 14.6,527 15.268,813 1,122,480 -14.146,333 138,807,780 1,020,436 1,224,000 132,14,080 16,104,286 164,527 164,527 14,162,27 1,414,173 135,933 1,575,600,303 132,4060 1,246,173 1,213,4 2,071,279 1,914,402 108,102 1,014,017 1,914,018 1,914,						(Ksh)								- 1	0 0 0 0 0 0 0
0 164,527 164,527 1,906,240 1,741,713 135,973 1575,405 1,439,402 108,102 0 164,527 164,527 1,906,240 2,525,713 123,612 2,002,127 1,909,605 9,390 0 164,527 1,64,527 3,390,800 3,226,273 102,158 2,005,262 81,702 102,107 1,909,405 9,390 0 164,527 1,64,527 3,390,800 3,226,273 104,107 1,655,589 1,702 1,102,900 1,64,527		1 15,104,286	164,527	15,268,813		-14,146,333	13,880,739	1,020,436	-12,860,303	13,274,080	975,838	-12,298,242	12,724,011		-11,/88,611
0 164,527 164,527 2.690,240 2,525,713 123.612 2,021,217 1,897,605 108,102 1.02,102 1.08,102 1.02,102 1.	•••	0	164.527	164,527	_	1,741,713	135,973	1,575,405	1,439,432	124,347	1,440,708	1,316,361	114,255	1,323,778	1,209,523
0 164.527 164.527 3.040,640 2.876,113 112.374 2.076,798 1,984,424 93.900 1.1 0 164.527 164.527 3.226,273 102,158 2.105,420 2.000.262 81.702 1.0 0 164.527 164.527 3.390,800 3.226,273 164.287 164.687 164.687 164.527 164.688 164.688 164.688			164 527	164,527	2.690,240	2,525,713	123,612	2,021,217	1,897,605	108,102	1,767,618	1,659,516	95,212	1,556,852	1,461,640
5,121,296 164,527 13,99,800 3,226,273 102,158 2,105,420 2,003,262 81,702 1,102 6,12,20 164,527 1,225,832 3,390,800 -1,895,023 2,983,709 1,914,018 -1,069,691 2,281,977 1,102 0 164,527 1,390,800 3,226,273 84,428 1,740,017 1,655,589 61,749 1,102 0 164,527 1,64,527 3,390,800 3,226,273 69,776 1,438,030 1,368,254 46,669 1,655,589 0 164,527 164,527 3,390,800 -1,852,673 69,776 1,438,030 1,388,244 40,572 1,655,689 40,572 5,641,94 1,133,191 1,144,527 3,390,800 3,226,273 <	. 1		164 527	164 527	3.040.640	2.876.113	112.374	2.076,798	1,964,424	93,980	1,736,847	1,642,867	79,344	1,466,358	1,387,014
5,121,296 164,527 5,285,833 3,390,800 -1,895,023 2,983,709 1,914,017 1,655,889 1,14,017 1,655,889 1,14,017 1,655,889 1,14,911 1,655,889 1,14,911 1,655,889 1,14,911 1,655,889 1,14,911 1,655,889 1,14,911 1,655,889 1,14,911 1,655,889 1,14,911 1,14,91 1,14,91 1,14,91 1,14,91 1,14,91 1,14,91 1,14,91 1,14,91 1,14,91 1,14,91 1,14,91 1,14,91 1,14,91 1,14,91 1,14,91	_		164 527	164 527	3 390 800	3 226 273	102,158	2.105.420	2,003,262	81,702	1,683,829	1,602,127	66,120	1,362,686	1,296,566
0 164,527 1,390,800 3,226,273 84,428 1,740,017 1,655,899 61,749 1.1 0 164,527 1,390,800 3,226,273 6,733 1,581,833 1,500,800 53,862 1,1 0 164,527 1,390,800 3,226,273 6,342 1,361,254 46,669 53,862 1,1 46,572 1,40,017 1,636,254 46,669 53,862 1,1 40,572 1,40,017 1,63,824 40,572 1,40,017 1,63,824 40,572 1,40,017 1,63,824 40,669 53,862 1,1 40,609 53,862 1,1 40,609 53,862 1,1 40,609 53,862 1,1 40,609 53,862 1,1 40,609 53,862 1,1 40,609 53,862 1,1 40,609 53,862 1,1 40,609 53,862 1,1 40,609 53,862 1,1 40,609 40,672 1,1 40,609 30,609 30,609 30,609 30,609 30,609 30,609 30,609 30			164 527	5.285.823	3,390,800	-1,895,023	2,983,709	1,914,018	-1,069,691	2,281,957	1,463,851	-818,106	1,770,211	1,135,572	-634639
6 164,527 164,527 164,527 3390,800 3,226,273 76,753 1,581,833 1,505,080 55,682 1,1 0 164,527 164,527 164,527 3,390,800 3,226,273 69,776 1,438,030 1,588,524 46,669 46,669 0 164,527 164,527 3,390,800 -1,285,023 1,362,43 1,073,90 1,243,688 40,572 0 164,527 164,527 164,527 3,390,800 -1,285,023 5,2423 1,080,413 1,133,191 0 164,527 164,527 164,527 3,390,800 3,226,273 47,658 982,194 934,536 26,658 0 164,527 164,527 3,390,800 3,226,273 47,658 982,194 934,536 26,658 1 64,527 164,527 3,390,800 3,226,273 47,658 982,194 934,536 26,668 5,121,296 164,527 164,527 3,390,800 3,226,273 25,551 609,865 580,732 11,503,49 1 64,527 164,527 3,390,800	•		164 527	164.527	3 390 800	3,226,273	84.428	1.740.017	1,655,589	61,749	1,272,612	1,210,863	45,916	946,310	900,394
0 164,527 164,527 3,390,800 3,226,273 69,776 1,438,030 1,368,254 46,669 0 164,527 164,527 3,390,800 3,226,273 63,432 1,307,300 1243,868 40,572 0 164,527 5,285,823 3,390,800 3,226,273 1,884,55 -64,194 1,133,191 0 164,527 164,527 3,390,800 3,226,273 47,658 982,194 30,668 0 164,527 164,527 3,390,800 3,226,273 47,658 982,194 849,579 26,668 0 164,527 1,390,800 3,226,273 47,628 892,194 849,579 20,148 0 164,527 1,390,800 3,226,273 32,592 69,904 849,579 20,148 164,527 164,527 3,390,800 3,226,273 32,592 69,904 849,579 20,148 164,527 164,527 3,390,800 3,226,273 26,901 50,806 11,500,44 164,527		. ~	164.527	164.527	3,390,800	3,226,273	76,753	1,581,833	1,505,080	53,682	1,106,357	1,052,675	38,264	788,592	750,328
6,121,296 164,527 164,527 3.390,800 3.226,273 63,432 1,307,300 1,243.868 40,572 6,121,296 164,527 5,285,823 3,390,800 -1,895,023 1,884,55 -64,194 1,133,191 0 164,527 164,527 3,390,800 3,226,273 5,243 1,080,413 1,027,990 30,664 0 164,527 164,527 3,390,800 3,226,273 47,658 82,904 849,579 26,658 0 164,527 164,527 3,390,800 3,226,273 47,658 811,731 772,345 26,658 0 164,527 164,527 3,390,800 -1,895,023 1,150,349 737,937 -412,412 562,728 0 164,527 164,527 3,390,800 -1,895,023 1,150,349 737,937 -412,412 562,728 1,12,296 164,527 3,390,800 3,226,273 26,901 554,423 562,722 11,509 47,200 164,527 164,527 3,390,800 3,2	_	. ~	164.527	164.527	3 390,800	3,226,273	69,776	1,438,030	1,368,254	46,669	961,821	915,152	31,886	657,160	625,274
5,121,296 164,527 5,285,823 3,390,800 -1,895,023 1,852,649 1,188,455 -664,194 1,133,191 0 164,527 164,527 3,390,800 3,226,273 52,423 1,080,413 1,027,990 30,664 0 164,527 164,527 3,390,800 3,226,273 47,658 982,194 934,579 26,658 0 164,527 164,527 3,390,800 3,226,273 43,325 892,904 849,579 20,148 0 164,527 164,527 3,390,800 3,226,273 39,386 811,731 772,345 20,148 0 164,527 164,527 3,390,800 3,226,273 26,901 554,423 527,522 11,509 0 164,527 3,390,800 3,226,273 26,901 554,423 527,522 11,509 47,200 164,527 3,390,800 3,226,273 26,901 554,623 529,442 5,121,296 164,527 3,390,800 3,226,273 20,211 416,546	Ŧ		164 527	164.527	3 390 800	3,226,273	63,432	1.307,300	1,243,868	40,572	836,168	795,596	26,572	547,633	521,06
0 164,527 164,527 3,390,800 3,226,273 52,423 1,080,413 1,027,990 30,664 0 164,527 164,527 3,390,800 3,226,273 47,658 982,194 934,536 26,658 0 164,527 164,527 3,390,800 3,226,273 47,558 982,194 934,536 26,658 0 164,527 164,527 3,390,800 3,226,273 43,325 892,904 849,579 20,148 0 164,527 164,527 3,390,800 3,226,273 29,592 609,865 580,273 15,227 0 164,527 164,527 3,390,800 3,226,273 26,901 554,423 527,522 11,509 0 164,527 164,527 3,390,800 3,226,273 26,901 554,423 527,522 11,509 10 164,527 3,390,800 3,226,273 26,901 554,423 527,522 11,509 47,200 164,527 3,390,800 3,226,273 26,901	. +	5 121 29	164.527	5.285,823	3,390,800	-1,895,023	1,852,649	1,188,455	-664,194	1,133,191	726,930	-406,261	711,408	456,361	-255,047
0 164,527 1,390,800 3,226,273 47,658 982,194 934,536 26,658 0 164,527 164,527 3,390,800 3,226,273 47,658 982,904 849,579 23,175 0 164,527 164,527 3,390,800 3,226,273 39,386 811,731 772,345 20,148 0 164,527 164,527 3,390,800 -1,895,023 1,150,349 737,337 -412,412 562,728 0 164,527 164,527 3,390,800 3,226,273 26,901 550,855 638,301 15,227 0 164,527 164,527 3,390,800 3,226,273 26,901 554,423 57,522 11,509 1 164,527 164,527 3,390,800 3,226,273 26,901 55,4423 57,522 11,509 47,200 164,527 164,527 3,390,800 3,226,273 26,901 478,203 11,509 47,200 164,527 164,527 3,390,800 3,226,273 20,11	. ‡		164 527	164.527	3,390,800	3,226,273	52.423	1.080.413	1,027,990	30,664	631,963	601,299	18,453	380,301	361,848
0 164,527 164,527 3,390,800 3,226,273 43,325 892,904 849,579 23,175 0 164,527 164,527 3,390,800 3,226,273 39,386 811,731 772,345 20,148 0 164,527 164,527 3,390,800 -1,895,023 1,150,349 737,937 -412,412 562,728 0 164,527 164,527 3,390,800 -1,895,023 1,150,349 737,937 -412,412 562,728 0 164,527 164,527 3,390,800 3,226,273 26,901 554,423 527,522 11,509 0 164,527 1,64,527 3,390,800 3,226,273 26,901 554,423 527,522 11,509 47,200 164,527 3,390,800 -1,895,023 714,72 504,021 472,549 12,875 5,121,296 164,527 3,390,800 -1,895,023 714,276 45,540 579,444 0 164,527 164,527 3,390,800 3,226,273 16,704 34	· ; ;	. ~	164.527	164.527	3,390,800	3,226,273	47,658	982,194	934,536	26,658	549,403	522,745	15,377	316,917	301,540
0 164,527 164,527 3,390,800 3,226,273 39,386 811,731 772,345 20,148 5,121,296 164,527 5,285,823 3,390,800 -1,895,023 1,150,349 737,937 -412,412 562,728 0 164,527 164,527 3,390,800 3,226,273 29,592 609,865 580,273 15,227 0 164,527 164,527 3,390,800 3,226,273 26,901 554,423 527,522 11,509 47,200 164,527 21,727 3,390,800 3,226,273 26,901 554,423 527,522 11,509 47,200 164,527 21,1727 3,390,800 3,226,273 26,901 554,423 527,522 11,509 5,121,296 164,527 21,390,800 3,226,273 20,211 416,546 396,335 7,562 0 164,527 3,390,800 3,226,273 20,211 416,546 396,335 7,156 0 164,527 164,527 3,390,800 3,226,273 <t< td=""><td>. ,-</td><td></td><td>164.527</td><td>164.527</td><td>3,390,800</td><td>3,226,273</td><td>43,325</td><td>892,904</td><td>849,579</td><td>23,175</td><td>477,628</td><td>454,453</td><td>12,814</td><td>264,098</td><td>251,284</td></t<>	. ,-		164.527	164.527	3,390,800	3,226,273	43,325	892,904	849,579	23,175	477,628	454,453	12,814	264,098	251,284
5,121,296 164,527 5,285,823 3,390,800 -1,895,023 1,150,349 737,937 -412,412 562,728 0 164,527 164,527 3,390,800 3,226,273 32,551 670,852 638,301 15,227 0 164,527 164,527 3,390,800 3,226,273 29,592 609,865 580,273 13,238 47,200 164,527 164,527 3,390,800 3,179,073 31,472 504,021 472,549 12,875 5,121,296 164,527 21,727 3,390,800 -1,895,023 714,276 458,201 -256,075 279,444 6,4527 164,527 3,390,800 3,226,273 20,211 416,546 396,335 7,562 164,527 164,527 3,390,800 3,226,273 16,704 344,253 320,304 6,574 164,527 164,527 3,390,800 3,226,273 16,704 344,253 320,304 6,574 164,527 164,527 3,390,800 3,226,273 16,704 344,	· -		164.527	164.527	3,390,800	3,226,273	39,386	811,731	772,345	20,148	415,231	395,083	10,679	220,081	209,402
0 164,527 164,527 3,390,800 3,226,273 32,551 670,852 638,301 15,227 0 164,527 164,527 3,390,800 3,226,273 29,592 609,865 580,273 13,238 0 164,527 164,527 3,390,800 3,226,273 26,901 554,423 527,522 11,509 47,200 164,527 211,727 3,390,800 3,179,073 31,472 504,021 472,549 12,875 5,121,296 164,527 5,285,823 3,390,800 -1,895,023 714,276 458,201 -256,075 279,444 0 164,527 164,527 3,390,800 3,226,273 16,746 396,335 7,562 0 164,527 164,527 3,390,800 3,226,273 16,746 396,335 7,562 0 164,527 164,527 3,390,800 3,226,273 16,746 396,335 7,752 4,968 5,121,296 164,527 164,527 3,390,800 3,226,273 16,350 </td <td>=</td> <td></td> <td>164,527</td> <td>5,285,823</td> <td>3,390,800</td> <td>-1,895,023</td> <td>1,150,349</td> <td>737,937</td> <td>-412,412</td> <td>562,728</td> <td>360,984</td> <td>-201,744</td> <td>285,899</td> <td>183,401</td> <td>-102,498</td>	=		164,527	5,285,823	3,390,800	-1,895,023	1,150,349	737,937	-412,412	562,728	360,984	-201,744	285,899	183,401	-102,498
0 164,527 164,527 3,390,800 3,226,273 29,592 609,865 580,273 13,238 0 164,527 164,527 3,390,800 3,226,273 26,901 554,423 527,522 11,509 47,200 164,527 211,727 3,390,800 3,179,073 31,472 504,021 472,549 12,875 5,121,296 164,527 5,285,823 3,390,800 -1,895,023 714,276 458,201 -256,075 279,444 0 164,527 164,527 3,390,800 3,226,273 20,211 416,546 396,335 7,562 0 164,527 164,527 3,390,800 3,226,273 16,704 344,253 327,549 5,715 0 164,527 164,527 3,390,800 3,226,273 16,704 344,253 327,549 5,715 0 164,527 164,527 3,390,800 3,226,273 16,704 344,253 327,549 5,715 0 164,527 164,527 3,390,800	·		164,527	164,527	3,390,800	3,226,273	32,551	670,852	638,301	15,227	313,825	298,598	7,416	152,834	145,418
0 164,527 164,527 3,390,800 3,226,273 26,901 554,423 527,522 11,509 47,200 164,527 211,727 3,390,800 3,179,073 31,472 504,021 472,549 12,875 5,121,296 164,527 5,285,823 3,390,800 -1,895,023 714,276 458,201 -256,075 279,444 0 164,527 164,527 3,390,800 3,226,273 20,211 416,546 396,335 7,562 0 164,527 164,527 3,390,800 3,226,273 16,704 344,253 327,549 5,715 0 164,527 164,527 3,390,800 3,226,273 16,704 344,253 327,549 5,715 0 164,527 164,527 3,390,800 3,226,273 16,704 344,253 327,549 5,715 0 164,527 164,527 3,390,800 3,226,273 16,704 344,253 327,549 5,715 0 164,527 164,527 3,390,800	ĩ	9	164,527	164,527	3,390,800	3,226,273	29,592	609,865	580,273	13,238	272,827	259,589	6,180	127,362	121,182
47,200 164,527 211,727 3,390,800 3,179,073 31,472 504,021 472,549 12,875 5,121,296 164,527 5,285,823 3,390,800 -1,895,023 714,276 458,201 -256,075 279,444 0 164,527 164,527 3,390,800 3,226,273 20,211 416,546 396,335 7,562 0 164,527 164,527 3,390,800 3,226,273 18,374 378,678 360,304 6,574 0 164,527 164,527 3,390,800 3,226,273 16,704 344,253 327,549 5,715 0 164,527 164,527 3,390,800 3,226,273 16,704 344,253 327,549 5,715 0 164,527 164,527 3,390,800 3,226,273 15,185 312,957 297,772 4,968 5,121,296 164,527 164,527 3,390,800 3,226,273 11,409 235,129 224,092 3,256 0 164,527 164,527 3,390,800 <td>÷</td> <td>0</td> <td>164,527</td> <td>164,527</td> <td>3,390,800</td> <td>3,226,273</td> <td>26,901</td> <td>554,423</td> <td>527,522</td> <td>11,509</td> <td>237,184</td> <td>225,675</td> <td>5,150</td> <td>106,135</td> <td>100,985</td>	÷	0	164,527	164,527	3,390,800	3,226,273	26,901	554,423	527,522	11,509	237,184	225,675	5,150	106,135	100,985
5,121,296 164,527 5,285,823 3,390,800 -1,895,023 714,276 458,201 -256,075 279,444 0 164,527 164,527 3,390,800 3,226,273 20,211 416,546 396,335 7,562 0 164,527 164,527 3,390,800 3,226,273 18,374 378,678 360,304 6,574 0 164,527 164,527 3,390,800 3,226,273 16,704 344,253 327,549 5,715 0 164,527 164,527 3,390,800 3,226,273 15,185 312,957 297,772 4,968 5,121,296 164,527 164,527 3,390,800 3,226,273 15,185 312,957 297,772 4,968 6,12,1296 164,527 164,527 3,390,800 3,226,273 11,409 235,129 223,720 3,755 0 164,527 164,527 3,390,800 3,226,273 11,409 235,129 223,720 3,264 0 164,527 164,527 3,390,800 </td <td>7</td> <td></td> <td>164,527</td> <td>211,727</td> <td>3,390,800</td> <td>3,179,073</td> <td>31,472</td> <td>504,021</td> <td>472,549</td> <td>12,875</td> <td>206,198</td> <td>193,323</td> <td>5,523</td> <td>88,446</td> <td>82,923</td>	7		164,527	211,727	3,390,800	3,179,073	31,472	504,021	472,549	12,875	206,198	193,323	5,523	88,446	82,923
0 164,527 164,527 3,390,800 3,226,273 20,211 416,546 396,335 7,562 0 164,527 164,527 3,390,800 3,226,273 18,374 378,678 360,304 6,574 0 164,527 164,527 3,390,800 3,226,273 16,704 344,253 327,549 5,715 0 164,527 164,527 3,390,800 3,226,273 15,185 312,957 297,772 4,968 5,121,296 164,527 5,285,823 3,390,800 3,226,273 15,185 312,957 297,772 4,968 6 164,527 164,527 3,390,800 3,226,273 12,550 258,642 246,092 3,755 0 164,527 164,527 3,390,800 3,226,273 11,409 235,129 223,720 3,264 0 164,527 164,527 3,390,800 3,226,273 10,372 213,754 203,382 2,838 0 164,527 164,527 3,390,800 3,226	2	Ŋ	164,527	5,285,823	3,390,800	-1,895,023	714,276	458,201	-256,075	279,444	179,260	-100,184	114,896	73,705	-41,191
0 164,527 164,527 3,390,800 3,226,273 18,374 378,678 360,304 6,574 0 164,527 164,527 3,390,800 3,226,273 16,704 344,253 327,549 5,715 0 164,527 164,527 3,390,800 3,226,273 15,185 312,957 297,772 4,968 5,121,296 164,527 5,285,823 3,390,800 -1,895,023 443,509 284,507 -159,002 138,768 0 164,527 164,527 3,390,800 3,226,273 11,409 235,129 223,720 3,755 0 164,527 164,527 3,390,800 3,226,273 11,409 235,129 223,720 3,264 0 164,527 164,527 3,390,800 3,226,273 10,372 213,754 203,382 2,838 0 164,527 164,527 3,390,800 3,226,273 9,429 194,322 184,893 2,467	2	2 0	164,527	164,527	3,390,800	3,226,273	20,211	416,546	396,335	7,562	155,842	148,280	2,980	61,421	58,441
0 164,527 164,527 3,390,800 3,226,273 16,704 344,253 327,549 5,715 0 164,527 164,527 3,390,800 3,226,273 15,185 312,957 297,772 4,968 5,121,296 164,527 5,285,823 3,390,800 -1,895,023 443,509 284,507 -159,002 138,768 0 164,527 164,527 3,390,800 3,226,273 11,550 258,642 246,092 3,755 0 164,527 164,527 3,390,800 3,226,273 11,409 235,129 223,720 3,264 0 164,527 164,527 3,390,800 3,226,273 10,372 213,754 203,382 2,838 0 164,527 164,527 3,390,800 3,226,273 10,372 213,754 203,382 2,467	2	3	164,527	164,527	3,390,800	3,226,273	18,374	378,678	360,304	6,574	135,482	128,908	2,484	51,184	48,700
0 164,527 164,527 3,390,800 3,226,273 15,185 312,957 297,772 4,968 1 5,121,296 164,527 5,285,823 3,390,800 -1,895,023 443,509 284,507 -159,002 138,768 0 164,527 164,527 3,390,800 3,226,273 12,550 258,642 246,092 3,755 0 164,527 164,527 3,390,800 3,226,273 10,372 213,754 203,382 2,838 0 164,527 164,527 3,390,800 3,226,273 10,372 213,754 203,382 2,838 0 164,527 164,527 3,390,800 3,226,273 9,429 194,322 184,893 2,467	2.	4	164,527	164,527	3,390,800	3,226,273	16,704	344,253	327,549	5,715	117 783	112,068	2,070	42,653	40,583
5,121,296 164,527 5,285,823 3,390,800 -1,895,023 443,509 284,507 -159,002 138,768 0 164,527 164,527 3,390,800 3,226,273 12,550 258,642 246,092 3,755 0 164,527 164,527 3,390,800 3,226,273 10,372 213,754 203,382 2,838 0 164,527 164,527 3,390,800 3,226,273 10,372 213,754 203,382 2,838 0 164,527 164,527 3,390,800 3,226,273 9,429 194,322 184,893 2,467	7	5 0	164,527	164,527	3,390,800	3,226,273	15,185	312,957	297,772	4,968	102,395	97,427	1,725	35,544	33,819
0 164,527 164,527 3,390,800 3,226,273 12,550 258,642 246,092 3,755 0 164,527 164,527 3,390,800 3,226,273 11,409 235,129 223,720 3,264 0 164,527 164,527 3,390,800 3,226,273 10,372 213,754 203,382 2,838 0 164,527 164,527 3,390,800 3,226,273 9,429 194,322 184,893 2,467	ฉี		164,527	5,285,823	3,390,800	-1,895,023	443,509	284,507	-159,002	138,768	89,018	-49,750	46,174	29,620	-16,554
0 164,527 164,527 3,390,800 3,226,273 11,409 235,129 223,720 3,264 0 164,527 164,527 3,390,800 3,226,273 10,372 213,754 203,382 2,838 0 164,527 164,527 3,390,800 3,226,273 9,429 194,322 184,893 2,467	2		164,527	164,527	3,390,800	3,226,273	12,550	258,642	246,092	3,755	77,389	73,634	1,198	24,684	23,486
0 164,527 164,527 3,390,800 3,226,273 10,372 213,754 203,382 2,838 0 164,527 164,527 3,390,800 3,226,273 9,429 194,322 184,893 2,467	Ñ		164,527	164,527	3,390,800	3,226,273	11,409	235,129	223,720	3,264	67,279	64,015	866	20,570	19,572
0 164,527 164,527 3,390,800 3,226,273 9,429 194,322 184,893 2,467	Ñ		164,527	164,527	3,390,800	3,226,273	10,372	213,754	203,382	2,838	58,489	55,651	832	17,141	16,309
	က်	0 0	164,527	164,527	3,390,800	3,226,273	9,429	194,322	184,893	2,467	50,848	48,381	693	14,284	13,591
T.++1 AD 157 066 A 0.02 040 A 5 600 775 05 000 AND 51 205 60 A 0 9 9 11 0 9 0 10 10 0 0 0 0 0 0 0 0 0	1	40 757 0A	A 025 010	AF 600 776	000 000 400	E1 008 804	99 911 970	97 010 958	5 608 979	18 471 608	18 471 607	1	16 244 740 13 387 083	13 387 083	-2 857 657

Table I.6-9 FIRR for Rain Water Harvest in Arabal

FIRE

		Difference	174 000	176,971,1-	22,482	32,705	37,634	42,384	41,964	41,549	41,138	40,730	40,327	39,927	39,533	39,141	38,753	38,370	37,990	37,614	37,241	36,873	36,508	36,146	35,788	35,434	35,083	34,735	34,391	34,051	33,714	33,380	33,050	-108 228	100,440
	1.0	Benefit	100	626,11	28,358	38,383	43,394	48,087	47,611	47,140	46,673	46,211	45,753	45,300	44,852	44,408	43,968	43,533	43,102	42,675	42,252	41,834	41,420	41,010	40,604	40,202	39,804	39,409	39,019	38,633	38,250	37,872	37,497	1 228 270	6/0,007,1
	= 1)	Cost	000000	1,192,846	5,876	5,818	5,760	5,703	5,647	5,591	5,535	5,481	5,426	5,373	5,319	5,267	5,215	5,163	5,112	5,061	5,011	4,961	4,912	4,864	4,816	4,768	4,721	4,674	4,628	4,582	4,536	4,492	4,447	1 2/1 605	000,1 1 0,1
sh)		Difference		-1,182,390	22,769	33,394	38,600	43,748	43,591	43,434	43,277	43,121	42,965	42,811	42,655	42,502	42,349	42,196	42,044	41,892	41,741	41,591	41,441	41,291	41,142	40,994	40,846	40,699	40,551	40,405	40,260	40,114	39,970	6	ים
Net Present Value (Ksh)	0.4 %)	Benefit D	Į		28,720	39,323	44,508	49,635	49,456	49,278	49,100	48,923	48,746	48,571	48,395	48,221	48,047	47,874	47,701	47,529	47,358	47,187	47,017	46,847	46,678	46,510	46,342	46,175	46,008	45,842	45,677	45,512	45,348	4 00 4	1,304,307
Net Pre	= 1)	Cost		1,200,429	5,951	5,929	5,908	5,887	5,865	5,844	5,823	5,802	5,781	5,760	5,740	5,719	5,698	5,678	5,657	5,637	5,617	5,596	5,576	5,556	5,536	5,516	5,496	5,476	5,457	5,437	5,417	5,398	5,378	7 C	1,364,364
		Difference		-1,185,484	22,888	33,657	39,006	44.324	44.280	44,236	44.191	44,147	44.103	44,059	44,014	43.971	43.927	43,883	43,839	43.796	43.752	43.708	43,665	43.620	43.577	43,533	43,490	43,447	43,404	43,360	43,316	43,273	43,230	40.04	48,212
	0.1%)	1		- 18,086	28,870	39,633	44,976	50.288	50.238	50 188	50,137	50,087	50 037	49,987	49.937	49,888	49,838	49.788	49.738	49 689	49.639	49,589	49.540	49.490	49.441	49,391	49.342	49,293	49,244	49,194	49,145	49,096	49,047	0.10	1,422,856
	= 1)			1,203,570	5,982	5,976	5,970	5.964	5 958	5,952	5.946	5,940	5 934	5,928	5,923	5.917	5911	5,905	5,899	5 893	5 887	5,881	5.875	5.870	5 864	5.858	5 852	5.846	5,840	5,834	5.829	5.823	5,817		1,3/4,644
Difference		1	(Ksh)	-1,186,670	22,934	33,758	39,162	44 546	44.546	44 546	44 546	44.546	44.546	44.546	44 546	44.546	44 546	44 546	44.546	44 546	44.546	44 546	44 546	44 546	44 546	44.546	44.546	44.546	44.546	44.546	44.546	44.546	44,546		67,380
Renefit L			(Ksh)	18,104		39 752	45.156	50 540	50.540	50,540	50,540	50,540	50.540	50,540	50,540	50,540	50,540	50,540	50,540	50,540	50,540	50,540	50,540	50,540	50.540	50.540	50.540	50.540	50,540	50,540	50,540	50,540	50,540		1,445,980
		Total Cost		1.204.774	5.994	5 994	5 994	0,00	, 00 R	5,004	5,004 5,004	5,994	100°C	5 994	5,004 5,004	100 H	100,0	0,00 000	2,500 H	700	0,00 1000	5,994	0,00 T 094	100°C	5,554 5,994	5,994	5 994	5 994	5.994	5.994	5.994	5.994	5,994		1,378,600
(V.h.)	OSC (NSII)	O&M T		5.994	5 994	5 994	5 994	100 K	100°C	1,00 R	100°C	5 094	1000	4,00,7 4,00,7	100°C	1000	0,994 F 00A	0,00 R	100 H	1000	100 H	1,00 R	100°C	100.0 100.4	100°,0	200'S	5 994	5 994	5,994	5.994	5.994	5 994	5,994		179,820
	٥	Investment		1 198 780																															1,198,780
		Year		•	- 6	1 ~	> <	7 6	n (9 1	~ 0	0 <	n ç	2 ‡	- 5	7 1	5 2	<u> </u>		5 F	- 0,	0 4	n (c	20	- 60	27	07	2 C	22	2,0	200	20	30		Total

Table I.6-10 FIRR for Livestock Improvement in Arabal

FIRR:

		Difference	1 105 006	-1,193,096	30,400	89,342	70,616	55,770	-3,707	33,000	25,385	19,527	15,021	866-	8,888	6,837	5,259	4,046	-268	2,394	1,841	1,416	841	-73	645	496	382	294	-20	173	134	102	79	-801,188
	30.0 %)	Benefit D			2/5,0/	100,024	78,833	62,091	47,762	36,740	28,262	21,740	16,723	12,864	9,895	7,612	5,855	4,504	3,465	2,665	2,050	1,577	1,213	933	718	552	425	327	251	193	149	114	88	531,923
-	= ()	Cost	000000	1,209,022	3,880	10,682	8,217	6,321	51,469	3,740	2,877	2,213	1,702	13,862	1,007	775	596	458	3,733	271	209	161	372	1,006	73	56	43	33	271	20	15	12	ග	1,333,111
(sh)		Difference	71000	/55,914,1-	19,073	149,666	140,495	131,780	-10,400	109,987	100,481	91,797	83,864	-6,619	69,995	63,946	58,420	53,371	-4,212	44,545	40,695	37,179	26,224	-2,681	28,348	25,898	23,661	21,615	-1,706	18,040	16,481	15,058	13,756	0
Net Present Value (Ksh.	9.5 %)	Benefit	۱		99,260	167,560	156,843	146,715	134,036	122,452	111,869	102,201	93,369	85,300	77,928	71,193	65,041	59,420	54,285	49,593	45,307	41,392	37,815	34,546	31,561	28,833	26,342	24,065	21,985	20,085	18,349	16,764	15,315	1,975,963
Net Pre	= 1)	Cost	100	1,435,896	18,587	17,894	16,348	14,935	144,436	12,465	11,388	10,404	9,505	91,919	7,933	7,247	6,621	6,049	58,497	5,048	4,612	4,213	11,591	37,227	3,213	2,935	2,681	2,450	23,691	2,045	1,868	1,706	1,559	1,975,963
		Difference	000	-1,412,386	78,893	147,471	137,756	128,575	-10,098	106,260	96,601	87,818	79,835	-6,270	65,979	59,981	54,528	49,571	-3,893	40,968	37,244	33,858	23,764	-2,417	25,438	23,125	21,023	19,112	-1,501	15,795	14,359	13,054	11,867	-63,690
	10.0 %)	Benefit [Ţ		98,288	165,103	153,785	143,147	130,134	118,303	107,549	97,771	88,883	80,803	73,457	66,779	60,708	55,189	50,172	45,611	41,465	37,695	34,268	31,153	28,321	25,746	23,406	21,278	19,344	17,585	15,986	14,533	13,212	1,876,132
	= [)	Cost		1,428,844	19,395	17,632	16,029	14,572	140,232	12,043	10,948	9,953	9,048	87,073	7,478	6,798	6,180	5,618	54,065	4,643	4,221	3,837	10,504	33,570	2,883	2,621	2,383	2,166	20,845	1,790	1,627	1,479	1,345	1,939,822
Difference	5	1	(Ksh)	-1,553,624	95,460	196,284	201,688	207,072	-17,889	207,072	207,072	207,072	207,072	-17,889	207,072	207,072	207,072	207,072	-17,889	207,072	207,072	207,072	159,872	-17,889	207,072	207,072	207,072	207,072	-17,889	207,072	207,072	207,072	201,072	3,151,675
Renefit [118,928	219,752	225,156	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	230,540	6,575,980
		Total Cost		1,571,728	23,468	23,468	23,468	23,468	248,429	23,468	23,468	23,468	23,468	248,429	23,468	23,468	23.468	23,468	248,429	23,468	23,468	23,468	70,668	248,429	23,468	23,468	23,468	23.468	248,429	23,468	23,468	23,468	23,468	3,424,305
Cont (Keb)	036 (15311)	O&M T		23,468	23,468	23,468	23,468	23,468	23.468	23,468	23,468	23,468	23,468	23,468	23,468	23.468	23,468	23.468	23.468	23,468	23,468	23,468	23,468	23,468	23,468	23,468	23,468	23,468	23,468	23,468	23,468	23,468	23,468	704,040
		Investment		1,548,260	0	0	0	0	224.961	0	0	0	0	224.961	0	0	0	0	224.961	0	0	0	47,200	224 961	0	0	0	0	224.961	0	0	0	0	2,720,265
	1	Year		_	2	က	4	, ro	6		- σ	o	10	: =	12	13	14	15	9	17	8	19	20	21	22	23	24	25	26	27	28	29	30	Total

Table I.6-11 EIRR for Rain Water Harvest in Arabal

	(%	Difference	1000	-990,464	617.12	36,913	41,171	45,254	44,368	43,497	42,645	41,809	40,988	40,185	39,397	38,624	37,867	37,125	36,397	35,683	34,984	34,297	33,625	32,965	32,319	31,686	31,064	30,456	29,858	29,272	28,698	28,136	27,584	43.682
	2.0 %)	Benefit		22,282	32,218	41,756	45,919	49,909	48,931	47,971	47,031	46,109	45,204	44,318	43,449	42,597	41,762	40,943	40,140	39,353	38,582	37,825	37,083	36,356	35,643	34,945	34,259	33,588	32,929	32,283	31,650	31,030	30,421	1 166 486
	= ()	Cost		1,012,746	4,939	4,843	4,748	4,655	4,563	4,474	4,386	4,300	4,216	4,133	4,052	3,973	3,895	3,818	3,743	3,670	3,598	3,528	3,458	3,391	3,324	3,259	3,195	3,132	3,071	3,011	2,952	2,894	2,837	1 122 804
sh)		Difference		-987,402	27,110	36,572	40,665	44,560	43,551	42,565	41,601	40,659	39,739	38,839	37,960	37,100	36,261	35,440	34,637	33,853	33,087	32,338	31,605	30,890	30,191	29,507	28,840	28,186	27,549	26,925	26,315	25,720	25,137	6
Net Present Value (Ksh)	2.3 %)	Benefit C		22,213	32,019	41,370	45,354	49,143	48,030	46,943	45,880	44,841	43,826	42,834	41,864	40,916	39,990	39,085	38,200	37,335	36,490	35,664	34,856	34,067	33,296	32,542	31,806	31,085	30,382	29,694	29,022	28,365	27,722	1114834
Net Pre	= 1)	Cost		1,009,615	4,909	4,798	4,689	4,583	4,479	4,378	4,279	4,182	4,087	3,995	3,904	3,816	3,729	3,645	3,563	3,482	3,403	3,326	3,251	3,177	3,105	3,035	2,966	2,899	2,833	2,769	2,707	2,645	2,585	1114834
		Difference		-1,000,270	27,822	38,021	42,827	47,540	47,069	46,603	46,142	45,685	45,233	44,785	44,341	43,903	43,467	43,038	42,611	42,190	41,772	41,358	40,948	40,543	40,141	39,744	39,351	38,961	38,575	38,194	37,816	37,441	37,070	202 921
	1.0 %)	Benefit	١		32,860	43,009	47,765	52,430	51,910	51,396	50,888	50,384	49,885	49,391	48,902	48,418	47,938	47,464	46,994	46,529	46,068	45,612	45,160	44,713	44,270	43,832	43,398	42,968	42,543	42,122	41,705	41,292	40,883	1 353 232
	=0	Cost		1,022,773	5,038	4,988	4,938	4,890	4.841	4,793	4,746	4,699	4,652	4,606	4,561	4.515	4.471	4,426	4,383	4,339	4,296	4 254	4,212	4 170	4 129	4,088	4,047	4,007	3,968	3,928	3,889	3,851	3,813	1 150 311
Difference			(Ksh)	-1,010,273	28,381	39,173	44,565	49,965	49,965	49,965	49,965	49,965	49,965	49,965	49,965	49,965	49,965	49,965	49,965	49,965	49.965	49.965	49,965	49,965	49,965	49,965	49,965	49,965	49,965	49,965	49,965	49,965	49,965	400 036
Benefit					33,520																								55,104	55,104	55,104	55,104	55,104	1 522 968
		Total Cost		1,033,001	5,139	5 139	5 139	5,139	5.139	5,139	5,139	5,139	5,139	5,139	5,139	5,139	5,139	5,139	5,139	5,139	5,139	5,139	5,139	5.139	5,139	5,139	5,139	5,139	5,139	5,139	5,139	5,139	5,139	1 189 039
(Koh)	OSL (NSH)	O&M T		5,139	5.139	5 139	5.139	5.139	5 139	5,139	5,139	5,139	5 139	5,139	5 139	5 139	5 139	5.139	5.139	5,139	5.139	5.139	5.139	5,139	5.139	5,139	5,139	5.139	5.139	5 139	5,139	5,139	5,139	15/170
	ار	Investment		1,027,862																														1 007 262
	1	Year I		-	2	l es	4	. rc) (C	^	- 00	က	10	÷ -	12	<u> </u>	2 1	. 12	1.0	17	18	61	20	21	22	23	24	25	26	27	28	29	30	- T

Table I.6-12 EIRR for Livestock Improvement in Arabal

		Cost (Keh)		Renefit	Difference				Net Pr	Net Present Value (Ksh)	(Ksh)			
		(1811)				= 0	10.0 %)		= I)	10.6	(%)	= I)	30.0 %	
Year	Investment	O&M	Total Cost	:	•	Cost	Benefit [Difference	Cost	Benefit	Difference	Cost	Benefit [Difference
				(Ksh)	(Ksh)	000	1	10000	1 054 000	20 558	1 222 622	1 066 900	17.483	-1 049 409
~ ~	1,364,966	21,994	1,386,960	22,728	-1,364,232	1,260,873		-1,240,211	1,234,388	20,036	200,007,1	7000,000,	00t'/-	5043,400
2	0	21,994	21,994	116,720	94,726	18,177	96,463	78,286	17,990	95,4/3	17,483	410,81	000'60	100,00
6	0	21,994	21,994	210,712	188,718	16,524	158,311	141,787	16,271	155,881	139,610	10,011	95,909	85,898
4	0	21,994	21,994	216,104	194,110	15,022	147,602	132,580	14,716	144,589	129,873	7,701	75,664	67,963
· IC	0	21,994	21.994	221,504	199,510	13,657	137,537	123,880	13,309	134,036	120,727	5,924	59,657	53,733
, (C	217 646	21 994	239.640	221.504	-18,136	135.271	125 033	-10,238	131,150	121,224	-9,926	49,648	45,890	-3.758
· -	0	21.994	21.994	221.504	199,510	11,286	113,667	102,381	10,886	109,637	98,751	3,505	35,300	31 795
- 00	0	21.994	21.994	221,504	199.510	10,260	103,333	93,073	9,846	99,158	89,312	2,696	27,154	24 458
0	0	21,994	21,994	221.504	199,510	9,328	93,939	84,611	8,905	89,680	80,775	2,074	20,888	18,814
10	0	21.994	21.994	221,504	199,510	8,480	85,399	76,919	8,054	81,108	73,054	1,595	16,067	14 472
: ==	217 646	21.994	239,640	221,504	-18.136	83,992	77,636	-6,356	79,361	73,355	900'9-	13,372	12,360	-1,012
12	0	21.994	21.994	221,504	199,510	7,008	70,578	63,570	6,588	66,344	59,756	944	9,507	8,563
1.5	0	21.994	21,994	221,504	199,510	6,371	64,162	57,791	5,958	60,002	54,044	726	7,313	6,587
14	0	21.994	21,994	221,504	199,510	5,792	58,329	52,537	5,388	54,267	48,879	529	5,626	5,067
15	0	21,994	21,994	221,504	199,510	5,265	53,026	47,761	4,873	49,080	44,207	430	4,327	3,897
16	217,646	21,994	239,640	221,504	-18,136	52,153	48,206	-3,947	48,023	44,389	-3,634	3,601	3,329	-272
17	0	21,994	21,994	221,504	199,510	4,351	43,823	39,472	3,986	40,146	36,160	254	2,561	2,307
18	0	21,994	21,994	221,504	199,510	3,956	39,839	35,883	3,605	36,308	32,703	196	1,970	1,774
19	0	21,994	21,994	221,504	199,510	3,596	36,218	32,622	3,261	32,838	29,577	150	1,515	1,365
20	47,200	21,994	69,194	221,504	152,310	10,285	32,925	22,640	9,277	29,699	20,422	364	1,166	802
21	•	21,994	239,640	221,504	-18,136	32,383	29,932	-2,451	29,060	26,860	-2,200	970	897	-73
22	0	21,994	21,994	221,504	199,510	2,702	27,211	24,509	2,412	24 293	21,881	89	069	622
23	0	21,994	21,994	221,504	199,510	2,456	24,737	22,281	2,182	21,971	19,789	53	530	477
24	0	21,994	21,994	221,504	199,510	2,233	22,488	20,255	1,973	19,871	17,898	41	408	367
25	0	21,994	21,994	221,504	199,510	2,030	20,444	18,414	1,784	17,971	16,187	31	314	283
26	217,646	21,994	239,640	221,504	-18,136	20,107	18,585	-1,522	17,584	16,254	-1,330	261	241	-20
27	0	21,994	21,994	221,504	199,510	1,678	16,896	15,218	1,460	14,700	13,240	18	186	168
28	0	21,994	21,994	221,504	199,510	1,525	15,360	13,835	1,320	13,295	11,975	14	143	129
29	0	21,994	21,994	221,504	199,510	1,386	13,963	12,577	1,194	12,024	10,830	,	110	66
30	0	21,994	21,994	221,504	199,510	1,260	12,694	11,434	1,080	10,875	9,795	ω	82	77
Total	2,500,396	659.820	3.160.216	6.325.368	3.165.152	1.749.407	1.808.998	59.591	1,715,884	1.715.884	0	1,185,131	516,355	-668,776

Table I.7-1 Farm Budget and Cost Sharing in Salabani

(Bee-keeping)							
			Without Project	roject	With Project	t t	Source
Output	Chit	Unit Price	Quantity	Price	Quantity	Price	
Unit Yield	Kg/hive(crude)		17.5		25		Field Survey
	Kg/hive(refined)		8.75		12.5		NBS*
Price	Ksh/kg(refined)	160		1,400			Field Survey
	Ksh/kg(refined)	240				3,000 NBS	NBS
Output	Ksh/hive			1,400		3,000	
Cost							
Log Hive	Ksh/hive/year	240		240			Field Survey (duration, 5 years)
KTBH	Ksh/hive/year	180			-	180	80 NBS (duration, 5 years)
Refining	Ksh/kg	164	0.2	33	-	164 **	**
Whisky bottle	Ksh/bottle	10	18	180			Field Survey
Special jar +Label	Ksh/jar	30			25	750	750 NBS
Improved Jiko	Ksh/nos	75			-	75	75 Field Survey
Hired Labor	Ksh/hive	100	-	100	0.5	50	50 Field Survey
Total cost	Ksh/hive			553		1,219	
Net Droff+				847		1.781	
	Ksh/hive					934	· · · · · · · · · · · · · · · · · · ·
	T						

Note: * National Beekeeping Station

** Cost for with project is based on equipment with 5 years duration and community building cost with 9m3/70m3 and 30 years duration.

Cost without duration was estimated refering to the cost with project.

Cost shared (Ksh/capita) 1,500 75 375 1,950 1,234 000'9 000'9 4,050 With Project Price 300 300 150 Quantity 750 000'9 1,500 3,750 000'9 Price Without Project 300 300 300 Quantity 5 75 2.5 20 Unit Price Unit Ksh/kg Ksh/nos Ksh/kg Ksh/hive Ksh/hive Ksh/jiko Ksh/kg (Fish Proceessing) Cost Fish Improved Jiko Firewood Total Difference Total cost Net Profit Difference Output Price Output

Table I.7-2 Farm Budget and Cost Sharing in Sandai

Sandai (Grop)									[
0.4ha	With	Without Project		M	With Project		Difference	Cost Sharing	Ť
	ha	Ksh/ha	Ksh	ha	Ksh/ha	Ksh	Ksh	Ksh (sh/capita	23
Maize	0.31	22,213	988'9	0.3	25,433	7,630	744		
Beans	90:0	15,430	926	90.0	38,206	2,292	1,366		
Watermelon	0.01	96,588	996	0.02	123,572	2,471	1,505		
Kale	0.01	64,742	647	0.02	90,378	1,808	1,161		
	0.39	198,973	9,425	0.40	277,589	14,201	4,776	4,776 1,306,200 2,177	
Sandai (Goat)									
	With	Without Project		M	With Project		Difference	Cost Sharing	
	head K	head Ksh/head	Ksh	Ksh Ksh/head	Ksh		Ksh	Ksh (sh/capita	ā
Female	10.5	1,710	17,955	3,510	36,855		18,900	68,960 7,241	_
Total							23,676	9,418	∞

Table I.7-3 Farm Budget and Cost Sharing in Arabal

Arabal (Grop)	_								
0.4ha	Witho	Without Project		W	With Project		Difference	Cost Sharing	ıring
	ha	Ksh/ha	Ksh	ha	Ksh/ha	Ksh	Ksh	Ksh (sł	Ksh (sh/capita
Maize	0.32	-1,367	-437	0.24	6,129	1,471	1		
Sorghum	10.0	5,190	52	0.04	45,236	1,809	1,757		
Millet	90:0	3,110	187	0.08	8,458	677			
Beans	0.01	6,430	64	0.04	23,930	957	893		
	0.4	13,363	-134	0.40	83,753	4,914	5,048	79,950	7,995
Arabal (Goat)									
	Witho	Without Project		W	With Project		Difference	Cost Sharing	ıring
	head Ks	head Ksh/head	Ksh	Ksh Ksh/head	Ksh		Ksh	Ksh (sł	Ksh (sh/capita
Female	16	1,710	27,360	3,510	56,160		28,800	096'89	11,034
							,,		
Total							33,848		19,029

II. RECORD OF WORKSHOP	

Participants at Kampi ya Samaki Workshop (23rd to 25th March 2000)

	Ethnic			Firewood	poor		Tim	Time for cooking	ng	Time for fetching	No of	Womer	Women meetings
Name	Group	Major Source of Income	Distance	Means	Price	Volume / week	Morning	Lunch	Evening	water	-	Time	Weck
Grace M. Asara	Njemps	Buying and Selling cattle	6Km	Fetching	Ksh. 40	1.5	30Min	45Min	45Min	2 Km	0	2.00p.m.	Wed, Sat
William Ole Siangiki	Njemps	Fishing	4Kın	Fetching	Ksh. 30	2	10Min	Noon	Evening	30Min	0	N/A	N/A
Jane Parsalach	Njemps	Selling livestock	4Kın	Fetching	0	7	35Min	45Min	45Min	6Km	0	2.00p.m.	Sat
Mary Lekipirich	Njemps	Goats/Cattle	2Km	Fetching	0	3	25Min	40Min	45Min	3 Km	0	2.00p.m.	Wed, Sat
Mary Kaploni	Njembs	Selling firewood	7Kan	Fetching	Ksh. 40	2	25Min	40Min	45Min	2 Km	0	2.00p.m.	Wed, Sat
Margaret Kajos	Njemps	Selling firewood	4Km	Fetching	Ksh. 40	33	40Min	1Hr	1.5Frs	4 Km	ĊΩ [™]	2,00p.m.	Wed, Sat
Maria Kiseku	Njembs	Farming maize	4Km	Fetching	0	4	1Hr	45Min	1Hr	2 Km	0	2.00p.m.	Wed, Sat
Maria Lekiliyo	Njemps	Selling goats/cattle	5Km	Fetching	Ksh. 40	e.	25Min	35Min	35Min	4 Km	0	2.00p.m.	Wed, Sat
Arm Kiptala	Tugen	Buy goats/cattle	6Km	Fetching	Ksh. 40	2	30Min	40Min	45Min	4 Km	2	2.00p.m.	Wed, Fri
Natalina Lenasiaku	Njemps	Farmer	6Km	Fetching	0	2	1Hr	1.5Hrs	1Hr	4 Kın	1	2.00р.т.	Wed, Fri
Lina Cheptoo	Tugen	Restaurant/Hotel	10Km	Buying	Ksh. 50	'n	1HL	1.5Hrs	30Min	7 drums /day	2	2.00p.m.	Wed, Fri, Sat
Dennis Otieno	Luo	Boat Ride	0.5Km	Buying	Ksh. 40	2	20Min	40Min	45Min	1Km	0	N/A	N/A
Johana Chepngeny	Tugen	Kiosk retailer	10Km	Buying	Ksh. 40	2	114	1Hr	1Hr	10Kın	8	N/A	N/A
Hellen Ngolianga	Njemps	Farming /Selling cattle	3Km	Fetching	Ksh. 40	-	10Min	20Min	15Min	2Hrs	90	2.00p.m.	Wed, Sat
Eleen Chebii	Tugen	Retailer	3Km	Buying	Ksh. 40	2	10Min	2 Hrs	20Min	10Mins	4	2.00p.m.	Sat
Teresia Kenya	Mswahili	Retailer	Charcoal	Buying	Ksh. 50	3 tins of charcoal	1Hr	3Hrs	1.5Hrs	1Hr	0	2.00p.m.	Sat
Martha Akitela	Turkana	Buying and Selling eggs	12Km	Both	Ksh. 50	2	45Min	1Hr	1.5Hrs	114	0	2.00p.m.	Mon, Fri
Joel Kinnosop	Tugen	Buying selling honey	10Km	Both	Ksh. 50	S	45Min	1Hr	1Hr	45Min	120	N/A	N/A
Mirian Akiano	Turkana	Basket making	10Km	Fetching	Ksh. 40	p-ed	20Min	40Min	45Min	30Min	0	N/A	N/A
Paulina Atuko	Turkana	staff health centre	3Km	Buying	Ksh. 60		10Min	1 Hrs	20Min	10Min	0	N/A	N/A
Margaret Thomas	Turkana	Labourer	3Km	Fetching	Ksh. 60		20Min	10Min	45Min	10Min	0	N/A	N/A
Wlliam Lempakany	Njemps	Civil servant	N/A	Fetching	Ksh. 50	-	30Min	50Min	45Min	3Kın	1	N/A	N/A
Josephine Etapal	Turkana	Making Tie & dye	1 Km	Both	Ksh. 50		20Min	30Min	30Min	1Km	0	2.00p.m.	Sat
Miriam Tilia	Turkana	Selling baskets	2Kın	Fetching	0	Times	20Min	40Min	30Min	1Km	0	2.00p.m.	Sat

Women Groups in Salabani (23rd to 25th March 2000)

Name of Women Group	Starded	Chairperson	Committe	Members	Activities	Strength	Weakness	For verification of project
Meisori Women group	1993	Hellen Koipiri	8		12 1. Making beads 2. Selling beads 3. Selling honey	1. Bead making	 No markets 	Can make beads
Londiani Women group	8661	Naitoti Koipiri	6	<i>L</i> T	17 I. Making beads 2. Keeping poultry 3. Farming 4. Merry-go-round	1. Team work	1. Iliferacy	Harambee Farning
Lorecho Women group	1994	Margaret Kajos	6		24 1. Making leatherBelts 2. Selling cattle 3. Rope Making	1. Enough teamwork	1. Illiteracy	Can work in the farms
Salabani Women group	1981	Jane Parsalach	10	20	20 1. Fishing 2. Cattle keeping 3. Selling honey	1. Fishing	Lilliteracy No Markets No Boat No enough water	Farming
Turkana Women group	1989	Jecinta Edapal	8		15 1. Making baskets/beads 2. Making mats	 Have skills to make Variety of baskets 	1. No markets to sell products	Embroidery
Ngenyin Women group	1997	Christina Kipchilot	12	09	60 1. Buying and selling fish 2. Buying & selling honey 3. Mary go round	1. Many members	1. No Market 2. No enough money 3. Buying firewood from far	Can sell fish and buy fising facilities
Longiron Women group	1994	Lilian Lekosiek	\$		(Маѓге)	1. Selling poutry Selling far crops	1. Illeteracy	Skills articraft making
Kampi Ya Samaki Tilupia		Teressa Owour	7	21	21 1. Nusery schoo 2. Fishing not working	I. Having Bank account	2. Severe drought	N/A
Kampi Ya samaki women		Mary Cherop	10	113	113 1. Mary go round 2. Fishing	1. Have a plot in town	1.No enough money to build the plot	N/A

For the Verification Project at Kampi ya Samaki (23rd to 25th March 2000)

What they can do	Problems	Result	Solution	Design
1. Cooperation as a team	1. Building Materials not available e.g. Blocks	1. Women groups will not benefit most tourists customers	1. Form one organisation	1. Roofing with iron sheets ,ceiling and good ventilation
2. They can contribute 10%	2. Inadequate water supply	2. Small women retailers will miss customers	2. Make price mechanism for products	2. Modern stone building
	3. No money to hire for security	3. Women groups will not have more skills 3. Create mutual understanding among all in selling their products		3. Furniture e.g. Seats, benches, tables
	4. Acquiring a plot takes time from County Council of Baringo		4. Keep time during meetings	4. Doors/ windows made of steel frames
		-	5. To acquire the plot requires time	5. Modern iron hangers, to hang crafts

Cost and price of Njemps tratitional belts

eather belt	Treads	Skill	Beads	Purchase place	Time to make one	Selling price
	Ksh. 100 for 5 belts	oelts Weaving	Ksh. 250 Nakuru	Nakuru	1-2 weeks	Ksh. 800

Cost and price of Turkana Mats/Baskets

Material	Skill	Cost of material	Purchase place	Time to make one	Selling price
Reead/ palm	Weaving	Vary	from Kapedo	Vary	750 -3000

Activities of Women Groups in Salabani (23rd to 25th March 2000)

Name of Group	Chairperson	Activity	Handicraft	Honey Processing	Fishing Processing
Meisori Women Group	* Helen Koipiri	1. Making belts/beads	•	0	
		Z.Demug noney			
Londiani Women Group	* Naitoti Lekoipiri	1. Craft making		0	
	Anna Kiptala	2. Poultry keeping			
		3. Farming/Mary -go round			
Longirion Women Group	* Lilian Lekosiek	1. Craft making /growing maize	•	0	
		2. Buying selling honey			
		3. Making table cloths			
Loresho Women Group	* Margarret Kajos	1. Making leather belts/ropes		0	
		2. Poultry keeping/selling cattle			
Ngenyin Women Group	* Lois Raymond	1. Craft making /selling honey	•	0	0
		2. Buying and selling fish			
Tilapia Women Group	* Teressia Owour	1. Fishing not working			©
		2. Running nursery school			
Salabani Women Group	* Jane Parsalach	1. Making handicrafts	•		
		2. Making leather belts			
Turkana Women Group	* Mary Kaploni	1. Making crafts, mats, belts	•		
	Paulina Kaundu	and beads			
	Margaret Thomas	2. Making baskets/mats			
	Paulina Atuko				
	Margaret Atuko				
	Miriam Akeno		,		
	Damaris Lochorchoria				
	Monica Mbeyo				

Upper Part of Sandal Imgation Scheme

		F	-	-	Moior	Moior Come	}	Niverbo	1.30	too!		Ļ										
Name	Sex Village		Sub Location A	Acres		dans 1	(*owe	Goate	Shaun	Boulfay T	Donkern Ree	No. 01	Стяглів ріпсе	Douts County	D BYCSTOCK O	neu or mon	E. 6	- 100 C	NO. CL LIVESIOCK	men or menses		Mores Course
Will at On London	-		+		,	T	2	2			: 1	-+-		Caller	Cours	dayllo	LYOMAN	Caller Caller	2	daale	Jakeys	rajor Causes
Kabet Chebobbin		Sanda				s Maller	21 9	g (0	92	<u> </u>	7 Kesubi	Kesubo Swamp	77 (0 1	0	0	0	0	0	0 ECF, Tsetsefly, Worm	ly, Worms
Jarries Bogona	M Kimacci	Sandai		BW 7	Marze Boars		N 4	7 6	2 5	0 6	- c	O Kesub	Kesubo Swanp	0 0	0 (0 (0 0	0	0 0	0 (0 FMD, ECF	
David Wendot		Sandai					> =	9	20	0 0	10	0 Kesuho	Genho Swann	- C	> c	> <	> 0	• •	9 0	o c	0 Istiselly	h, EMD
David Kipluman							9	01	_		. 0	0 Kapcha	Kaochanea Swamp	0			0	. –	ν 4/Ν	, c	O FOR Tectsefly FMI	ly, i.M.)
Kiptek Kimarei	_			9 Ma			81	. E	SS	21	0	0 Kesubo	Cesubo Swann	. 0	0	o o	0	. 9	0	· •		N. FMD
Daudi Cherutich	M Kimnech	Mbechut			Maize Millet		91	50	10	30	10	0 Kesubc	Kesubo Swamp		0	0	0	5	0	-		Iv. FMD
Wilson Bogoria	M Kimaech	Sandai		2 Maize	ize Millet	t Beans	9	10	۸	0	0	0 Kesubc	Cesubo Swamp	0	0	0	0	0	0	0	0 ECF. Tsetseffy, Worth	ly, Worns
Joseph Komen	M Kimacelt	Mbechut		3 Maize	ize Millet	t Beans	20	50	0	0	0	0 Kesubo	Kesubo Swamp	0	0	0	0	0	-	0	0 PMD, RCF	
Angeline Kigen		Mbechut		2 Maize	ize Millet	t Beans	C1	2	٠,	0	0	0 Kesubc	Cesubo Swanip	0	0	0	0	N/A	0	0	0 Tsetsefly	
John Kiptunai	M Mbechut	Sandai	-	2 Maize	ize Millet		13	10	0	20		60 Mbech	Mbeelint Swamp	4	0	0	0	0	N/A	o		v. Worms
Mary Kapturai		Sandai		2 Maixe	ize Millet		12	91	0	30	-	_	Mbeelut Swamp	ঘ	0	0	0	d	-	· c		Wombs
Sylus Cherono	M Chenkotovan						4	\$	7	٠,	-	_	Kosnho Sasama				· c	, ,		N/A		31 11 21 11 1
Martha Chemusoi							-	-	O			-	Variety Summe		, <	, ,	, ,	-	, V.V.			
John Kangogo		Afbechuk		Maize					, ,	, [, ,	Chronibo	Koutho Strama	- 0	· c		, c	- 4	Ć v	-	o 134th that	
Elizabeth Katero		Mbcchut		6 Maize			2	99	9	9	, 0		Kesulo Swamp		> 0		0 0	· •	V/N	N/N		
Participants: 16 (M:12, F:4)		Total		51.5		Γ	180	345	157	82	12	120		2		6	0	24	8	1	ь.	
		Average		3.2 Maize	ize Millet	t Beans	11.3	21.6	8.6	3.1	D.9	7.9		1.1	0.0	0.0	0.0	1.6	0.7	6.0	ECF: 12,	Tsetsefly: 12, FMD; 8
Middle Part of Sandai Irrigation Scheme	gation Scheme																					
N.		ŀ	\vdash	-	Major	Major Crops	L	Numb	er of Lives	ook.	ř	No. of		No. oN	Mivestock died of drov	ied of drong	ļ	No.	flivestock d	lied of diseases		
Name	Sex Vallage		Sub Location Ac	Acres	-	3	Cowe	Goats	Shecp	Poultry L	Donkey Beel	-	Grazing place	Cattle	Goats	Shren	Domkov	Carrile	Gnats	Sheen	Mean	Major dispasses
Samwel Kiphman	M Chepkotoyan	m Mbochut		4 Maize	ize Millot	Beans	18	20	17	0	0	0 Kesubo	Kesubo Swamp	24	0	0	0	0	N/A	0	0 BCF	
Francis Kangogo	M Chepkotoyun	m Mbechut		3 Maize			•	20	01	0		7 Kesubo	Kesubo Swamp	0	0	0	. 0	. 0	0	. 0	O ECF	
Pantinu Kinnen	F Chepkotoyan			2 Maize	ize Beans	Melon	~	10	9	9	0	0 Cheman	Chemango Swamp	0	0	0	0	0	0	0	o Tsetseffy	
Jolus Bogona	M Chepkotoyan	m Mbceliut		2 Maize	ize Millet		10	30	0	0	0	0 Kesubo	Kesubo Swamp	0	0	0	-0	0	0		1 Tsetsefly ECF	p.
Pauline Kiptunai	F Chepkotoyan	m Mbeclut	_	Maize	ize Beaus		.5	30	 س	0	0	0	•	0	0	0	0	0	0	- 0	CCPP	•
Jacob Cheburet				l Majze	ize Beans		4	01	0	9	Đ	0 Kesubo	Kesubo Swamp	0	0	0	0	_	0	. 0	0 ECF Tsetseffy, FME	v. FMD
Retimoj Kandie	M Kapolepkendi	ndi Sandai	_	Maize	ize Beans	Millet	18	30	0,	0	9	0 Cheman	Chemange Swamp	 6	0	0	0	-4	0	0	0 RCF. CCPP	
John Chebotibin	M Mokowo	Sandai		3 Maize	-d		30	9	77	0	য	0 Kesubo	esubo Swamp	0	0	0	0	3	0	C	0 CCPP, FMD	
Samson Kiptai		Sandai		3 Maize		Benns	**	30	0	0	0	10 Kesubo	esubo Swamin	0	0	0	0	0	0	0	0 ECF, Tsetsefly, Worm	y, Worms
Tarkok Kaptıbaı		Mbechut	··	2 Maize			30	20	7	0	7	5 Kesubo	csubo Swamp	_	0	0	0	-	0	0	0 Tsetsefly	
Tarkek Rutto		Mbechut		2 Maize			16	99	0	00	0	0 Kesubo	Kesubo Swamp	н	0	0	0	Š	0	0	0 ECF, Tsetsofly, Worn	y, Worms
John Barkasaw		Mbechut		Marze			4	20	0	13	0	7 Kesubo	cesubo Swamp	0	0	0	0	9	0	0	0 ECF, Tsetsefly, FMD	y, FMD
Jane Menotano		Sandar		2 Maize			00	9	0	0.	0	0 Kesubo	Kezubo Swamp	0	0	0	0	-	0	0	0 ECF, CCPP	
Verber Design	M M Decimi	Mbechut		Marze			0 ;	 7	0		0	16 Mbeeln	Mbediut Swamp	4	0	0	0	ç	0	0	O CCPP, FMD	
Michael Modei	M Vendense			azurin z	oze begins		3 S	₹ 5	D (2 :	-	3 Kesubo	Kesubo Swamp	0	c	0	0	0	0	0	0 ECF, Tsetseffy, Worn	у, Мотпя
Fether Vator				Mulan		Allo Tomotogo	7 -	97	0 0	2 ;	9 0	2 Kesubo	Kesubo Swanip	0 0	0 (0	0	*	0	0	0 ECF, CCPP	
Linah Karato		Mhechut	. *	Maire		-	,	2		9 5	> <	4 Subon Swaring	Swarip	rt e	 ⊃ •		۰ د	0 (0 (0	0 ECF	
Rosa Chebotibin	F Mokowo	Sandar		3 Maize			_ : : :	2 2	, =		, 8	Kamin C	Kemin Swam	5 V	> <	> <	> 0	٠:		-	O CCPF	
Rose Songol		Sandai	-1					0	000	s v	2 -	0 Keenho	Kesiho Swamp	n c	> =	> <		= =	5 6	 	o ECP, CCPP	
Richard Chebotibin	M Mokowo	Sandai	स	2 Maize			50	9	4	· v	, ,	2 Kembo	Kestiho Swamp	· c		> <		> 0	> 0		DECF, FMU	
Margaret Cherutich	F Kokchande	Mbeolut					Ξ	0	0	0	0	2 Mbechu	Mbechut Swamo		· c	, ,	> <	> <	0 0	÷ c	o inches	
Mitei Francis	M Kokehande			2 Maize	ze Millet		01	Ξ	4	0	0	O Kesubo Swamp	Swamp	0	, 0	0 0	. 0	0	2	> <	O FOF Testeoffs Worm	Worms
Joel Yator	M Kapchepkendi	idi Sandai	.N	2 Marze	ze Millet	Sorghun	10	12	0	9	0	5 Cheman	Chemange Swamp	*7	0	0	0	7	ν/ν		O FAID BCE	
Veronica Chepkuto		Sandai		Maize Maize		Sorghum	Ŷ	30	9	0	15	0 Loboi Swanp	wanip .	2	0	0	0	l (~)	C	, 0	0 Tsetseffe	
Symon Lehmwo		Sandai		Maize			7	6	61	737	0	5 Kesubo	Kesubo Swamp		0	0	0	0	0	. 0	0 RCF Testseffy PMD	r PMD
MargaretChangwony			_	Maize		Велив	7	10	0	10	0	O Cheman	Chemange Swamp	-	0	0	0	-	0	0	0 ECF	!
Charles Cherono			***3	Marze			10	30	0	8	0	0 Kesubo	Кевиро Ѕwamp	*	0	0	0	0	0	0	0 ECF, Tsetseffy, FMD	y, FMD
Wilson Wendot	M Sesta	Sandai	(*) E	3 Maize			9 '	유 :	00	0	'n	7 Chemor.	Chemonge Swamp	ý	0	0	0	0	0	0	0 ECF, Tsetsefly,	y, FMD
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M:18, F:14	1	Total	T	1	Ţ		342	903	113	214	24	77	Swaring	- -	5	5 6	5 0	2 2	0	0 0	0 Tsetseffy	
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										1						,		5	7.5	2.0		-

Participants at Sandai Workshop (20th and 21st March 2000)

Name	Village	SubTocation	Acros	The state of the s								_			Coro to com management		ĺ			
		SHO EDGHION	ACCOS	1	2	3	Cows	Goats St	Sheep Pou	ltry Don	akey Bechive	ives Crazing pract	Cattle	Goats	Sheep	Doth	Cattle	Goats	Sheep Don	Donkey Major disease
Dickson Chepkuto M	Cheplock	Sandai	3	Maize.	Millet	Везня	10	30	5.	18	0	O Loboi Swantp	0	0	0	0	0	1	0	0 ECF
Charles Rotich M	Kapchepkendi	Sandai		Maize	Millet	Beaus	20	ę	0	0	0	4 Kesubo Swamp	0	0	0	0	0	0	0	0 Tsetseffy
Clement Chepsat M	Kapchepkendi	Sandar	er	Maize	Beans	Millet	=	46	00	m	0	2 Kesubo Swamp	9	0	٥	0	N/A	9	0	0 ECF
	Chepkotoyan	Mbechut		Maize	Beans	Melon	Ħ	30	•	0	Ç	O Kesubo Swamp	0	0	0	0	0	0	0	0 Tsetseffy
		Sandaí		Maize	Millet	Melon	9	10	15	. <u>.</u>	0	O Chemange Swong	*	0	0	0	N/A	0	0	0 ECF, CCPP
	Тепрагаме	Sandai		Maize	Millet	Vegetable	m	4	9	0	0	O Chemange Swunp	0	0	0	0	0	m	0	0 Tsetsefly
	-	Mbechut	C-1	Maize	Beans	Millet	_	7	_	10	0	0 Kesubo Swamp	0	0	0	0	10	0	0	 ECF, Tsetseffy, Worms
Reuben Cherutich M	Kapchepkendi	Sandai		Maize	Millet	Benus	22	71	티	0	0	0 Chemange Swamp	0	0	٥	0	N/A	0	0	0 FMD, ECF
Philemon Rotich M	Kapchepkendi	Sandai		Maize	Beans	Millet	80	93	0	0	0	0 Kesubo Swamp	1	0	0	0	ò	2	0	0 Tsetseffy
John Boswony M	Sesya	Sandai	8	Maize	Benns	Millet	0	53	10	0	0	3 Chemange Swamp	•	0	0	0	ž	0	0	0 ECF Tsetseffy, FMD
_		Sandai		Marize	Beans	Millet	v	01	12	CI	0	O Chemange Swamp		0	0	0	9	0	0	0 ECF
Nati		Mischat		Maize	Millet	Beans	9	v-1	00	98	0	O Chemanae Swamn		_	-		ve	_	c	O ECE Tenterfly FMD
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		Moceni	2	millet	maize	Hearts)£	3	oç.	01	>		OI IO	ວ ໌ 	0	ءَ -	2	÷	N/A	U Testsetly
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Ionathan Mitci	Chepkotoyan	Mbechut	~	Maize	Millet	Beams	m	9	*4	0	0	0 Kesubo Swamp	0	0	0	0	0	N/A	0	0 ECF, CCPP
	_	Mbechut	61	Maize	Millet	Beans	~	2	Ó	0	0	O Kesubo Swamp	0	0	٥	0	0	A/N		O CCPP, FMD
in our		Sandai		Moiso	Mallot	Roome	. 6	: 5				_		_				97.70	c	o BOE Technology Menner
		Series de la	-	Make .	· ·	2	3 5	3 .	> <		-	_		•	> <	ء آھ 	> 0	200	o (o mer, issuent, wonis
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_		Mbechut		Marze	Millet	Beans	7	4	0	os)	0	6 Lobai Swamp	c·I	0	0	0	4	0	0	0 ECP, Tsetsefly, FMD
tiol	Sokoterwo	Mbechut		Marze	Millet	Beams	Ç23	2	ó	9	0	 Kesubo Swamp 	-	0	0	•	0	0	0	0 ECF
Rael Kipleroi F	Sokotejwo	Mbechut	C1	Maize	Millet	Vegetable	·-	œ	0	13	0	 Loboi Swamp 	2	0	0	0	7	0	0	0 BCF, Tsetsefly, FMD
Mary Kimosop F	Sekoteiwo	Mbechut	-	Maize	Beans	Vegetable	0	Ç	0	-4	0	0 Kesubo Swamp	0	0	0	5	0	0	0	0 BCF, Tsetseffy, FMD
Hellen Kibon F	Cheploch	Sandai	3.5	Vegetable	maize	Millet		20	2	Ó	0	2 Kesubo Swamp	5	0	0	0	2	0	0	0 ECF Teetseffy, Worms
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Jacob Cheruffelt M		Mbechut		Maize	Millet	Beans	4	01	0	- 10	0		0	0	0		_	_	C	n Tentroffe
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		Candai		Maig	Vella,	Deals	יז ני	9	7 <	 	, ,	O Pombo Swamp		> 0	-	5 6		> <	0 0	O ECF, ISPERBIN, FIMIL
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_		Taputas:		Marze		Vegetable		5 ;	> ·	2	> •			-	0	<u> </u>	•	0	O,	0 ECF Tsetseffy, Worns
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rancis		Mbcchut	61	Maize	Millet	Beans	C-I	30	01	0	0	0 Kesubo Swamp	0	0	0	0	Ş	0	c	0 ECF, Tsetsefly, FMD
Joel Rufto M	Mbechut	Mbechut		Maize	Millet	Везпя	40	30	0	10	0	0 Mbechut hill	N/A	0	0	0	N/A	0	0	0 RCF, Tsetseffy, FMD
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Samson Chebochboch M		Mbechut	2	Maizo	Millet	Beans	 m	0	0	0	ć		-	_		c				C. Transferd
		Sandai		Muize	Millet	Beane	9	•		12							, (the state of
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a		Sandoi		Maize	Miller	Sorganin	o	n	0	2	0		0	o _	0	•	0	0	0	0 ECF, Taetselly, IMD
		Sandar	64	Maize	Millet	Beans	0	0	0	4	0		N/A	0	N/A	0	N/A	0	0	 ECF, Tsetsefly, Worms
	-	Sandai		Maize	Millet	Beans	4	8	9	4	0	0 Loboi Swamp	N/A	0	0	0	N/A	0	0	0 FMD, ECF
kaitany	Poi	Kapkuikui		Marze		Beuns	70	40	10	C-I	0	15 Kapkuikui swamp	N/A	0	0	0	N/A	0	0	0 Tsetsefly
	Seria	Sandai	2	Maize	Millet	Beans	20	15	01	0	0	O Chemange Swamp	N/A	0	0	0	N/A	0	0	0 ECF, Teetsefly, Worms
Ħ.		Sandai	e-	Maize		Beaus	9	01	-#	0	0	 Chemange Swamp 	_	0	N/A	0	0	O	0	0 ECF, Tsetsefly, Worms
Jackson Rutto M		Mbcchut	1.5	Muze	Millet	Sorghum	ø	15	D23	23	0	O Kesubo Swarip	0	0	N/A		10	0	0	0 ECF, Tsetsoffy, Worms
# #		Sandui.	~	Marize		Sorghum	2	13	\$	0	0	5 Chemonge Swamp	•	0	N/A		0	0	0	
		Sandai		Maize		Sorghum	10	53	30	8	0	O Chemorage Swang	4	0	N/A		0	0	0	0 Tsetsefly
Mosa Kipsung M		Sandai	5	Maize		Sorghum	*		15	0	0	10 Chemonge Swamp	_	0	0	0	0	0	0	0 ECF, Tsetsefly, FMD
Wilson Kiptni M	Sesna	Sandai	7	Maize	Millet	Sorghun	_	_	_	40	¢.	O Chemongo Swamp	0	0	0		8	0	0	0 ECF, Tsetsefly, FMD
Participants: 58 (M:37, F:21)							L		L									į		
		Dia	8			1	519	1047	357	331	0	7.2	54	0	0	0	133	10	0	O GOE: 44 Testeadly, 40 EMD:

Problems and Solutions of Sandai Irrigation Scheme (21st March 2000)

Upper Part Total Acres	Total Acres Kimaech Chepkenion Kabasikari	Chepkenion	Kabasikari	Problems	Solutions	Activities
173 acres	62 acres	80-81acres	30 acres	30 acres 1. Spillage of water to farms	1. proper water management	1. Water users Association
				2. Shallow canals	2. Use locked gates at division boxes	2. Maintenance of division boxes
			,· f	3. Silting of canals causing logging	3. Weekly removal of silted canals	3. Seed supply
				4. Poor Leveling of farms	4. Farmers should cooperate	4. Buying of foodstuffs
				5. Farmers increase by 10 yearly	5. A time table schedule to all farmers	
				6. Main intake area Rocky	6. Main intake to be cemented	
			•	7. No gates at division boxes		
			~_	8. Cattle spoil canals when crossing		
				9. No Culverts dividing roads and farms		
			<u> </u>	10. Ostriches spoil germinating crops		

Middle Part	Total acres	Farmers	Middle Part Total acres Farmers Good yields Less yields	Less yields	Problems	Solutions	Activities
	115 acres	50	60 acres	55 acres 1	55 acres 1. No division boxes	1. A rotational type of irrigation	1. Association to assist farmers buy certified seeds
					Shortage of water for irrigation	2. Well improved and strict by-laws	2. Marketing strategies by association
			•	(*)	3. By -laws are weak	3. Proper schedule of canal cleaning	3. Association confine all farmers in the scheme
				7	 Canals are not well prepared 	4. Increase more division boxes	
				<u>«)</u>	5. Canals not supervised	5. Proper supervision within the scheme	
				9	6. Floods during rainy season	6. Control of main intake during rains season	
				7	7. Some introduce new canals	7. Farmer to agree on water distribution	
				<u> </u>	8. Farmers in upper part block division boxes		

Lower Part Total Acres Farmers Cultivated Uncultivated	Farmers	Cultivated	Uncultivated	Problems	Solutions	Activities
1,118 acres	234	289 acres	829 acres	289 acres 829 acres 1. Small main intake of water	1. Widening the main intake	1. Setting up lower farmers committee
			, 4	2. Less management of water	2. Strengthening by-laws	2. Digging up canals and cleaning
			×: 8	3. Silted and shallow canals	3. Canals be cleaned regularly	3. Harambee contributions to make canal good
			7	4. New unprocessed canals	4. Improved canals e.g. cementing	
				5. Shifting cultivation and overgrazing	5. Repairing existing division boxes	
				6. Evaporation too high	6. Other farmers to respect lower farmers	
				7 Movement of farmers to middle and upper parts		

Groups and Associations in Sandai (21st March 2000)

	Major Activities	Main Actors	Strength	Weakness	For Verification of Projects
Sandai W.U.A.	1. Buying and selling seeds to farmers 1. Farmers Committee	1. Farmers Committee	1.Repairing canals	1. No by-laws	1. Making by-laws by members
	2. Selling seeds	2. Min. Of Agriculture Technicians 2. Bank account		2. Farmers use local seeds	2. Trained personnel
	3. Buying and selling maize to farmers 3. NGOs (FAO,	3. NGOs (FAO, World Vision, CCF) 3. Enough income		3. No tools for cultivation	3. Use Certified seeds by farmers
		4. Kenya seed Co. Ltd.,	4. Farmers Contributions	4. Inadequate water supply	4. Inadequate water supply 4. Buying tools for making intake
				5. Inadequate marketing	5. Search for markets e.g. N.C.P.B
Irrigation Scheme 1. Cultivate land	e 1. Cultivate land	1. NGOs (World vision, C.C.F)	1. Provide labour by farmer	1. Poor water management	1. Hire a watchman to control intakes
	2. Digging of canals	2. Scheme committee	2. Provide labour by community 2. Poor water distribution	2. Poor water distribution	
	3. Water Management	3. Min. Of Agriculture Technicians		3. Blocked canals	
	4. Clearing canals by farmers	4. Planting trees along canals			
	5. Fencing				
	6. Repairing division boxes				
Livestock groups	Livestock groups 1. Dipping animals	1. Animal farmers	1. Keeping of livestock		
	2. Grazing animals	2. Dipping committee			
	3. Repairing Dip crushes	3. Veterinary officers			
	4. Deworming animals				
	5. Castration of animals				
	6. Ear marking the animals				

Activities of Sandai Women (21st March 2000)

Daily	
Time	Activities
4:00 a.m.	Light fire
	Sweep House
5:00 a.m.	Milk animals
	Make tea
7:00 a.m.	Fetch water
	Wash dishes
	clean house
7:30 a.m.	Take animals grazing
10:30 a.m.	Back from grazing
	Cooking lunch
1:00 - 12:30 a.m.	Wash clothes
	Take early lunch
1:00 p.m.	Wash dishes
2:00 p.m.	Farming vegetable garden 5km
4:30 p.m.	Home from fetching firewood
5:00 - 6:00 p.m.	Milking cows
	Prepare supper
7:30 p.m.	Close the closure
	Prepare children to sleep
8:00 p.m.	Eat dinner
	Wash dishes
9:00 p.m.	Children sleep
10:00 p.m.	Fetch water (drought time)
1:00 a.m.	Back from fetching water
1:30 a.m.	Sleep

Weekly	
Day	Activities
Monday	Farming
Tuesday	Look after animals
Wednesday	Fetch grass for thatching as groups
Thursday	Market Day
Friday	Fetch firewood as a group
Saturday	Wash clothes
Sunday	Church / rest

Monthly	
Week	Activities
1st Week	Farm
	Fetch water
	Dipping
2nd Week	House maintenance
3rd Week	Women meetings
4th Week	Women visit each other

Yearly	
Month	Activities
January	Look after animals
February	Look after animals, prepare land
March	Fetch water/prepare land
April	Planting/Fencing
May	Weeding/Thinning/Taking care of farms
June	Weeding second time/irrigating farms
July	Harvest Beans/Millet
August	Harvest maize/Storage for harvest
September	Harvest maize/collecting to
	Prepare farms for vegetable
October	Plant beans/vegetable
November	Weeding vegetable/bcans
	Prepare for Christmas
December	Take care of Vegetable gardens
	Christmas holiday

Sandai Irrigation Scheme (21st March 2000)

Upper part	No. of farmers	Total Acres	Cultivated
Kamaech	N/A	62 acres	62 acres
Chepkenion	N/A	80-81 acres	80-81 acres
Kabasikari	N/A	30 acres	30 acres
Total	N/A	172-3 acres	172-3 acres

					Major Crops	
Middle Part	No. of farmers	Total Acres	Cultivated	Maize	Beans	Millet
Total	50	115 acres	115 acres	75%	12.5%	12.5%

Lower Part	No. of farmers	Total Acres	Cultivated	Uncultivated
Sesia	38	100 acres	30 acres	70 acres
Cheploch	40	300 acres	120 acres	180 acres
Kapchepkendi	38	390 acres	76 acres	320 acres
Tambarawe	30	335 acres	15 acres	320 acres
Sokoteiwo	40	170 acres	18 acres	152 acres
Kesubo	25	21acres	30 acres	7 acres
Total	234	1,118 acres	289 acres	829 acres

Possible negative impacts by/on the Verification Project (20th April 2000)

	Possible problems in the future	Negative impacts by the verification project Negative impacts on the verification project	Negative impacts on the verification project
	. Shortage of water	1. Floods of the river	1. Lack of technical know-how
C1	2. Lack of corporation of farmers	2. Destruction of crops by	2. Lack of tools
ω	. Expensive to maintain	wild animals	3. Lack of tractor
4	4. Poor management of controlling water	3. Less income	4. Famine and drought may affect the bulks
Ω	5. Over population of animals in grazing	4. Poverty will go up	5. Less division boxes
	fields/overgrazing	5. Silt of intake	6. Pests and diseases
9	6. Low population of goats	6. Block of water at upstream	
7	. Outbreak of diseases - can easily be spread		
∞	8. Shortage of fresh drinking water		
	to maintain animals		
6	9. Lack of marketing, lateral lining		

Participants at Arabal Workshop (16th and 17th March 2000)

		Nur	nber of Li		efore Draw		Nun	nber of Liv				Num	ber of Liv	vestock Di	ed of Disc	ases		No. of	
Name	Sex M	Cattle	Goals		Poultry 1	Donkeys 0	Caltle	Gosts	Sheep 2	Poultry 1	Donkeys	Cattle 4	Goats	Sheep		Donkeys	Major Diseases ECF, Tsetsefly	Beefuves	Type of Crops
William Kipkech Mary Mursoi	F	40 0	120 10	20 0	16 4	0	10 0	0	0	1	0	0	1	2 0	1 2		Tsetsefly, New Castle	16 0	Millet, Beans, Maize Maize, Sorghum, peas
Samwel Kandie	М	5	14	0	0	0	3	3	0	0	0	0	0	0	٥		ECF, Tsetsefly	I	
John Molok	M	11	20	0	14	0	4	7	0	0	0	9	0	0	0	0	ECF, Tsetsefly	I	Millet, Beans, Maize
Patrick Teweret	М	6	15	0	2	N/A	2	4	0	1	0	0	0	0	0		Tsetsefly, ECF	6	
Isaac Rutto Christina Komen	M F	7	25 6	2	4	0	2 1	4 0	1 0	N/A 0	0	0	0 4	0	N/A 0		ECF, Tsetsefly Tsetsefly	5	Maize, Sorghum, peas Cow peas, Millet, Beans
William Lombaino	М	5 :	10	5	0	o	4	4	2	0	0	1	4	0	0		ECF, Tsetsefly		
Grace Tallam	F	10	20	6	0	0	4	5	0	0	0	2	2	0	1	0	ECF, Tsctsefly	0	Millet, Beans, Maize
James Chepchieng	М	2	10	6	0	0	1	3	2	2	0	0	6	0	0	0	Tsetsefly, ECF	I	-
Barkutol Wendot	M F	40	30	5	0	0	3	3	3	0	0	4 2	8	0	0	0	Tsetsefly, ECF	I	
Tarkek Johana Sote Tarkek	F	16 10	140	14	3	1	3	1 0	0	0	0	3	1	0	1	0	Tsetsefly, ECF, FMD Tsetsefly	•	1
Joseph Kairo	М	12	20	9	0	0	4	6	3	0	0	2	6	1	0	0	FMD, ECF	2	
Johntone Cherutich	М	15	30	5	0	0	4	10	0	0	9	4	1	0	0	0	ECF, FMD	2	Millet, Maize, Peas
Chebon Samwel	М	9	4	16	6	0	0	2	4	0	0	0	1	1	2	0	Womis, Tsetsefly	2	Maize, Sorghum, peas
Kandie James Thomas Kipteweret	M M	4 15	10 45	20	6	0	1	2 10	0 6	0	0	1 5	1	0	0 N/A	0	Tsetsefly Tsetsefly, Heart water	8 10	Beans, Maize Sorghum, Peas
Rutto Jacob	м	23	57	13	8	0	2	16	4	4	o	0	o	0	0	0	CCPP, Worms	0	Peas, Millet
Paul Mursoi	M	6	15	3	0	0	2	5	2	0	0	0	0	2	0		ECF, FMD	0	Maize, Sorghum, peas
Willy Chelal	M	4	30	2	0	0	0	6	2	8	0	1	1	N/A	0		ECF, Tsetsefly	4	Maize, Sorghum, peas
Wilson Chebon	M	20	54	13	0	0	7	12	6	0	0	0	2	2 0	0	0	Tacisefly	5	Millet, Sorghum, Maize
Tarkok Stephen Christine Molok	r F	70 3	60 6	30 0	5	0	16 0	20	10	3	0	3 0	0 2	н	0	0	Tsetsefly ECF, Tsetsefly, Worms	10	Maize, Beans, Millet, Sorghum Maize Millet
Selly Chebon	ľ	30	40	10	10	0	16	11	4	6	0	4	Ŋ⁄A.	0	0		ECF, FMD	7	Maize Millet, Beans
Tarkok Tallam	F	6	10	Û	Û	0	4	7	Û	0	0	N/A	6	N/A	0	0	ECF, Tsetseffy	5	Maize, Millet Sorghum
Christina Konga	F	10	30 i	40	30	0	8	8	20	15	0	2	4	2	0		ECF	10	Millet Maize
Jennifer Thomas Sokome Kipsortich	F	10 20	30 20	10 100	0	0	0 10	7	0 10	0	0	4	7 0	0 11	0	0	ECF Heart water, Tseisefly	5 1	Millet, Maize, Sorghum Maize, Millet Sorghum
Sole Johnson	F	5	10	6	4	٥	3	4	2	1	o o	0	N/A.	0	٥		ECF. Tsetsefly		Maize, Beans, Millet
Kipkwolei Kipkwe	F	20	20	6	0	0	15	0	5	0	0	N/A	1	N/A	N/A		ECF, FMD	•	Maize, Millet, Beans
Kimengich Kipwe	м	20	70	15	9	0	6	10	5	0	0	1	0	1	0		ECF, Tseisefly, Worms	4	Maize, Beans, Millet
David Chemursoi	M	11	17	7	2	0	1	7	1	11	0	0	0	0	0		Heart water, Tsetsefly		Muze, Millet, Beans
Henry Kandie Kaiparor Kipyemat	M	20 : 15	30 40	0 15	7	0	3 4	5 15	0	1	0	6	3 N/A	0	0	0	Tsetseffy, ECF, Drought, Worms Drought, Heart water	ì	Maize, Millet, Sorghum Maize, Sorghum, Millet
Joseph Teweret	M	3 :	5	0	5	0	2	3	٥	0	٥	N/A	N/A	NΑ	0		_		Maize, Millet
Samwel Korikon	м	10	20	4	5	0	ı	8	4	0	0	0	3	0 :	N/A		Tsetseffy, Drought		Maize Millet, Beans
William Kandie	Mi	40	60	10	10	0	15	10	4	0	0	N/A	N/A.	N/A	0	0	Tsetsefly, ECF		Cow peas, Millet, Beans
Kobilo Chebon	F	20	30 17	8	0	0	15	10	4	1	0	6	7	2	0	0	ECF, Tsetsefly, Worms		Millet, Cowpeas, Beans
Joel Chepkor Tarkok Kipkurwo	M F	9 40	80	3 54	5	0	0 10	20	46	0	n	1	0	6	0	0	Tsetsefly, Worms, Tsetsefly		Millet, Beans, Cowpeas Maize, Beans, Millet
Daniel Kimayos	м	10	20	0	0	9	0	0	0	0	0	0	0	0	0	0	Tsetsefly		Maize, Bananas, Potatoes
Joseph Kirkok	M	20	80	10	30	0	5	7	1	0	0	0	0	0	0	0	ECF, Tsetsefly, Worms		Millet, Maize, Sorghum
Christine Kiplelion	F	I	10	6.	4	0	2	3	6	2	0	0	0	0	0	0	ECF, Tsetsefly		Millet, Maize, Sorghum
Richard Kiptibai Tarkok Keitany	M F	20 2	20 s	10 1	0	0	4	1	0	0	0	0 N/A	0 N/A	0 N/A	0 N/A	NA 0	ECF Drought		Maize Beans Maize, Millet, Sorghum
Napangara Chemjor	F	20	30	10	0	0	10	15	5	0 -	0	0	0	0	0	0	Drought, ECF, Tsetsefly		Maize, Millet, Sorghum
Samwel Cheptoo	М	20	60	8	0	N/A	2	10	2	0	G	2	0	0	0	0	Drought, ECF, Worms		Maize, Beans, Millet
Joseph Kigen	М	o	12	0	0	0	0	6	9	0	0	0	1	0	0	0	Tsetsefly, Drought		Maize, Millet, Beans
Kipraisi Kiptekoi	M	40	100	6	6	0	10	20	0	4	0	8	4	0	0	0	ECF, Tsetsefly		Maize, Millet,
John Chesaina Samwel Rutto	M M	5	20	4	0	0	3 0	10	3	0 0	0	0	0	0	0	0	Tsetsefly Nil		Maize, Millet Maize, Millet, Beans
John Kibogong	M	12	41	2	0	0	4	6	0	0	o	7	ŏ	ő	0	0	Drought, Heart water		Maize, Millet, Beans
David Chepyegon	М	2	5	1	0	0	0	2	1	0	0	0	0	0	0	0	ECF, Drought, Worms		Maize, Millet, Sorghum
Richard Tewerst	M	2	34	2	16	0	4	6	4	0	0	1	0	0	0	0	FMD, ECF		Groundnuts, Cowpens, Millet
Joel Chepkwony Keitany Rhapael	M M	4	10 -	2	0	0	2 0	3 2	0	0	0	0	0	0	0	0	CCPP, Worms, Tsetseffy ECF, Drought, Worms	1 3	Maize, Millet, Beans Maize, Millet, Sorghum
Kenany Knapaei Kobilo Koisok	M F	2	15	8	10	0	0	4	1	0	٥	2	2	0	0		ECF, Drought, Worms		Maize, Millet, Sorgmun Cowpess, Bampkins, Millet
Samuel Kiptomoto	M	15	12	8	12	0	10	8	4	3	0	3	-	0	0		Rinderpest, Tsetsefly		Tomatoes, Maize, Millet
Joseph Kiptoo	M	19	35	14	5	0	9	5	1	1	0	3	WA.	N/A	N/A		CCPP, Tseisefly, ECF		Bananas, Groundnut, Miller
Samuel Chebon	М	15	39	3	0	N/A	4	0	0	0	0	3	0	WA	N/A		ECF		Maize, Millet
Kandie S. William Margaret Rutto	M	2 10	50 20	0 1 1	4	0	1 2	5.	0 3	0	e o	1	3	0	0		Worms, Tsetsefly CCPP, ECF		Maize, Millet, Beans Vegetables, Maize
Jackson Chemwotie	M	18	35	6	4	2	5	9	3	1	0	٥	0	0	6		ECF, Heart water		vegetanies, Maize Maize, Millet, Beans
Stephen Chebet	м	10	15	0	5	0	3	0	9	0	0	1	1	0	1		Dronght, ECF		Maize, Millet, Beans
Raymond Kimosop	М	3	6	2	2	0	2	1	0	0	0	0	0	0	0		Drought, ECF		Maize, Millet, Sorghum
Julius Chemjor	M	15	7	0	0	0	3	7	0	9	0	N/A	N/A	N/A	N/A		Drought, ECF		Maize, Millet, Sorghum
Kobilo Chepkoimet Leleito Mursoi	M M	6 14	21 40	0 10	6 10	0	2	12	0 8	2	0	2	3	2	0		ECF Tsetsefly, ECF		Vegetables, Maize Maize, Millet, Sorghum
Julius Chepkorir	M	10	20	0	0	5	10	10	0	0	0	N/A	N/A	N/A	N/A		ECF, Tsetsefly		Maize, Millet Sorghum
Sote Letio	F	6	8	0	2	0	0	3	0	Ð	0	N/A	N/A	N/A	N/A		FMD, ECF		Greengrams, Millet, Sorghum
Esther Kobilo	F	6	22	0	10	0	2	0	0	7	0	N/A	N/A	N/A	N/A		Tsetsefly	8	Maize, Millet, Sorghum
Average (Mortality Rate)	Щ	12.99	29.33	8.24	3.90	0.14	4.04 31.1%	5.97 20.4%	2.71 32.9%	1.07 27.4%	0%	1.60	1.48 5.1%	0.75 9.1%	0.13	0%	ECF: 46, Tsetselly: 45, FMD: 8	7.25	

(Mortality Rate)
Participants: 72 (M:49, F:23)

Villages in Arabal (16th and 17th March 2000)

Male Female Catle Goats Sheep Poultry Catle Goats Sheep Millet Sheep Millet Sheep Millet Millet Millet Millet Millet Sheep Millet Millet Sheep Mi		Sobash							;
Male Fornale Cautle Cautle Goats Sheep Poulfry Cautle Group Affilter 8 9 150 157 418 1,256 502 50 120 15 Maize Millet 10 3 240 242 115 1,453 106 80 30 34 46 0 60 Maize Millet 10 8 1046 2,322 273 40 150 130 Maize Millet 3 4 470 520 100 200 300 70 Maize Millet 4 1 1,036 3,204 293 36 273 73 20 30 Millet Sorghum 5 1 1,036 <th></th> <th>Idois</th> <th>Attending</th> <th> St</th> <th>Drop outs</th> <th>7</th> <th>Attending</th> <th>a</th> <th>Drop outs</th>		Idois	Attending	 St	Drop outs	7	Attending	a	Drop outs
6 1 185 182 100 320 20 30 20 150 175 418 1,256 502 50 100 200 300 20 Maize Millet 9 3 150 157 418 1,256 502 50 100 200 300 20 Maize Millet 10 3 240 225 1,046 2,322 273 40 150 30 70 Maize Millet 3 0 87 79 150 100 300 70 Maize Millet 3 0 87 79 150 100 300 70 Millet Sorghum 3 0 103 85 203 413 81 0 30 73 73 73 73 73 73 73 73 73 73 73 73 74 74 74 74	dary Tertiary Primary	Nursery	Primary Nursery	ئــــــــــــــــــــــــــــــــــــــ	Male Female	ale Male	le Female	le Male	Female
8 9 150 157 418 1,256 502 50 100 200 300 30 Maize Millet 10 3 240 242 115 1,453 106 80 30 34 46 0 Maize Millet 3 240 220 1,046 2,322 273 40 150 120 130 Millet Millet Millet 3 0 87 70 100 200 300 70 Millet Sorghum 4 1 103 81 203 100 200 300 70 Millet Sorghum 5 1 103 820 413 81 0 32 73 21 70 Millet Sorghum 5 1 103 820 413 81 20 380 100 53 0 Millet Sorghum 5 1	Sorghum 0	1	N/A	N/A N	N/A N/A	4			0
9 3 240 242 115 1,453 106 80 30 34 46 0 Maize Millet 10 9 200 295 1,046 2,322 273 40 150 120 130 Maize Millet 3 0 88 200 470 520 100 200 300 70 50 Millet Sorghum 3 0 103 85 203 413 81 0 32 73 73 70 70 Millet Sorghum 1 2 1130 162 3,204 293 380 100 53 Millet Sorghum 5 2 17 170 656 600 70 80 70 70 70 70 Millet Sorghum 1 1 150 151 151 170 170 170 170 170 170 170 </td <td>Beans 0</td> <td>-</td> <td>N/A</td> <td>N/A N</td> <td>N/A N/A</td> <td><</td> <td>4</td> <td>0</td> <td>2</td>	Beans 0	-	N/A	N/A N	N/A N/A	<	4	0	2
10 9 200 295 1,046 2,322 273 40 150 150 130 <td>Vegetables 1</td> <td>7</td> <td>113</td> <td>707</td> <td>N/A N/A</td> <td>⊲'</td> <td>-</td> <td>0</td> <td></td>	Vegetables 1	7	113	707	N/A N/A	⊲'	-	0	
3 0 87 79 470 520 100 100 200 300 70 60 70 Millet Sorghum 1 2 103 85 203 413 81 0 32 73 73 21 0 Millet Beans 5 1 1 1,036 3,204 293 39 100 53 0 Millet Sorghum 5 2 1 1,036 3,204 293 39 100 53 0 Millet Sorghum 5 2 1 1,036 3,204 293 39 100 53 Millet Sorghum 1 0 150 154 101 211 159 97 15 10 45 Millet Millet <td>Sorghum 1</td> <td>1</td> <td>43</td> <td>33</td> <td>N/A N/A</td> <td></td> <td>m</td> <td></td> <td></td>	Sorghum 1	1	43	33	N/A N/A		m		
3 0 103 85 203 413 81 0 32 73 23 73 21 0 Maize Beans 5 1 150 162 1,036 3,204 293 380 100 53 0 Millet Sorghum 5 2 1 170 656 600 70 80 270 70 20 Millet Beans 1 0 150 154 101 211 159 97 15 113 104 45 Millet Maize 0 0 N/A	un Maize 0	0	4	N/A	N/A N/A		0	0	
1 2 130 162 3,204 293 380 100 53 0 Millet Sorghum 5 2 217 170 656 600 70 80 270 70 20 20 Maize Beans 1 0 150 154 101 211 159 97 15 113 104 45 Millet Maize 0 0 N/A N	Tomatoes 0	1	N/A	30 N	N/A N/A		_	0	
5 2 217 170 656 600 70 80 270 70 20 20 Maize Beans 1 0 150 154 101 211 159 97 15 113 104 45 Millet Maize 0 0 N/A N/A N/A N/A N/A N/A N/A N/A N/A 46 26 1,462 1,526 4,145 10,299 1,604 536 1,130 759 145 Milet Milet Milet	m Maize 0		N/A	N/A	N/A N/A		0		0
1 0 150 154 101 211 159 97 15 113 104 45 Millet Maize Maize 0 N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A	Millet	1	N/A	35 N	N/A N/A		9		٠,
0 0 N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A	Sorghum 0	0	N/A	N/A N	N/A N/A	4:	7		0
0 0 N/A	A N/A N/A	N/A	N/A	N/A N	N/A N/A	A N/A	A N/A	V/N	N/A
46 26 1,462 1,526 4,145 10,299 1,604 536 1,197 1,130 759 145 Maize Millet	N/A N/A	N/A N	N/A	N/A N	N/A N/A	A N/A	A N/A	N/A	N/A
700 17 700 000	Sorghum 3	2	160	168	0	0	18	5	_
(Mordality Kate) 26.9% 11.0% 47.3% 27.1%					_				

		Fetching water (Dry)	r (Dry)		No.	No. of livestock	ock		No. of	of livestock died of drought	died of d	rought	Ĺ	Vo. of live	stock die	No. of livestock died of diseases	sosi		No of J.	No of Livestock Killed by wild animals	Killed by	y wild ar	nimals		V C-1-0
Name Sex	Tribe	Source	Distance	Cattle	Goats	Sheep Poultry		Don, C	Cattle	Goats She	Sheep Poultry	try Don.	n. Cattle	e Goats	Sheep	Poultry	Don.		Cattle	Goats	Sheep	Poultry	Don.	Orazing place	Main Crops
Jones Ole Kirati M N	Njemps	Lake	6 km	40	100	90	10	0	20	0	0	0	0 15		0	0	0	Tsetseffy	2		0	Т	0	Near Lake	Maize, Sorghum
	Njemps	Lake	5 km		07	15	٥,	0	1.5	30	10	0	0	2 0	0		0	Heart water	0	0	-	0	0	Near Lake	Maize, Millet, Peas
×	Njembs	Lake	4 km	25	8	01	9	0	12	0	33	0	0	4 20	•	0	0	Heart water	0	0	0	0	0	Near Lake	Maize, Sorghum, Beans
Stanley Ofe Mugut M N	Njemps	Lake	2 km		Q	13	10	0	115	0	3	0		5 20		0	0	ECF	0	0	0	0	0	Near Lake	Maize ,Millet, Beans
Z	Njemps	Lake	5 km		5	ន	15	0	13	25	0	0	0 12	2 0	12	0	0	ECF	0	2	0	7	0	Kakun Hill	Maize, Millet, Pawpaw
Moses Ole Napunya M N	Njemps	Lake	5 km	25	35	m	15	0	01	0	0	0	0	3 0		0	0	Tsetsefly	7	ε.	63	-	0	Near Lake	Maize, Millet, Onions
Hosea Njaufe M N	Njembs	Lake	1 km	2	70	0	5	0	-	0	0	0	0	0 0		0	0	Tsetsefly	0	0	0	0	0	Near Lake	Maize, Millet, Sorghum
Thomas Parsale M N	Njemps	Lake	5 km	25	30	0	0	0	41	0	0	0	0	6 2	•	0	0	Heart water	0	0	-	0	0	Near Lake	Maize , Millet, Beans
Nalmopoye Lempane F N	Njemps	Lake	5 km	0	Ś	0	0	0	0	0	0	0	0	0 :0	0	0	0	Heart water	0	0	0	0	0	Near Lake	Maize, Millet, Sorghum
Longorareng Tikapei M M	Njemps	Lake	5 km	8	04	30	٧.	0	21	10	0	S.	0	5 10	٥	0	0	FMD	0	0	0		0	Near Lake	Maize, Millet, Beans
Francis Lolkinii M N	Njemps	Lake	4 km	Q +	20	0	7	0	20	0	0	0	0 12	2 0	2	0	0	Tsetsefly	0	0	0	-5	0	Near Lake	Maizc, Millet, Pawpaw
Lente Thomas M N	Njemps	Lake	6 km	37	S	230	œ	0	11	0	50	_	0	9 36	22	0	0	Heart water	0	0	0	0	0	Near Lake	Maizc, Millet, Pawpaw
Leat Lepariyo F N	Njemps	Lake	6 km	20	30	14	7	0	11	\$. 9	-	0	2 0	2	m	0	Black quaver	0	0	0	0	0	Near Lake	Maize, Millet, Beans
Nongichun Lekateya M N	Njemps	Lake	6 km	3	10	0	3	0	-	0	0	0	0	0 1	0	0	0	Black quarter	2	-	0	0	0	Near Lake	Maize, Millet, Pawpaw
Maria Lenngut F N	Njemps	Lake	1 km	40	100	8	10	0	25	10	s	0	0	5 5	9	0	0	Heart water	0	0	0	0	0	Near Lake	Maize, Millet, Sorghum
William Aponyo M N	Njemps	Lake	3 km	0	15	0	0	0	0	9	0	0	0	0 0	0	0	0	Black quarter	0	0	0	0	0	Near Lake	Maize, Millet, Sorghum
Mary Lokuangwa F N	Njemps	Lake	3 km	40	9	10	0	0	16	30	90	4	9	6 3	7	0	0	Heart water	0	2	0	0	0	Near Lake	Maize, Millet, Sorghum
Lenangion Longachar F N	Njemps	Lake	3 km	9	20	0	0	0	c	0	0	0	0	0 0	0	0	0	Tsetsefly	0	0	D	-	0	Near Lake	Maize, Millet, Papaw
Julius Lesautet M M	Njemps	Lake	5 km	0	0	0	7	0	0	0	0	0	0	0 0	0	0	0	Heart water	0	0	0	0	0	Near Lake	Maize, Millet, Beans
Roda Lekisika F N	Njemps	Lake	3 km	20	30	10	30	0	10	0	0	0	0	0	0	0	0	Tsetseffy	0	0	0	m	0	Near Lake	Maize, Millet, Sorghum
	Njemps	Lake	3 km	15	9	'n	20	0	<u></u>	2	0	0		2 10	4	0	0	ECF	0	2	0	0	0	Near Lake	Maize, Millet, Beans
ĮI,	Njemps	Lake	6 km	18	25	15	13	0	∞	737	0	0	0 2	2 2	0	0	0	Black water	0	0	0	0	0	Near Lake	Maize, Millet, Papaw
	Njemps	Lake	3 km	2	0	0	0	0	0	0	ò	0	0	0 (0	0	0	FMD, ECF	0	0	0	0	0	Near Lake	Maize, Millet, Papaw
Nongerio Lemepugo M N	Njemps	Lake	5 km	16	40	4	0	0	9	10	2	7	0) 6	0	0	0	Black quarter	0	0	0	0	0	Near Lake	Maize, Millet, Beans
at M	Njemps	Lake	2 km	30	90	0	30	0	13	_	0	0	0	- 1	0	0	0	ECF	0		0	0	0	Near Lake	Maize, Millet, Papaw
×	Njemps	Lake	2 km	Ś	0	0	20	0	-	0	0	0	0	0 (0	œ		Tsetseffy	0	0	0	0	0	Near Lake	Maize "Millet, Sorghum
M	Njemps	Lake	3 km	22	40	20	o c	0	٥	4	4	0	0	3	2	0	0	ECF	0	0	0	0	0	Near Lake	Maize, Millet, Sorghum
kut M	Njemps	Lake	2 km	25	45	9	0	0	7	4		0	9 0	2 0	0	0	0	Tsetsefly	₩	2	0	0	0	Near Lake	Marze, Millet, Sorghum
F	Njemps	Lake	3 km	30	23	91	0	0	o c	7	1	0	0	0	٥	0	0	Heart water	0	-	0	0	0	Near Lake	Maize, Millet, Pawpaw
Z	Njemps	Lake	2 km	S	9	4	01	0	0	0	0	0	0	0 (0	0	0	Black quarter	0	0	0	0	0	Near Lake	Maize, Sorghum
.Lepene F	Njembs	Lake	+ km	21	78	~	0	0	6	7	0	0	0	9	0	0	0	Tsetseffy	0	2	0	0	0	Near Lake	Maize, Millet, Peas
<u></u>	Njemps	Lake		25	\$	9	0	0	12	14			0	0	0	•	0	Black water	0	3	0	0	0	Near Lake	Maize, Sorghum, Beans
ugut F	Njemps	Lake	10 km	10	0	2	0	0	s.	-	0	0	0 0	0 (0	0	0	ECF	0	0	0	0	0	Near Lake	Maize, Millet, Beans
M	Njemps	Lake	-		•~-1	0	10	0	¢	0			0	0	0	0	0	Tsetsefly	0	0	0	0	0	Near Lake	Maize, Millet, Pawpaw
<u> </u>	Njemps	Lake	7 km	25	9	8	9	0	16	∞	0		0	٥ 	0	0	0	Heart water	0	0	0	0	0	Near Lake	Maize, Millet, Beans
<u> </u>	Njemps	Lake	-	10	12	9	4	0	w	7			0	0	0	0	0	Tsetsefly	0	0	0	0	0	Near Lake	Maize, Millet, Sorghum
<u>.</u>	Njemps	I ake	6 km	10	8	6	12	0	4				0 0	2	0	0	0	ECF	-	0	0	0	0	Near Lake	Maize, Millet, Bearts
ŭ.	Njemps	Lake		9	0	01	10	0	81		01	9	0	0	0	0	0	heart water	0	0	0	0	0	Near Lake	Maize, Millet, Pawpaw
<u> -</u>	Njemps	I,ake	6 km	40	28	m	4	0	14	28	~ ~	4	0	0	0	0	0	Tsetseffy	0	-	0	0	0	Lesit Swamp	Maize, Millet, Pawpaw
s Nartiya I	Njemps	Lake	1 km	7	0 4	0	4	0	0	<u> </u>	0				0		0	ECF	0	0	0	0	0	Near Lake	Maize, Millet, Beans
₹ ;	Nicinps	Lake	. KB	7 .	٠ ;	- ;	9 ,	0 (0 {	7		0	0		0	0	0	Black quarter	0	0	0	0	0	Near Lake	Maize, Millet, Beans
W ;	Njemps	Lake		102	£ :	27	15	0	78	7	_		<u> </u>	-	0	0	0	Black quarter	0	0	0	0	0	Ncar Lake	Maize, Millet, Pawpaw
Stephen Lesrina M N	Njemps	Lake	3 Km	91	S —	0	<u></u>	0	4	<u>~</u>	_	en	_	0	•	0	10	ECF	0	0	0	0	0	Near Lake	Maize, Millet, Beans

Josephine Lenaso F 1	Njemps	Lake 1 ake	6 km	n 100	30	20	90	0 0	23	т «	e c	v 0	-00	4 0		0 0	0 0	Tsetsefly	0 0	0	0 0	vs c	0	Near Lake	Majze, Millet, Sorghum
	Niemps	Lake						· c	· =		· 0	, ,	, ,			-	> 0	Black cularter	> <	9 0	> <	> =		Near Lake	Maize, Miller, Deans
ya F	Njemps	Lake				0	0	0	m	4	0	. 0	. 0	. 0		0	0	Tsetsefly		O	, c		, c	Near Lake	Maize, Sopphim
Kitana Lekiritio M M	Njemps	Lake	5 km	n 30	0 40	12	17	0	11	12	1	0	0	7	0	0 2	0	ECF	0	0	0	0	0	Near Lake	Maize, Millet, Peas
	Njemps	Lake	4 km		5 111	0	0	0		8	0	0	0	0	0	0	0	Tsetsefly	0	0	0	0	0	Near Lake	Maíze, Sorghum
Lemusi Lenapunya M 1	Njemps	Lake	15 km	n 20	0 15	5	0	0	0	0	0	0	0			0 0	0	Black quarter	0	0	0	0	0	Near Lake	Maíze, Millet, Peas
Nokiapo F 1	Njemps	Lake	6 km	0	4	0	0	0	0	0	0	0	0	-		0	0	ECF	0	0	0	0	0	Near Lake	Maize, Sorghum
Natachu Leriongomet M 2	Njemps	Lake	5 km	S S	09	25	+	0	18	16	\$	0	0		-	1 0	0	Tsetsefly	1	0	0	0	0	Near Lake	Maize, Millet, Peas
	Njemps	Lake	6 km	n 10	9 0	2	0	0	ю	0	0	0	0	7	0	2 0	0	Heart water	0	0	0	c	0	Near Lake	Maize, Millet, Pawpaw
Symon Lenariaki M 1	Njemps	Lake	6 km	10		4	5	0	9	0	0	0	0		0	0 0	0	Black quarter	0	0	0	0	0	Near Lake	Maize, Millet, Beans
Nadutari Lesauroki F	Njemps	Lake	6 km	n 10	0 37	œ	4	0	4	0	0	0	0	-	1 (0 0	0	Heart water	_	0	0	0	0	Near Lake	Maize, Millet, Pawpaw
Esther njaule F	Njemps	Lake	6 km	n 20	0 10	=	10	0	7	6	1	0	0		0	0	0	Tsetsefly	0	0	0	0	0	Near Lake	Maize, Millet, Sorghum
M	Njemps	Lake	5 km	n 20		22	S	0	15	01	æ	0	0	7	0	0 0	0	ECF	-	0	0	0	0	Near Lake	Maize, Millet, Sorghum
Notmokuri Lechule M. 1	Njemps	Lake	2 km	n 12	_	Ś	10	0	∞	70	0	10	0	0	0	0	0	Tsetseffy	0	0	0	0	0	Near Lake	Maize, Millet, Sorghum
John Lemukut M	Njemps	Lake	20 km			71	0	0	35	0	0		0	1 (0 1	1 0	0	Heart water	0	0	0	0	0	Near Lake	Maize, Millet, Pawpaw
pisia M	Njemps	Lake	3 km	n 27		0	0	0	11	-	0	7	0	0)	0 0	0	ECF	ю	-	0	0	0	Near Lake	Maize, Millet, Beans
Wilson Katai M	Njemps	Lake	2 km	11	1 45	7	5	0	74	0	0	0	•			0 0	0	Black quarter	-	0	0	0	0	Near Lake	Maize, Millet, Sorghum
rari M	Njembs	Lake	3 km	¥	0	6	0	0	0	0	0	0	-	0	٠	0 0	0	Black quarter	0	0	0	0	0	Near Lake	Maize, Millet, Beans
	Njemps	Lake	4 km	ر و	3	0	0	0	0	0	0	0	0	-		0 0	0	heart water	0	0	0	0	0	Cut Ngoswet	Maize, Millet, Pawpaw
M	Njemps	Lake	5 km		·	0	0	0	0	0	0	0	0	<u> </u>	0	0 0	0	ECF	0	0	0	0	0	Near Lake	Maize, Millet, Pawpaw
»	Njemps	Lake			54	25	00	0	50	16	12	0	0	») (0 0	0	Tsctsefly	13	2	0	0	0	Near Lake	Maize, Millet, Beans
Σ	Njemps	Lake				7	10	'n	12	0	2	0	0			0 0	0	Heart water	2	0	0	0	0	Near Lake	Maize, Millet, Pawpaw
ii.	Njemps	Lake				ю	0	0	'n	0	0	0	0	7	•	0 0	0	ECF	٦	0	0	0	0	Near Lake	Maize, Millet, Beans
Z	Njemps	I.akc	3 km	14	4,	95	16	0	45	70	0	0	0	1 10		0 0	0	Black quarter	20	4	0	0	0	Near Lake	Maize, Millet, Pawpaw
M	Njemps	Lake				0	9	0	7	ю	. 0	0	0	0	3	0 0	0	ECF	-	0	0	0	0	Near Lake	Maize, Millet, Beans
<u> T</u>	Njemps	Lake				28	0	0	12	7	7	0	-	0	<u> </u>	0 0	0	Tsetsefly	7	0	0	0	0	Near Lake	Millet, Sorghum
Tikabei M	Njemps	Lake		•		4	12	0	=	4	-	∞	0	0	0 0	0 0	0 1	heart water	4	0	0	0	0	Near Lake	Millet, Maize, Millet
\S	Pokot	Lake				0	12	0	m	0	0	0	0	0	0	0 0	0	ECF	e0	0	0	0	0	Near I.akc	Maize, Millet, Sorghum
<u> </u>	Pokot	Lake				~	7	0	-04	0	0	0	0) 	0	0	0	Esetsefly	9	0	0	0	0	Near Lake	Maize, Millet, Sorghun
Σ	Pokot	Lake				15	10	0	12	95	4	3	0	2	0	1	0	Tsetsefly	∞	2	0	c	0	Near Lake	Maize, Sorghum
pchemor M		Lake		_	~	9	4	0	35	20	<u>~</u>	7	0 10	ى -	0	0	0	Tsetsofly	14	4	0	0	0	Near Lake	Maize, Millet, beans
≅ ≥	M Njemps K.	K. Mukutani Teles	10 km	8 9	S	56	15	0 0	23	0 ;	01 0		0 1	· ·	. C		0	rsetseffy	12	7	0	0	0	Near Lake	Millet, Sorghum, Beans
Participants 77 (M 52 F 25)	ONO	Total	ALIA	0 6	ď	37.0	30	3 4	97	77	7 2		4	4	- 1	1	0	Heart water	9	- !	0	0	0	Near Lake	Millet, Maize, Beans
1		Arona			27.42	1000	ᅪ	7	4	Ľ	-	[-		_				107	37	4	_	0		
		Avelage 4.9 Km	ν. Ε		20.7U 37.1Z 12.88	12.00	177	0.Ub		5.06	2.22 0.88		_		_	_	_		1.39	0.48	0.05		0.00		
	(Mon	(мопалну кате)						3	37.9% 1	3.6% 17.3% 11.4%	3% 11.	4% 0.0%	% 9.7%	% 5.7%	%6.9 %	6 2.3%	%0.0		5.2%	1.3%	0.4%	2.7%	%0.0		

		Area			Livest	Livestock Population	lation		No.	No. of livestock died of drought	k died of	drought		No. o.	No. of livestock died of diseases	died of d	liseases	Majo: relatio	Major problems in relation to pan	What they can do for verification of	Nursery	, Lie	Primary	uy.	Secondary	dary
Village	Population	(Km2)	Farm (acres)	Cattle	Goats	Sheep Poultry		Don.	Cattle	Goats S	Sheep Po	Poultry D	Don. C.	Cattle Goals		Sheep Poultry	ultry Don.	-		Project 1	Male Female		Male Female Male Female	male	fale Fe	nale
Rugus	179	150	300	550	050	160	200	0	280	130	280	200	0	20	02	70	30	0 1. Sh	u	1. Dig pan	22			N/A	0	
			_															2. SH		Dig trenches			N/A		~.—	
			_				-									-		3. No	3. No tractor	3.Fence pan						
																~- mm				4. Prepare road			•			
Ltebes	120	4	170	362	200	305	720	0	62	120	30	02	0	64	88	21	45	0 1. No pan		1. Grow crops	N/A	N/A	N/A	N/A	N/A	N/A
																		2. Shawith J	2. Sharing pan with Rugus							
							1	1	-				-		-			_								
Longicharo	09	9	30	100	200	<u>8</u>	100	0	0	0	0	0	0	10	٠,	7	01	0 I. Villa in mud	gers get stuck	Make boat Fishing	N/A	V/N	N/N	N/A	N/A	N/N
										~ u										3. Dig small pan						
Lekiricha	52	12	30	360	420	200	300	0	160	08	20	5	0	47	0	6	0	0 1. Farming		1. Farming	26	52	14	188	0]-
(Men)																	-	Z, Dig		Animal keeping						-
																		3. Fer	3. Fencing the pan							
Torokole	305	10	09	084	540	360	0	0	350	215	150	9	0	142	44	68	09	0 1. No pan		1. Livestock	12	30	32	28	2	Г
																			ī	keeping						
	•							•												1. Growing crops						
Total	716	182	590	1,852	2,310	1,055	820	0	852	545	480	265	0	289	169 14	141	145	0			3	65	19	\$	77	77
Mortality Rate)									46.0%	23.6% 45.5% 32.3%	5.5% 3.		0.0% 15.6%	l	7.3% 13.4% 17.7%	4% 17.	.7% 0.0%	%]

Alternatives for Verification Project in Rugus	(30th March 2000)
Alternative	

Alternatives	Reasons for pan Jocation	Reneficiaries	8	No. or	No. of Livestock in rainy season	in rainy su	ason		No. of Lr.	vestock in c	No. of Livestock in drought season		Catchemont Water	Water	Form land	Denotine Metalials	10 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	4			Cattle Goats Sheep	ats		try . Donke	y Caffl	e Goal	s Sheep	poultry Donkey Caffle Goats Sheep poultry Donkey	Donkey	area	Quality		renoung manager	who will paracipate
Lekiricha	 Central point to four Villages 	1. Rugus	300	300 1,500 3,500		700	0	36	300 60	001 009	0	٥	20 acres	Good	_	250 Acres 1. Plouty of Fencing Mmaterials around the pan	1. All Rugus, Ltepes, Lekinicha and Longicharo
	2. Far from the lake	2. Ltepes	120	2,800 5,000		100	0	300		150 100	10	0		_			2. Men will provide man power
		Lekiricha	160	2,300	8	160	80	0 2,000		250 160	88	0		_			•
		4. Longicharo 150 150	150		800	80	150	0.	100	700	80 - 150	0					
		Total	730	730 6,750 9,700 1,040	700		230 (0 2,900	1,700	30 440	0 230	0	20 Acres		250 Acres		
Rugus	1. School children and tenchors need water 1. Rugus	i. Rugus	300	350	008	150	0	S	200 60	600 100	0	0	5 acres	5 acres Muddy	Ł	150 Acres 1. To get fenoing up to 2.5 kms from pan	
	2. Near the take	Ltepes	23	200	550	25	0	36	300 15	150 100	0	0					
		3. Lekiricha 160	160	550	99	유	30	2,000		250 160	88	0		_			
		4. Lengicharo 150	150	35	200	20	35 (01 (100	700 80	150	0					
		Total	730	730 1,635 1,650		235	55 (3 2,90	2,900 1,700	00 440	230	0	5 Acres		150 Acres		
Villagers not included	I. Pan 7 Km from these Vilages	1.Noosukro Primary	тапу													u proprio de la companya de la compa	
(Torokole, Nosukro and Nkasotok)	2. Can provide labour for the pan	with 125 children	F F														
	3. Noosukm schoole need water tack		_														

1. Form Village committee to organize plan of action for the pan	2. The villagers will remove any burriers and work towards the rehabilitation of the pan	3. The pan would benefit both villagers inside and outside Lekiricha	
Conunuity proposals			

Major Activities of Verification Project in Rugus (31st March 2000)

Overall Goal	People of Rugus get enough drinking water
Project purpose	Clean water for both human and livestock
Results/Outputs	1. Rehabilitation of the pan by community
	2. The community will maintain the pan
Activities	1. Forming planning committee
	2. Measuring Pan site
	3. Clearing the bushes
	4. Digging the pan
	5. Removing of soil in the pan
	6. Removing soil and depositing far from the pan
	7. Separate human and animal drinking places
	8.Digging of channels that bring water to the pan
	9.Fencing around the pan
	10. Control soil erosion
	11. Put up toilets at home, steams and schools
	12. Digging channels to drain out dirty water from animal waste
	13. Put filter media at the community drinking points
	14. Planting life fence around the pan
	15. Planting trees and grass on the catchment area
	16. By -laws especially (Ildeket) to strictly guard the pan

Community Participation for Verification Project in Rugus (31st March 2000)

Groups		What they can do	Available day	Available time	What they cannot do
	Women	 Fencing the pan Provide security during the day Conserve soil erosion 	Saturday	8:00 am - 12:00 noon	 Cannot dig pan Cannot collect/carry soil from pan
Women Group	Village elders	Fencing the pan Cutting fencing materials Collecting fencing materials			 Cannot dig pan Cannot collect/carry soil from pan
	Men	Dig holes for posts Construct terraces to prevent soil erosion			Cannot dig pan Cannot collect/carry soil from pan
	Village elders	1. Fencing the pan	Monday	8:00 am - 12:00 noon	1. They are not able to dig a large and deep pan
	ļ	2. Dig notes for renoing3. Dig trenches3. Identify pan site	w ednesday Saturday		
Elders group	Men	 Cut fencing materials Collect fencing materials Collect soil from pan 			
	Women	1. Supply food/water to the workers (men) at work			
	Children Teachers	Transport fencing materials to pan site Can fence pan			
Men Group	Men	Clear pan site Ence the pan Clear the bush	Apr-00	8:00 am - 12:00 noon	1. Cannot dig pan
	Elders	1. Give advice to the youth on the site of pan			2. Cannot remove soil from pan
	Teachers Children	1. Only Teaching 2. Only top be in school			