JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) MINISTRY OF PUBLIC WORKS AND WATER RESOURCES ARAB REPUBLIC OF EGYPT

THE FEASIBILITY STUDY ON THE NORTH SINAI INTEGRATED RURAL DEVELOPMENT PROJECT (PHASE II) IN THE ARAB REPUBLIC OF EGYPT

FINAL REPORT



SANYU CONSULTANTS INC. PACIFIC CONSULTANTS INTERNATIONAL



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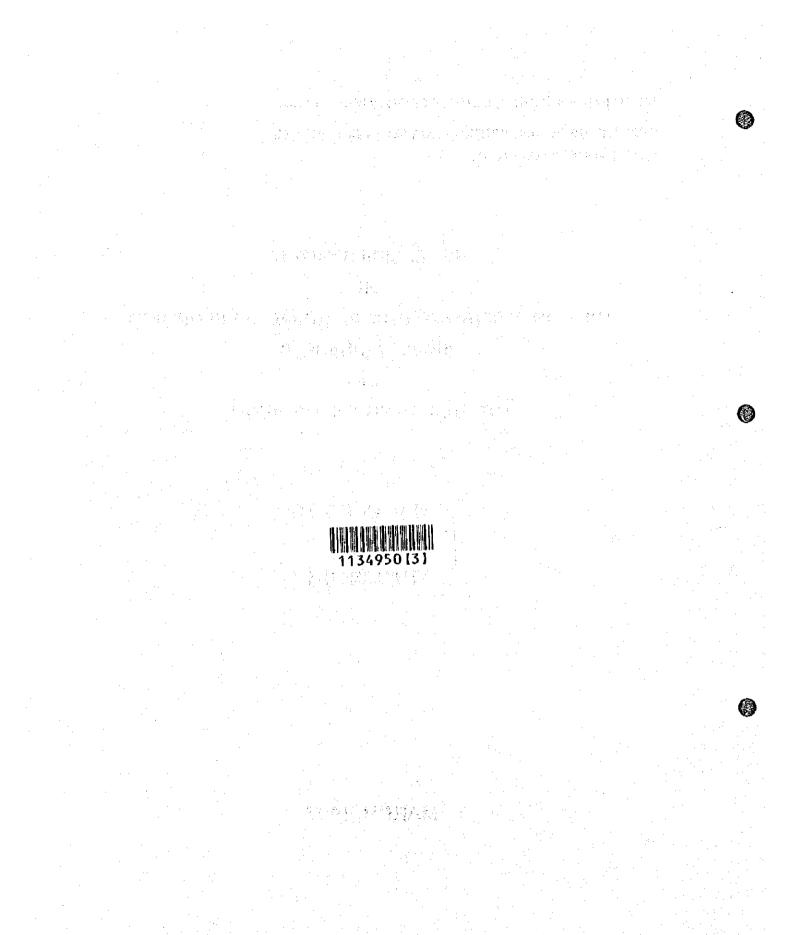
THE ARAB REPUBLIC OF EGYPT

FINAL REPORT

APPENDIX

MARCH, 1997

SANYU CONSULTANTS INC. PACIFIC CONSULTANTS INTERNATIONAL



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A-1 Unit Cost Estimation of Pipe

Unit cost of each pipe was estimated based on the following information:

Steel Pipe

- Unit price of 4,700 LE/ton was applied for the coated steal pipe based on the quotation of Mosahma Behera Company in Egypt.
- Joint welding, joint coating and installation cost were estimated based on the requirement per unit works referred to the WSP (Japan water Supply Steel Pipe Organization).
- · Wall thickness of the pipe was confirmed by the structural calculation.

<u>PCCP</u>

- Unit prices of 3,600 LE/m for pipe, 1,000 LE/piece for inland transportation and 5 % for tax are applied based on the price quotation from the Egyptian company.
- Labour and equipment requirement for the installation work are referred to standard of the MAFF, Japan.

<u>FRP</u>

- Unit price of 7,500 LE/m including taxes and inland transportation is applied to the price of the FRP pipe based on the quotation of the Egyptian company "HOBAS EGYPT S.A.E".
- Labour and equipment requirement for the installation work are referred to standard of the MAFF, Japan.

DCIP

- Unit prices of 72,167 LE/4m for pipe(CIF Port Said) and 500 LE/piece for inland transportation are applied based on the price quotation from the Japan company.
- Labour and equipment requirement for the installation work are referred to standard of the MAFF, Japan.

The estimation and calculation results are shown in the followings:

Table A-1Steel Pipe PriceTable A-2Structural Calculation of Steel PipeTable A-3PCC Pipe CostTable A-4FRP Pipe CostTable A-5DCl Pipe CostFigure A-1Bending Stress

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---|---|---|---|
| per | ton | | (TE/T) | 6. 038

 | 5. 808 | 5.807

 | 5.628 | 5.485 | 5, 369

 | 5.271 | 5.118 | 5.057 | 5.057 | 5.003
 | 4.956 | 4 914
 | 4.877 | 4.843 | 4 812 | 4. 784 | د 4. 759 | 4.736
 | 4 714 | 4.695 | 4.676 | 4.644 |
| per | meter | | (LE/m) | 734

 | 922 | 1.038

 | | |

 | | | | |
 | |
 | | | | | |
 | | | - 1.4 | 10.025 |
| | - | | E/pcs) | 4.404

 | 5. 533 | 6. 230

 | 7.547 | 8.990 | 0. 557

 | 2.724 | 6.010 | 8. 077 | 8.647 | 1. 472
 | 3. 853 | 6.358
 | 9.326 | 1.163 | 3.084 | 5. 038 | 7.175 | 9.346
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| g Cost | External | 100LE/sn | (E) | - I. 34I

 | 1. 532 | 1.724

 | 1.915 | 2.107 | 2.298

 | 2.585 | 2.873 | 3.064 | 3.160 | 3.447
 | 3. 639 | 3.830
 | 2.681 | 2.809 | 2.937 | 3.064 | 3.192 | 3 320
 | 3 447 | 3.575 | 3. 703 | 3.830 |
| Coatin | crnal | | (E) | ¥

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| Area | - | | sqn) | 3.406

 | 5. 321 | 7.236

 | 9. 151 | 1.066 | 2.981

 | 5.854 | 8. 727 | 0.642 | 1.599 | 4.472
 | 6. 387 | 8.302
 | 6.812 | S. 088 | 9.365 | 0.642 | 1.919 | 3.195
 | 14.472 | 5.749 | 1. 026 | 8. 302 |
| Coating | ternalE> | 2 | sqm) (mps | 142

 | 019 | 934

 | 812 | 689 | 567

 | 402 | 199 | 076 | 034 | 869
 | 746 | 624
 | 334 | 586 | 837 | 089 | 341 | 592
 | 844 | 095 | 6.347 | 7.573 |
| | 1
1
1 | ILE/T | | 678

 | 161 | 468

 | 084 | 769 | 523

 | 552 | 194 | 222 | 481 | 871
 | 690 | 337
 | 115 | 051 | 033 | 061 | 134 | 253
 | 417 | 627 | 883 | 33 |
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| Materia | COST | . 800LE/ | (TE) | 1.31

 | 1.71 | 1.93

 | 2.41 | 2.95 | 5

 | 4.34 | 5.63 | 6.43 | 6.63 | 7.72
 | 8.66 | 9.65
 | 7.13 | | | | |
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| · L | | Veight] | [/pcs) | 0.729

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 | 1.341 | 1.639 | 1.966

 | 2.414 | 3.128 | 3.575 | 3.687 | 4. 292
 | |
 | | 4.370 | 4. 797 | 5.244 | |
 | | | | 8.636 |
| · · · | | C. ¥ | (Kg/mC | 122

 | 159 | 621

 | 223 | 273 | 328

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 | 166 | 1093 | 1199 | 1311 | 428 | 1549
 | | 1807 | 1944 | 2159 |
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(2): The pipe fablication cost and external coating cost are estimated based on the quotation on the pipe diameter of 3.000mm.

Note (1): The costs marked with *1 to *5 and taxes are included to the pipe fablication cost.

Table A-1 Steel Pipe Price

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	Do(cn)	304.8					- 14 - 14 - 14 - 14 - 14 - 14 - 14 - 14
	t (cm)	2.9					
	Di(cm)	299.0					
D,	hax(kg/cm2)	979(Allovable	internal p	ressure)		
	MALAE/ CHIC /	21.2 (1110#11010	internar p			2 **
	8(ca)	100	150	200	300	400	500
2	B(cm)	1100	1100	1100	1100	1100	1100
	ø	30	30	30	30	30	30
	K	0. 3333	0. 3333	0. 3333	0. 3333	0. 3333	0. 3333
	μ	0. 5774	0.5774	0. 5774	0. 5774	0. 5774	0. 5774
·	Cd	0.0893	0. 1328	0. 1756	0. 2589	0. 3393	0.4170
	γ	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018
•	Cd • γ • B	0.1769	0. 2630	0. 3477	0.5126	0.6719	0.8257
	γ·11	0.1800	0.2700	0.3600	0.5400	0. 7200	0. 9000
	V. E. P	0. 1800	0.2700	0. 3600	0.5126	0.6719	0. 8257
	P(T-20)	8,000	8.000	8, 000	8, 000	8,000	8,000
	n	1	1	[1, 1]	1	. 1	\sim 1
	i .	0.50	0.50	0.45	0.35	0. 25	0.15
	¥t	0.2567	0.1429	0.0884	0.0422	0. 0238	0. 0147
	Supp. A	90	90	90	90	90	90
	Kx	0.096	0.096	0. 096	0.096	0. 096	0. 095
	Kb	0. 157	0.157	0. 157	0. 157	0.157	0. 157
· ·	e	28	28	28	28	28	28
•	R	150.95	150. 95	150.95	150.95	150. 95	150.95
11	E e e	2. 10E+06	2.10E+06	2.10E+06	2.10E+06	2. 10E+06	2. 10E+06
	1	2.0324	2.0324	2.0324	2. 0324	2. 0324	2. 0324
	Z	1. 4017	1.4017	1.4017	1. 4017	1. 4017	1.4017
	δΧ	4. 2918	4. 0577	4. 4068	5. 4532	6. 8373	8. 2596
	δ X/2R(%)	1. 4216	1. 3440	1.4597	1.8063	2. 2648	2. 7359
÷.	øb(kg/cm2)	770	728	791	978	1, 227	1, 482
÷.,	∂a(kg/cm2)	1. 400	1, 400	1, 400	1.400	1, 400	1, 400
	_	the second		•			

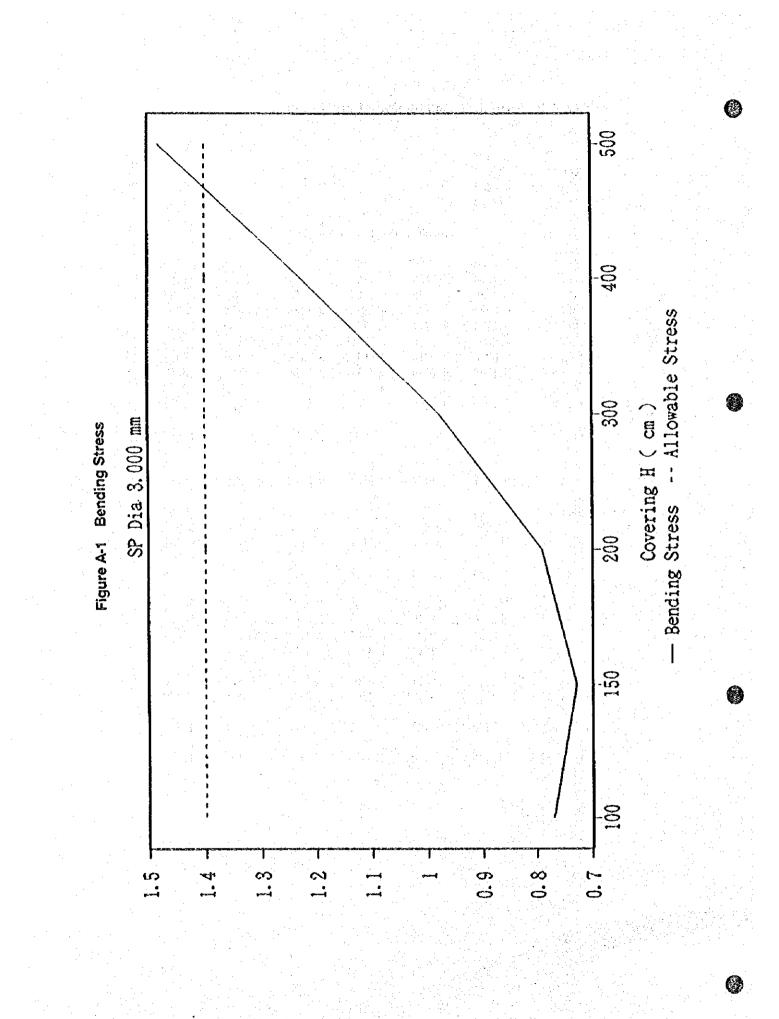


Table A-3 PCC Pipe Cost

	PCC Pipe Cost		
Diazeter	 nn	2,000	
Thickness	F.D	157	
Feight	kg/pc	16, 025	
Length	n/pc.	6. 15	
Const. Rate	m/day	19.6	
Const. Rate	pcs/day	3.2	
(1)Pipe Cost	LE/pc	24, 297	
(2)Installation	LE/pc	840	
(3)Testing	LE/pc	36	
Total	LE/pc	25.173	
Per Meter	LE/m	4. 093	

(2)Installation		· · · · · · · · · · · · · · · · · · ·	Dia. 2,000mm	
	(1,1,1,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2	Q'ty	Unit C.	Amount
Labour	4 - ¹	_	••	0.7
Scaffolding Man	No./day	2	18	36
Skilled Labour	No./day	4	18	72
Common Labour	No./đay	10	15	. j 150
Sum			1.	258
Machine	1.1	· · · ·		
Truck Crane	day	50 t	1470	1,470
Crawler Crane	day	40t	950	950
Sum		. :		2, 420
Total	. •			2, 678
per piece		3. 2pc/day		840
(3)Testing				
(a) lesting				
Connon Labour	No. /day	7	15	105
Testing Equipmen		1		200
Sun		· · · ·	•	305
per piece		8.5pc/day	r en la companya de l La companya de la comp	36

Table A-4 FRP Pipe Cost

	FRP Pipe	Cost per meter
Dianeter	 1610	2,500
Thickness	而和	
Weight	kg/pc	
Length	n/pc.	$\mathbf{A}_{\mathbf{A}} = \{\mathbf{A}_{\mathbf{A}}, \mathbf{A}_{\mathbf{A}}, \mathbf{A}_{\mathbf{A}}\}$
Const. Rate	n/day	29.6
Const. Rate	pcs/day	7.4
(1)Pipe Cost	LE/pc	29.600
(2)Installation	LE/pc	2 11 150 1997 - 160a
(3)Testing	EE/pc	1
Total	LE/pc	29.786
Per Meter	LE/m	7, 447

(2)Installation	n de la de la Referencia		÷	n ta di sa La siyat		
			Q' (ty	Unit C.	Amount
Labour	х.				and the second	
Scaffolding Man	No. /day	7.	1 - 14 - 14 - 14 - 14 - 14 - 14 - 14 -	2	18	36
Skilled Labour	No. /day	1		4	18	72
Cosmon Labour				9	15	135
Sum						243
Machine						
Truck Crane	📜 day	:	1 1	5t	400	400
Crawler Crane	day	· 11	1	6t	470	470
Sun	- 10 - E	- ·			· · ·	870
Total						1, 113
per piece		9. A	7. 4pc/	day	r , and r^{2}	150

(3)Testing

Connon Labour	No./day	7		15	2.5	105	
Testing Equipten	No. /day	1	1		4	200	
Sum			i.			305	
per piece		8. Spc/day				36	

Table A-5 DCI Pipe Cost

Dianeter		2	. 600]	
Thickness	. DA	-	157		
Weight	kg/pc	an an leiste	9. 21		
Length	m/pc.		4.00		lenge and the state of the stat
Const. Rate	m/day		12.0		
Const. Rate	pcs/day		3.0		
(1)Pipe Cost	LE/pc	72	2, 167		la de la completamenta e
2)Installation	LE/pc		893		
(3)Testing	LE/pc		36		
Total	LE/pc		3, 096	1.1	n an the transmission of the
Per Meter	LE/m	18	<u>3, 274</u>	· · ·]

den songe detter song

(2)Installation		1	Dia. 2, 600mm					
(0)	· .	Q' ty	Unit C.	Amount				
Labour								
Scaffolding Man	No. /day	2	18	36				
Skilled Labour	No. /day	- 1 - 1 - 1 - 1	18	72	· ·			
Connon Labour	No. /day	10	15	150	a da ta Sa			
Sum				258	an a			
Nachine								
Truck Crane	day	50 t	1470	1, 470				
Crawler Crane	day	101 - 40 1	950	950				
0				2, 420	1.1			
		i di di kala di seri di Seri di seri di		2, 678				
Total		2 Ana /day		893				
per piece	1	3. Opc/day		000				

(3)Testing

an de la tar de la

ç

3)Testing						· . 	
Common Labour	No. /đay	1		15	105	e do duta Nati	
Testing Equipmen	No./day	철학 승 문 🛾	Projets		200		
Sum					305		÷
per piece	n de la composition Al composition de la c	8. 5pc/d a	ay		36		

· 1111-1111-114

A-2 Flow Velocity Analysis of Pipeline

The most economical velocity of the pipeline will minimize the total amount of the pipeline construction and pump operation.

The analysis was made in case of ALT-37 to 40 on the route of B and C-2, which were expected to be the most promising route, with the pipeline length of 12.6km. In the analysis, the capital recovery factor is adopted to the annual cost calculation of the pipeline and pumping station constructions. Total annual cost is obtained by the sum of annual pump operation cost and construction cost.

The capital recovery factor(C.R.F) and annual construction cost are calculated as follows:

C.R.F =
$$\frac{i(1+i)n}{(1+i)n-1}$$

Annual Construction Cost = C.R.F x (Construction Cost) Total Annual Cost = Annual Construction Cost + Operation Cost

Where,	i : Interest rate, 12 % is as	sumed.	۰. بر به	
· .	n : Useful lives in year,	pipeline	i Alt	50 yr
÷ .		pumping sta	tion	25 yr

The calculation results are as follows:

Table A-6 : ALT-37, Steel Pipe Dia. 3,000 mmFigure A-2 : ALT-37, Optimum velocity of Steel Pipe

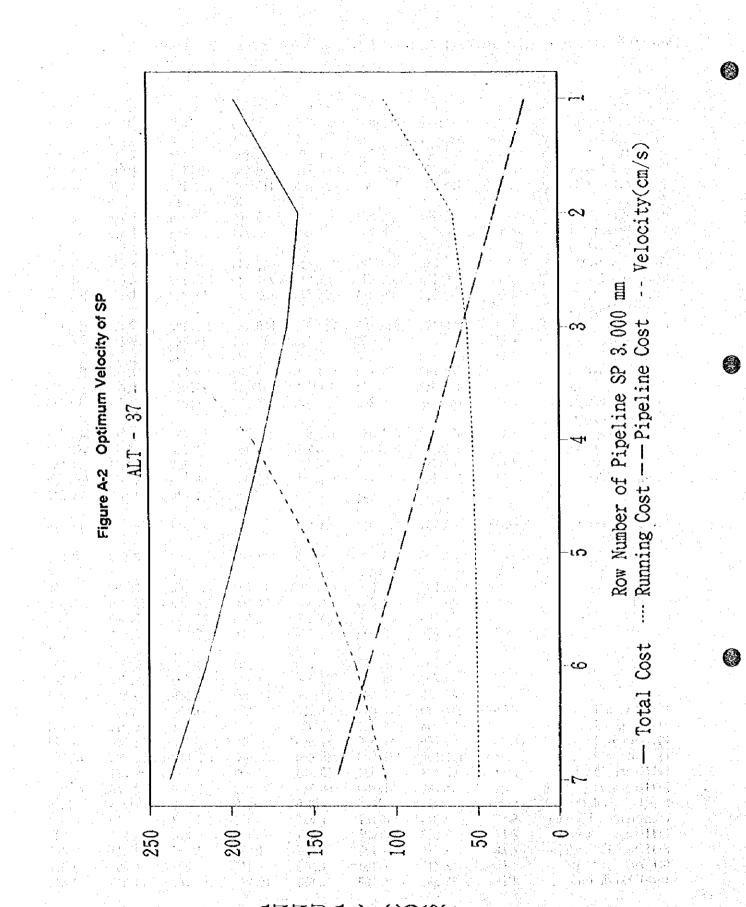
Table A-6

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A-6 Flow Velocity Analysis of the Steel Pipe Dia. 3,000 mm (ALT-37 : Route C-2)

and the second								
Item	🕆 Unit 👘		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1					
(1) Electric Cost		1.1						•
Pipe Diameter	n n	3, 000	3,000	3, 000	3,000	3, 000	3, 000	3, 000
Pipeline Length	Km/Row	12.6	12.6	12.6	12.6	12.6	12.6	12.6
No. of Pipeline	Row	7	6	5	- 1	3	2	.1
Velocity in the Pipe	m/S	1.064	1.242	1. 490	1.862	2.483	3.725	7.450
Pipe llead Loss(C=130)	л.	3. 439	4. 575	6. 410	9.685	16. 491	34.916	125. 871
Total Pump Lift	N	109.069	110.205	112.040	115. 315	122. 121	140. 546	231.501
No. of Unit	No.	10	10	10	10	10	. 10	_. 10
Discharge/Unit	#3/S	5. 266	5.266	5.266	5.266	5. 266	5.266	5. 266
Notor Output	k#/No.	6, 880	6, 951	7,067	7, 274	7, 703	8, 865	14.602
Water Quantity/Yr	MCN/Yr	690	690	690	690	690	690	690
Operation Hr/Yr/No	Hr/Yr/No	3, 640	3, 640	3,640	3, 640	3,640	3, 640	3, 640
Elec. Consump.	NVH	250, 395	253.001	257, 214	261.731	280, 359	322, 656	531, 466
Elec. Cost	N, LE	49.954	50.474	51.314	52.814	55. 932	64. 370	106.027
(2) Pipeline Cost								
Pipe Cost(11, 910LE/m)	M. LE	1,050.462	900. 396	750. 330	600.261	450. 198	300.132	150.066
Earth Work	N. LE	26. 583	24. 129	21.675	19. 221	16.767	14.313	0.842
Others (5%)	N. LE	53.852	46. 226	38.600	30. 974	23. 348	15.722	7.545
Pipeline Cost	N. LE	1, 130. 898	970. 752	810.606	650.460	490.314	330. 168	158.453
C. R. F(N=50, i=12%)		0. 12042	0. 12042	0. 12042	0.12042	0.12012	0.12042	0. 12042
Pipeline Annu. Cost	M. LE	136. 179	116.895	97.610	78.326	59.042	39.758	19.080
(3) Pump Station		1000 110						
Pump Station	N, LE	405. 573	374. 980	377. 827	382.909	393.467	422.048	563.147
C. R. F(N=25, i=12%)	M, 20	0. 12750	0. 12750	0. 12750	0. 12750	0. 12750	0. 12750	0. 12750
PS Annual Cost	X. LE	51.711	47.810	48.173	48. 821	50.167	53.811	71.801
(4) Total Cost	N, LE	237.843	215.178	197.098	179.961	165.140	157.939 🗄	196. 909
Ratio		1.440	1.303	1.248	1. 139	1.046	1.000	1.247
	$(1,1) \in \mathbb{R}^{n}$							
Pipeline Unit Cost	N. LE/Xn	89.754	77.044	64. 334	51.624	38.914	26. 204	12.576
Earth Work			a Tang tanàn amin'ny faritr'i Ang		di seri	•		· ·
DI ANTESCO	i n	3.000	3.000	3.000	3.000	3.000	3.000	. 3.000
and the NI of the second	Nos.	4	3	3	2	1	1 - E - E - L -	. 0
Bl	M	25. 500	19. 500	19.500	13.500	7.500	7. 500	0.000
C1	n R n	36. 300	30.300	30. 300	24. 300	18, 300	18.300	0.000
¥1	ខ	43. 500	37.500	37.500	31.500	25.500	25. 500	0.000
D2	រា	3.000	3.000	3.000	3.000	3.000	3. 000	0.000
N2	Nos.	3	3	2	2	2	- <u>-</u> - - 1 -	. I
B2	л	19.500	19.500	13. 500	13. 500	13.500	7.500	0.000
C2	n .	30. 300	30.300	24. 300	24. 300	24.300	18.300	1.800
¥2	n	37. 500	37.500	31. 500	31.500	31 . 500	25.500	9.000
Excavation 1	cum/m	207.000	171.000	171.000	135.000	99.000	99.000	0.000
Fill(manu) 1	cun/n	82.966	68. 434	68. 434	53.903	39. 371	39. 371	0.000
Fill(machi)1	cun/n	95. 760	81.360	81.360	66.960	52.560	52.560	0.000
Excavation 2	cum/m	171.000	171.000	135.000	135.000	135.000	99.000	13. 500
Fill(manu) 2	cum/m	68. 434	68.434	53.903	53. 903	53.903	39. 371	0. 540
Fill(machi)2	cum/m	81.360	81.360	66.960	66.960	66. 960	52.560	12.960
Pipeline Length	Km/Row	12.6	12.6	12.6	12.6	12.6	12.6	12.6
Excavation 1.9/cum	N. LE	9.049	8. 187	7.326	6. 464	5. 602	4. 740	0.323
Fill(manu) 5.0/cum	N. LE	9. 538	8.623	7,707	6. 792), 4. 961	0.034
Fill(machi) 2.5/cum	N. LE	5. 579	5. 126	4.672	4.218	3. 765	- 3. 311	0.408
Others 10%	N. LE	2. 417	2.194	1.970	1.747	1.524	1.301	0.077
Total Earth Work	31.K	26. 583	24. 129	21.675	19. 221	16.767	14. 313	0.842
n an the day a feature of the		and the second second		1.1.1.1.1	1			



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A-3 Design of Box Culvert Canal

The flow velocity in the culvert is designed with 1.2 times as fast as that of the open canal upstream to prevent from the sedimentation of sand.

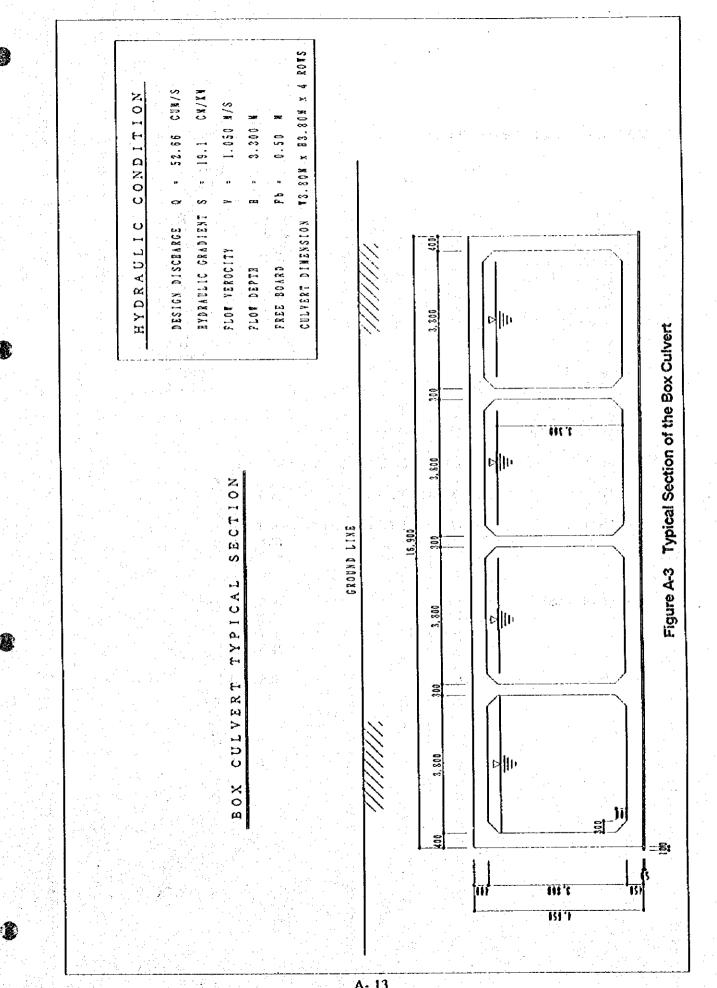
The water depth of the culvert is designed the same with that of the open canal upstream and 4 rows of the box culvert type are adopted.

Results of the design are shown as follows:

Table A-7 : Hydraulic Dimension of the Proposed Open Canal and Box CulvertFigure A-3 : Typical Section of the Box CulvertTable A-8 : Box Culvert Unit Cost

· · · · ·			10 A	
			Open Canal	Box Culvert
		$ _{\mathcal{L}_{2}} = \int_{\mathcal{L}_{2}} _{\mathcal{L}_{2}} dr = \int_{\mathcal{L}_{2}} _{\mathcal{L}_{2}} dr$		
Water Depth	1 h - 1	n	3. 305	3.300
Bottom Width	B	۲	12.000	3.800
Side Slope	1:m	'	2.000	0.000
Flow Area	er el X orice.	SQB	61.506	je na se je se na se da 12.540 – É
Wetted Perimeter	l P	<u>n</u>	26.780	10.400
Hydraulic Depth	· R .	10	2.297	1. 206
Nanning "n"	3/n		55.000	67.000
Bed Stope	1 I		8.00E-05	
Velocity	N N	n/s	0.856	1.050
Velo, Ratio	Vcu1/Vbo:	C	(1.000)	1. 226
Discharge	90	cun/s	52.670	1 Martin 18 19 13, 165 m
Design Discharge	Q	cun/s	52.660	a 1848 y 11 13. 165 x 4
Critical F. Dep.	Dc	n ·	1.170	1.069
Critical F. Vel.	Ve	m/s	3. 139	3. 240
Max. Velocity	2/3¥c	m/s	2.092	2. 160
Free Board	Fb	jî,	0.350	0. 500
Culvert Beight	ll=h+Fb	n	-	3.800
Culvert Dimens.	BxIIxN		12mx3. 65m	3. 8mx3. 8m
			÷	x 4

Table A-7 Hydraulic Dimension of the Proposed Open Canal & Box Culvert



3

Table A-8 Box Culvert Unit Cost

and the second				and the second
Iten	Unit	Unit Cost (LE)	Q° ty	Anount (LE)
		(uc)		(16)
and the second			ha an taga sa karatan s	化二氯化物 医手足性外丛
Excavation	cun	2.15	95.7	205.8
Backfill	cum	2.60	56.0	145.6
Embankment	cum	2.60	99.8	259.5
Soil Transportation	CUM	3. 15	99.8	314.4
Gravel & Soil Mixture	CUM	16.00	2.5	40.0
Mortared Riprap(0.3m)	cum	80.00	6.0	480.0
Reinforced Conc.	cum	850	21.55	18, 317. 5
Ke-bar(80 kg cum)	ton	(3, 000)	(1. 12)	(5, 160. 0)
Lean Conc.	CUB	200	0.86	172.0
Others	📜 L. S.	20%		3, 986. 9
Total per meter	LE/J	n ji kul		23, 921.6
Say	LE/r	8 5-1 L L		24, 000. 0
and a second		2		

Quantity Calculation

Excavation	1/2x(10.45+21.45)x6.0 x2 x 0.5m	: =	95.7 cum
Backfill	(191. 4-8. 45x4. 70x2)x 0. 5	=	56.0 cum
Embänkment	((20144)/2x6.0-4.7x16.9)x 0.5 (49x6.0/2) x 0.5 Sum	· · ·	26.3 cum 73.5 cum 99.8 cum
Reinforced Conc.	16. 90x4. 65 3. 80x3. 80x4 1/2x0. 3x0. 3x4x4 Sum	.=.	78.59 -57.76 0.72 21.55 cum
Lean Conc.	0. 05×17. 10	· F	0.86 cum

Λ- 14

A-4 Alternative : DWL of 100 m

Table A-9 Constructi	ion and O &	N Cost of	the Case	100 m 🦂 👌
1. Construction Cost			Cost	
No.7 Pumping Station		· · ·		
Total llead	n -	105.32		
Construction Cost	N. LE		367.40	
Open Canal				. · ·
Length	Kn	22.00		
Construction Cost	N. LE		110.00	· . :
		•		· · · ·
Box Culvert			•	
Length Construction Cost	Kro M. LE	7.80	187.20	
Construction cost	M. LC	· · · ·	101.20	1. A
Pipeline				
Length	Km	12.60		11 No.
Construction Cost	M. LE		650.46	
Booster Pumping Station			e Se se se s	
Construction Cost	M. LE	•	119.65	·
			1100.00	
Electric Transmission Line	an a	· .		
Length	Kn	4.00	0.00	
Construction Cost	M. LE		2. 20	an a
Total			. * .	
Canal Length	Ka	42.40		
Construction Cost	N. LE		1, 436. 91	
2. Operation & Maintenance Co	et la la			
No.7 Pumping Station	an an an an an			
Tótal Head	10 	105.32		
Total Dischargec Total Notor Output	m3/s KW	52.66 66,430.57	e generation de la companya de la compan	a da da
Annual Discharge Amount	NCN	690.00		t i se se se se
Annual Operation Hour	Hr	3, 639. 70		
Annual Operation Cost	1000LE		45, 939, 6	an an taon 1970 (na sain) Taon
Annual Xaintenance Cost	1000LE		2, 204. 4 87. 6	
Annual Operator Cost Annual Total 0 & X Cost	1000LE			1 A.
	- 1000LE	1		나는 말 같이 있었다.
	1000LE		48. 231. 6	
Canal Naintenance Cost	1000LE			
Canal Maintenance Cost Pipeline	1000LE		48. 231. 6 520. 4	
Canal Maintenance Cost Pipeline Open Canal	1000LE 1000LE		48. 231. 6 520. 4 220. 0	
Canal Maintenance Cost Pipeline Open Canal Box Culvert	1000LE 1000LE 1000LE		48. 231. 6 520. 4 220. 0 149. 8	
Canal Maintenance Cost Pipeline Open Canal Box Culvert Patrol & Inspection	1000LE 1000LE 1000LE 1000LE		48. 231. 6 520. 4 220. 0 149. 8 69. 6	
Canal Maintenance Cost Pipeline Open Canal Box Culvert Patrol & Inspection Total	1000LE 1000LE 1000LE		48. 231. 6 520. 4 220. 0 149. 8	
Canal Maintenance Cost Pipeline Open Canal Box Culvert Patrol & Inspection Total Electric Transmuission	1000LE 1000LE 1000LE 1000LE 1000LE		48. 231. 6 520. 4 220. 0 149. 8 69. 6	
Canal Maintenance Cost Pipeline Open Canal Box Culvert Patrol & Inspection Total	1000LE 1000LE 1000LE 1000LE		48. 231. 6 520. 4 220. 0 149. 8 69. 6	
Canal Maintenance Cost Pipeline Open Canal Box Culvert Patrol & Inspection Total Electric Transmission Maintenance Cost	1000LE 1000LE 1000LE 1000LE 1000LE		48. 231. 6 520. 4 220. 0 149. 8 69. 6	
Canal Maintenance Cost Pipeline Open Canal Box Culvert Patrol & Inspection Total Electric Transmission Maintenance Cost Booster Punping Station	1000LE 1000LE 1000LE 1000LE 1000LE 1000LE		48. 231. 6 520. 4 220. 0 149. 8 69. 6 959. 8 1. 8	
Canal Maintenance Cost Pipeline Open Canal Box Culvert Patrol & Inspection Total Electric Transmission Maintenance Cost Booster Punping Station Annual Operation Cost Annual Maintenance Cost	1000LE 1000LE 1000LE 1000LE 1000LE		48. 231. 6 520. 4 220. 0 149. 8 69. 6	
Canal Maintenance Cost Pipeline Open Canal Box Culvert Patrol & Inspection Total Electric Transmission Maintenance Cost Booster Punping Station Annual Operation Cost	1000LE 1000LE 1000LE 1000LE 1000LE 1000LE		48. 231. 6 520. 4 220. 0 149. 8 69. 6 959. 8 1. 8 2, 294. 0	

Total Operation & Maintenance Cost

52, 275. 1

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1000LE A- 15

Discharge cum/s 0.718 13.224 13 Suction %L m 96.95 96.86 95 Pipeline n 113.50 113.50 Pipeline kn 0.4 1.0 Length kn 0.4 1.0 Pipeline S.P. S.P. Diameter mm 900 2.000 Raw Nos. 1 3 Velocity m/s 1.128 1.403 Loss Head n 0.198 0.732 Pump n 0.498 0.732 Total Pump Head n 18.548 18.872 Number of Unit Nos. 2 + (1) 4 + (1) Bore mm 400 x 350 1.200 x 900 Pump Efficiency % 76 86 Total Notor Output NW 188.8 3.128.2 3.9 Pump Efficiency % 76 86 11.385 12 Annual Op. Cost An	Description	Unit	No. 1 BP. ST	No. 2 BP. ST	TOTAL
Location kn 4.5 14.0 Command Area Fcddan 1.840 33.900 35 Discharge cum/s 0.718 13.224 13 Suction NL n 96.95 96.86 13 Pischarge NL m 113.50 113.50 13 Pipe n 8.9 8.7 8.7 Diancter nm 900 2.000 8.7 Raw Xos. 1 3 7 Velocity n/s 1.128 1.403 7 Loss Head n 16.55 16.61 7 Loss Head in PL n 0.498 0.732 7 Number of Unit Nos. 2 + (1) 4 + (1) 7 Bore nm 16.55 1.200 x 900 86 Total Notor Output XW 188.8 3.128.2 3.3 Number of Unit Nos. 2 + (1) 4 + (1) 1 Bore nm <td< td=""><td></td><td></td><td></td><td>·····</td><td></td></td<>				·····	
Command Area Discharge Feddan cum/s 1.810 33.900 35 Discharge cum/s 0.718 13.224 13 Suction WL m 96.95 96.86 Discharge WL m 113.50 113.50 Pipeline m 113.50 113.50 Length km 0.4 1.0 Pipe S.P. S.P. Diameter m 900 2.000 Kaw Nos. 1 3 Velocity m/s 1.128 1.403 Loss Head n 0.498 0.732 Pump Metual Head n 1.5 1.5 Loss Head in PS m 1.5 1.200 x 900 Pump Blead n 18.548 18.872 Number of Unit Nos. 2 + (1) 4 + (1) Bore m 18.548 3.128.2 3.3 Pump Bouse mx m 25 x 8.0 52 x 18.0 52 x 18.0 El	(1) Dimension				
Discharge cum/s 0.718 13.224 13 Suction NL m 96.95 96.86 99 Discharge NL m 113.50 113.50 Pipeline km 0.4 1.0 Length km 0.4 1.0 Pipe S.P. S.P. Dianeter mm 900 2.000 Raw Nos. 1 3 Velocity m/s 1.128 1.403 Loss Head n 0.198 0.732 Pump m 1.5 1.5 Loss Head in PL n 0.498 0.732 Yump (Actual Head n 18.548 18.872 Number of Unit Nos. 2 + (1) 4 + (1) Bere mm 400.350 1.200 x 900 Pump Efficiency % 76 86 Total Motor Output NW 188.8 3.128.2 3.9 Pump Efficiency % 76 86 <td>Location</td> <td>km</td> <td>4.5</td> <td>14.0</td> <td></td>	Location	km	4.5	14.0	
Discharge cum/s 0.718 13.224 13 Suction %L m 96.95 96.86 99 Discharge %L m 113.50 113.50 Pipeline m 113.50 113.50 Pipeline S.P. S.P. S.P. Diameter mm 900 2.000 Rav Nos. 1 3 Velocity m/s 1.128 1.403 Loss Head n 0.198 0.732 Pump Actual Head n 1.5 1.5 Loss Head in PL n 0.498 0.732 Yump (Actual Head n 1.8.548 18.872 Number of Unit Nos. 2 + (1) 4 + (1) Bore mm 400.350 1.200 x 900 Pump Efficiency % 76 86 Total Motor Output NW 188.8 3.128.2 3.9 Pump Efficiency % 76 86 11.385 12 <td>Connand Area</td> <td>Feddan</td> <td>1, 840</td> <td>33, 900</td> <td>35, 740</td>	Connand Area	Feddan	1, 840	33, 900	35, 740
Discharge NL m 113.50 113.50 Pipeline kn 0.4 1.0 Length kn 0.4 1.0 Pipe S.P. S.P. S.P. Diameter mm 900 2.000 Raw Nos. 1 3 Velocity m/s 1.128 1.403 Loss Head n 0.198 0.732 Pump Actual Head n 1.5 1.5 Loss Head in PL n 0.498 0.732 Total Pump Head n 18.548 18.872 Number of Unit Nos. 2 + (1) 4 + (1) Bore mm 400 x 350 1.200 x 900 Pump House n x m 25 x 8.0 52 x 18.0 Elec. Transmis.Line Km (Included to the Yater Conveyance Canal (2) Annual Op. Cost NWII 687 11.385 12 Annual Op. Cost NWII 687 11.385 12 Annual Op.					13. 942
Discharge NL m 113.50 113.50 Pipeline kn 0.4 1.0 Length kn 0.4 1.0 Pipe S.P. S.P. S.P. Dianeter mm 900 2.000 Rax Nos. 1 3 Velocity m/s 1.128 1.403 Loss Head n 0.198 0.732 Pump Actual Head n 1.5 1.5 Loss Head in PL n 0.498 0.732 Totat Pump Head n 18.548 18.872 Number of Unit Nos. 2 + (1) 4 + (1) Bore mix m 200 x 900 900 Pump House n x m 25 x 8.0 52 x 18.0 12 Elec. Transmis. Line Km (Included to the Vater Conveyance Canal (2) Annual Op. Cost NWII 687 11.385 12 Annual Op. Cost NWII 687 11.385 12	a m		08.05	08-60	
Pipeline km 0.4 1.0 Length km 0.4 1.0 Pipe S.P. S.P. S.P. Diancter mm 900 2.000 Kaw Nos. 1 3 Velocity m/s 1.128 1.403 Loss Head n 0.498 0.732 Pump Actual Head n 16.55 16.61 Loss Head in PS m 1.5 1.5 1.5 Loss Head in PL n 0.498 0.732 1.001 Total Pump Head n 18.548 18.872 Number of Unit Nos. 2 + (1) 4 + (1) Bore Em 400 x 350 1.200 x 900 Pump Efficiency % 76 86 Total Notor Output KW 188.8 3.128.2 3.3 Pump Efficiency % 76 86 3.40 Total Notor Output KW 188.8 3.128.2 3.3 Pump Effic					ng shari siyati gi bari
Length kn 0.4 1.0 Pipe mm 900 2,000 Raw Nos. 1 3 Velocity m/s 1.128 1.403 Loss Head m 0.498 0.732 Pump n 1.5 1.5 Actual licad m 1.655 16.64 Loss Head in PL n 0.498 0.732 Total Pump Head n 18.548 18.872 Number of Unit Nos. 2 + (1) 4 + (1) Bore mm 400 x 350 1.200 x 900 Pump Efficiency % 76 86 Total Notor Output NW 188.8 3.128.2 3.3 Pump House m x m 25 x 8.0 52 x 18.0 1 Elec. Transmis. Line Km (Included to the Water Conveyance Cana) (2) Annual Op. Cost NWH 687 11.385 12 Annual Op. Cost NWH 687 11.385 12		aat i	110. 30	115.50	
Pipe S. P. S. P. S. P. Diameter mm 900 2.000 Raw Nos. 1 3 Velocity m/s 1.128 1.403 Loss Head m 0.498 0.732 Pump Actual Head m 16.55 16.64 Loss Head in PS m 1.5 1.5 1.5 Loss Head in PL n 0.498 0.732 1043 Yump House n 18.548 18.872 1200 x 900 Pump Efficiency % 76 86 3.3 Yump House n x m 25 x 8.0 52 x 18.0 86 Elec. Transmis. Line Km (Included to the Water Conceyance Canal (2) Annual Op. Cost MCN 9.4 173.3 1 Annual Op. Cost 1000LE 131 2.163 15 Annual Op. Cost 1000LE 131 2.163 15 Maintenance Cost 1000LE 1290 6.774 <td< td=""><td></td><td>kn</td><td>0.4</td><td>1.0</td><td>1.4</td></td<>		kn	0.4	1.0	1.4
Raw Nos. 1 3 Velocity m/s 1.128 1.403 Loss Head n 0.498 0.732 Pump n 0.498 0.732 Pump n 1.5 1.5 Actual Head n 1.55 1.6.64 Loss Head in PL n 0.498 0.732 Total Pump Head n 1.5.54 1.5 Loss Head in PL n 0.498 0.732 Total Pump Head n 18.548 18.872 Number of Unit Nos. 2 + (1) 4 + (1) Bore mm 400 x 350 1.200 x 900 Pump Efficiency X 76 86 Total Notor Output NW 188.8 3.128.2 3.3 Pump House m x 25 x 8.0 52 x 18.0 14 Annual Quantity NCN 9.4 173.3 1 Annual Quantity NCN 9.4 173.3 1 An				S. P.	
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Table A-10 Booster Pump Facility Cost in the Study Area for WL 100m

(7) Accorodation Cost(20%) 0.36 1.24	NAME No. of Unit Nos. Total Lift m		BP No. 1 H 2+(1) H = 18.6 m	BP No. 2 B 41(1) H = 18.9 m 18.00
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(1) Conc. 850 0.93 3.30 (2) Earth WorksExca. 2.15 0.01 0.05 Backfill 2.60 0.01 0.02 Disposal 3.15 0.01 0.04 Embankment/Grading 16.00 0.08 0.29 (3) Foundation 9.000 0.47 1.45 (4) Sun 1.50 5.15 (5) Others(20%) 0.36 1.24 (6) Sub-total 1.81 6.18 (7) Accornodation Cost(20%) 0.36 1.24			53	161
(1) Conc. 0.00 0.00 0.00 (2) Earth WorksExca. 2.15 0.01 0.05 Backfill 2.60 0.01 0.02 Disposal 3.15 0.01 0.04 Embankment/Grading 16.00 0.08 0.29 (3) Foundation 9.000 0.47 1.45 (4) Sun 1.50 5.15 (5) Others(20%) 0.30 1.03 (6) Sub-total 1.81 6.18 (7) Accornodation Cost(20%) 0.36 1.24	Cost Estimation(M.LE)		· · ·
Exca.2. 150. 010. 05Backfill2. 600. 010. 02Disposal3. 150. 010. 04Embankment/Grading 16. 000. 080. 29(3) Foundation9, 0000. 471. 45(4) Sum1. 505. 15(5) Others(20%)0. 301. 03(6) Sub-total1. 816. 18(7) Accornodation Cost(20%)0. 361. 24		850	0. 93	3. 30
Backfill 2.60 0.01 0.02 Disposal 3.15 0.01 0.04 Embankment/Grading 16.00 0.08 0.29 (3) Foundation 9.000 0.47 1.45 (4) Sum 1.50 5.15 (5) Others(20%) 0.30 1.03 (6) Sub-total 1.81 6.18 (7) Accomodation Cost(20%) 0.36 1.24		2. 15	0.01	0.05
Disposal 3. 15 0. 01 0. 04 Embankment/Grading 16. 00 0. 08 0. 29 (3) Foundation 9. 000 0. 47 1. 45 (4) Sum 1. 50 5. 15 (5) Others(20%) 0. 30 1. 03 (6) Sub-total 1. 81 6. 18 (7) Accornodation Cost(20%) 0. 36 1. 24				
Calculation9,0000.471.45(3) Foundation9,000 0.47 1.45(4) Sun1.505.15(5) Others(20%) 0.30 1.03(6) Sub-total1.816.18(7) Accorrodation Cost(20%) 0.36 1.24				· · · · ·
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(4) State 0.30 1.03 (5) Others(20%) 0.30 1.03 (6) Sub-total 1.81 6.18 (7) Accornodation Cost(20%) 0.36 1.24	(3) Foundation	9, 000	0. 47	1. 45
(5) Others(20%) 0. 30 1. 03 (6) Sub-total 1. 81 6. 18 (7) Accornodation Cost(20%) 0. 36 1. 24	(A) Sua	an an taon 1990. Taona	1. 50	5. 15
(7) Accorodation Cost(20%) 0.36 1.24				
(7) Accorodation Cost(20%) 0.36 1.24	(B) Sub-total		1.81	6. 18
	(7) Accordation for	st(20%)		
				·

Table A-11 Civil Works for Booster Pump (Case 100 m)

	1			
lten	Unit	No. 1 BP. ST	No. 2 BP. ST	TOTAL
Operators (4ps3shft/d/XS)	1000LE	87.6	87.6	175. 2
BPS Naint. (15%/25Yr)	1000LE	102.6	486. 6	589. 1
Pipeline (4%/50Yr)	1000LE	0.4	12.5	12.9
Reservoir (10% 50%r)	1000LE	0.6	10.2	<u> </u>
Total	1000LE	191.1	596.8	787.9

Table A-12 Annual Maintenance Cost of the Booster Pump Facilities

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Table A-13 Calculation of Net Present Value (ALT-100m)

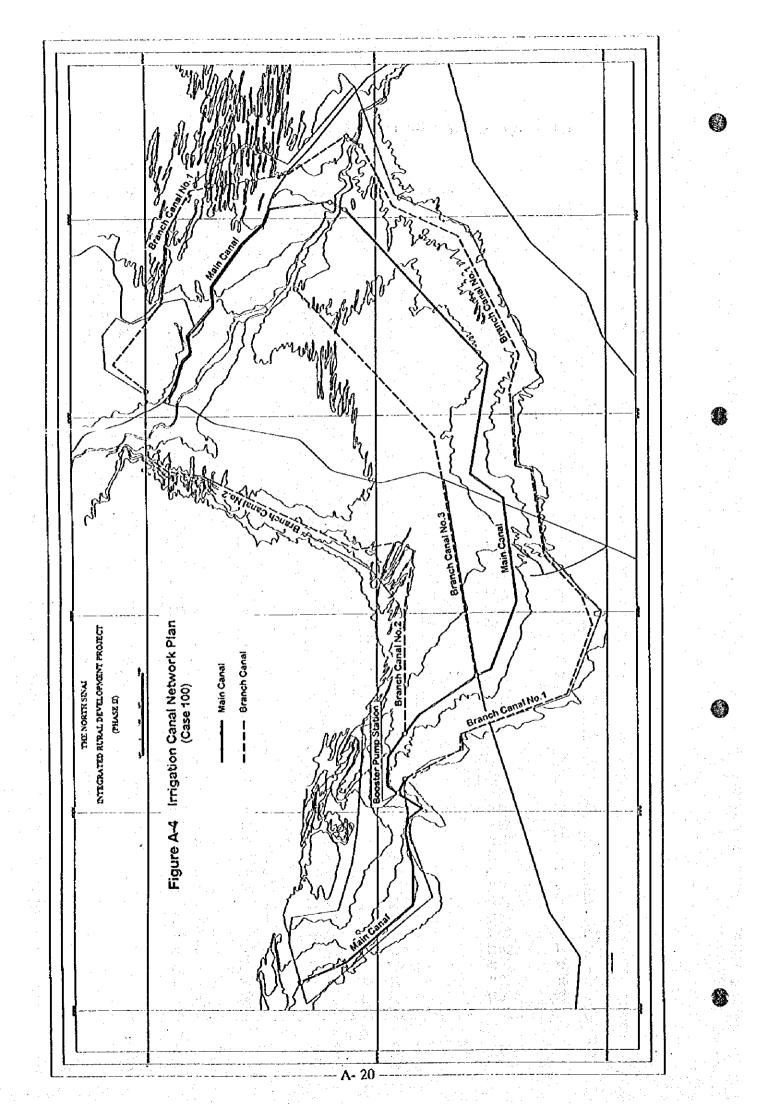
ALT - 100m	n de la composición d En esta de la composición de la composic						(Unit: M.LE)
	ear		Cost		Discount	Net	
Proj.	A. D.	invest.	Operat.	Total	Rate	Present	Remarks
Year		Cost	Cost	Cost		Value	
		1, 436, 91	52.28		Interest	1 = 12%	
1	1998	215.54		215.54	1.000	215. 537	Cx15%
2	1999	431.07		431.07	0.893	384.887	Cx30%
3	2000	431.07		431.07	0.797	343.649	Cx30%
4	2001	359.23		359.23	0. 712	255.691	Cx25%
5	2002		52.28	52.28	0.636	33. 225	ONx100%
6	2003		52.28	52.28	0.567	29.665	OXx100%
7	2004		52.28	52.28	0.507	26. 487	OXx100%
8 /	2005		52.28	52.28	0.452	23. 649	ONx100%
9	2006		52.28	52.28	0.404	21.115	
10	2007		52. 28	52.28	0.361	18.853	
11	2008		52.28	52.28	0. 322	16.833	e de la companya de l
12	2009		52.28	52.28	0. 287	15.029	
13	2010	tin series	52.28	52.28	0. 257	13.419	
14	2011		52. 28	52.28	0. 229	11.981	a da anti-arte de Ser
15	2012		52.28	52.28	0. 205	10.698	
16	2013		52.28	52.28	0. 183	9.551	en e
17	2014		52.28	52.28	0.163	8. 528	
18	2015	an an a' an a'	52.28	52.28	0. 146	7.614	
18 19	2016		52.28	52.28	0. 130	6. 798	
Z0	2017		52.28	52.28	0. 116	6. 070	
21	2018		52.28	52.28	0. 104	5. 420	
22	2019		52.28	52.28	0. 093	4. 839	
23	2020		52.28	52.28	0.083	4. 321	
24	2021		52.28	52.28	0.074	3. 858	
25	2022		52.28	52.28	0.066	3. 444	
26	2023		52.28	52.28	0.059	3.075	
27	2024		52.28	52.28	0.053	2.746	
28	2025		52.28	52.28	0. 047		(Pump replace)
29	2026	372. 47	52.28	424.75	0.042	17.784	PS.C x 80%
30	2027		52.28	52.28	0.037	1.954	
31	2028	and the second	52.28	52.28	0.033	1.745	
32	2029		52.28	52.28	0.030	1.558	
33	2030	5	52.28	52.28	0.027	1.391	
34	2031		52.28	52.28	0.024	1. 242	
35	2032		52.28	52.28	0.021	1.109	
36	2033		52.28	52.28	0.019	0.990	
37	2034		52.28	52.28	0.017	0.884	
38	2035		52.28	52.28	0.015	0.789	
39	2036		52.28	52.28	0.013	0.705	
. 40 💡	2037		52.28	52.28	0.012	0.629	
41	2038		52.28	52.28	0.011	0.562	
42	2039		52.28	52.28	0.010	0.502	
43	2040		52.28	52.28	0.009	0. 448	
44	2041		52.28	52.28	0.008	0.400	
45	2042		52.28	52.28	0,007	0.357	
46	2043		52.28	52.28	0.006	0.319	
47	2044	ne transferation Ne transferation	52.28	52.28	0.005	0. 285	and the second
48	2015		52.28	52.28	0.005	0.254	
49	2046		52.28	52.28	0.004	0. 227 0. 203	
50 Totol	2017	1,809.38	<u>52.28</u> 2,404.88	52.28 4,214.26	<u>0.004</u> 9.301	1. 523. 769	
Total		1 1,009.00	<u>yc, 404. 00</u>	4,614,20	1 3. 301	1 1. 020. 109	

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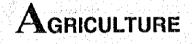
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AND AGRO-PROCESSING

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Table B- 1 Proposed Cropping area on farming Type

					-			(Unit:	Thousand	nd teddan	
		Small	Graduate	Small Investor	or	Large	Inves	tor			dno.Je)
		Farmer	Vereta + Vereta.	Beef Cattle Fruit		Land Use	Dairv	Beef			Crops
Orons Crons	Crobs		то	cta.	eta.	Crops	Cattle	Cattle	Fruit	Total	ratio
Cores e	Wheet	1.67				4. 14					20 20 24
مدادماه	Waize					4. 14	8. 28	S. 28	•	20.70	
	Rarlev					4.14					
Teddare	Corchine	A L	1 30	2.08	· · · · · · · · · · · · · · · · · · ·		S. 28	82 82 83			C) 24
roocer	our gaum	- TO	1. 00			•	•		-		
	berseem/rong	•	<				¥ • •		· .		
	Berseen/Short	2.50	L. 39	2. 00		н. С	r - 7 -	4- T4			· .
	Fodderbeet						4. 14			שינ איל שינ	20 C
011	Sovbean			2.08	0.83	4. Id				 3 5	P D
Crops	Sesane				0.83	4. 14			,	4. 4.	
Pulse	Brord bean	4.16	с» 					:		<u>م</u>	
Vereta-	Tomato/fresh	4.16	1.39 1.39		•					6.94	C-1 ∑⇒
bles		S		2.08	0.83		•			16.2	
	Cantaloupe	4.16	1.39 1.39							. 84 9	
	Water melon	4, 16				•			-	4. 16 1 - 16	
	Squash		-і,							2. 22	
- - - - - -	Green pepper	4.16	1.39 1.39							0.0 9.0	-
 	Cabbage	· · ·	•	2.08	1.66	, - , - , -				20 1	
	Poteto			2 08	0. 83	4. 14				20 - E	
	Onion					4.14				00 · 0	20
Medical Pl	. Cumin	4. 16 4	1.39 1.39			: 		÷.		5 5 6 7 7	201
Fiults	Almond	-	· · · · · · · · · · · · · · · · · · ·						4.14	ਸਾਂ 5 ਜਾਂ 5 ਜਾਂ -	169
	Peach		1.39			-				1. 35	
	Grape		•		1.66	·			- I , I	00 00 00 00 00 00 00 00 00 00 00 00 00	
	Olive				1.66	•			t s	ည်း သူရို	
÷	Orange				1.66	- 1	- 1	- 1		0.00	
Total Crop	Cropped Area	33, 30	11.10 9.71	16.60	11.62	33. 12	33. 12		വം	198. 25	100%
Cultivable Area	F Area	- 91		8 3	8 8 9	16 6	16. 6 1	16. G	16.6	\sim	٠
No. of households	seholds	1665	555 555	63	83	23	23	53	R	3033	

B- 1

Table 8-2 Proposed Target Yield and Production

		· · · ·	i de tratilitations	
		Target	Planted	Produc
Crops	Kind of	Yield	Агеа	tion :
Group	Crops	(ton/fed)	(1000fed)	(1000ton)
Cerecals	Theat	2.5	14.09	35.2
	Maize	2.7	20.70	55.9
	Barley	1.5	14.50	21.7
Fodder	Sorghum	18.0	24.19	435.3
	Berseen(Long season)	25. 0	1.11	103. 5
	Berseen(Short season)	16.5	14. 24	235. 0
	Fødder beet	50. O	4.14	207. 0
Oil crops	Saybean	1.2	7.05	8.5
- 4	Sesane	0.7	4.97	3.5
Palse	Broud bean	1.2	6.91	8.3
Vegetables	Tomato(Fresh)))	10.0	6.91	277.5
	Tomato(Processing)12,	25.0	2.91	72.6
1. 1 .	Cantaloope #2)	10.0	6. 94	59.4
g de la constante de la constan La constante de la constante de	Vater mélon (2)	· 10. 0	4. 16	41.6
	Squash	8.0	2.78	22. 2
	Green pepper	7.0	6. 91	48.6
	Cablage	20. 0	7.88	157.5
	Poteto	12.0	7.05	81.5
	Onion	10.8	7.88	85.1
Medical plant	Cumin	1.1	6.91	7.6
Fruits	Alecod	5.0	4.14	20.7
	Peach	7.3	E. 39	10.1
	Grape .	8.1	5.80	47.0
	Olive	7.0	5.80	40.6
	Orange	7.4	5. 80	42.9
	Total		198.25	

Note: 41 Planting by under plastic tunnels 42 Nursery by the vinil house and planting by open cultivation.

Table B-3 Proposed Time Schedule to Build up Development

· · · · · · · · · · · · · · · · · · ·						·		Unit:	ton/feddaa)
	1	st Stag	e		2 nd st	age	·		3rd Stage
Crops	. <u> </u>	2	3	. 1	5	G	7	8	9
theat	i. 3	1.4	1.5	1.8	2.0	2.3	2.5	2.5	2.5
Maize	1.3	1.6	2.2	2. 1	2.7	2.7	27	2.7	. 2.7
Barley	0.9	1.1	1.2	1.4	1.5	1.5	1.5	1.5	1.5
Sorghon	10. 8	14.4	16.2	18.0	18. 0	18.0	18.0	18.0	18.0
Bei seen/Loog	12.5	15.0	17.5	20. 0	22.5	25.0	25. D	25.0	25.0
Berseen/Shirt	8.3	9. 9	11.6	13.2	14.9	16, 5	16.5	16.5	16.5
Foxkkabeet	20. 0	25.0	37.5	45. 0	50.0	50.0	S0.0	50.0	50.0
Soybcan	0. G	0. 7	0.8	1.0	1.1	1.2	1.2	1.2	1.2
Sesane -	0.4	0.4	0.5	0.6	06	0.7	07	0.7	0.7
Broudbean	0.6	8_0	I. 0	5 1. L	1.2	1.2	1.2	12	1.2
Tonato/Eresh	20. Q	26.0	32.0	36.0	{0 0	10.0	40.0	10.0	40.0
Tomato/process	12.5	16.3	20.0	22.5	25.0	25.0	25 0	25.0	25.0
Caatatoupe	5.0	6.5	8.0	9.0	10.0	10.0	10.0	10.0	10.0
Fater melon	5.0	6.5	8.0	9.0	10.0	10.0	10.0	10.0	10.0
Squash	1.0	5.2	6.4	7.2	8.0	8.0	8.0	8.0	8.0
Green pepper	3.5	4.6	5.6	6.3	1.0	7.0	7.0	7.0	1.0
Cabbage	12.0	13.0	16. O	18.0	20.0	20.0	20.0	20.0	20.0
Poleto 👘	7.2	7.8	9.6	10.8	12.0	12.0	12.0	12.0	12.0
Onton	6.5	7.0	7.6	8.6	9.7	10.8	10.8	10.8	10.8
Cunta	0.4	0.6	0.7	0.8	0.9	0.9	÷ 1.0	1.1	1.1
Almond :	0.0	0.0	0.0	0.0	1.0	2.0	3.0	4.0	5.0
Peach	0.0	0.0	0.0	0.0	1.5	2.9	4.4	5.8	7. 3
бтаре	0.0	0.0	0.0	0.0	1.6	3.2	4.9	G. S	8.1
Olive	÷ 0. 0	0. 0	0.0	0.0	1.4	2.8	4.2	5.6	7.0
Urange	0.0	0.0	0.0	0.0	1.5	3.0	4.5	5.9	7.4

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Table B-4 Chemical Composition of Crops

Kaind of	Noisture	DCI	SE	Fibers
Crops	<u>(())</u>	(1)	(1)	(1)
Berseen(Avg)	84.3	1.9	7.9	4.0
lst cutting	88. 3	1.8	6.3	2.5
2nd cutting	85.2	2.6	7.8	3.9
3rd cutting	80.5	2.0	9.6	6.1
Bay of Berseen	8.8	7.5	35.2	34. 9
Surghum	80.5	0.4	- H. F	6.0
Fodder beet	86.5	0.8	1 - A.	0.9
Maize leaves	9.6	5. 9	81.8	20.3
Theat Straw	6.9	0.5	23.0	36.9
Burley Straw	7.2	0.5	24.0	37.0
Olive Cake	38.0	15.0	42.0	· _

Rute: DCP: Digestible crude Protein SE : Starch Equivalent

Table B.5. Proposed Feeding Troughout the Year by Farm house hold

		and the second second			and the second second		
	Forage	Fodder	DCP	DCIS	Per head	Rearing head	
Farming	Crops	Production	(%)	Production	Rearing day	for Year	Rearing
1 1 × 4		(ton)	1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	(18)	(day)	(head)	Yariety
Small Small	Sorgham	45	1.10	495	1, 053		2011
Farmer	Berseen(S)	25	2. 13	527	1, 122		· · · · ·
n in de la Reije Nacionalista	Theat straw	3	0.30	8	16		
	Sub-total			1.030	2, 191	. 6	Baladi
Graduate	Sorghua	45	1.10	495	1,053		· · ·
이가 가지 수 있습니다. 이가 같아요. 이가 같아요.	Berseco(S)	41	2.13	. 879	1, 869		
	Sub-total			1, 374	2, 923	8	Baladi
Small	Sorghan	450	1.10	4. 950	10, 532		
Investor	Berscen(S)	413	2.13	8, 786	18, 694	14 - 14 March 14	
	Barlay straw	-	0.70	264	561	and the second	
	Sub-total		1.10	14,000	29, 788	82	Friesjan
Large	Sorghum	6, 480	1. 10	21, 280	151,660		
lavestor	Berseen(S)	2, 880	2.13	61, 344	130, 519	and the second second	
(Dairy)	Fodder beet	9, 000	° 0. 80	72,000	153, 191		1. A. A.
	Theat straw	448	0.30	1, 344	2, 860		
	Barlay strai	1	- 0. 70	1, 865	3, 968		
	Nalze leaves		1.10	10.692	22, 749	1. A.	
이 생활 사람을	Sub total			218, 525	464, 946	1.274	Friesian
Large	Sorghun	G. 480	1.10		151, 660	•	
Investor	Berseen(L)	4, 500	2.13				
(Beef Cattle		2, 880	2. 13		130, 519	4	
	Theat straw		0.30	×			
	Baslay stra		0.70				
	Naize leave		1. 10			and the state	· · · ·
	Sub-total		:	242, 315		1, 413	Friesian
	Total						
1 ·							

Note: Feed convert into 470g of Nutritive value(DCP)by head per day

 α_{1}^{2}

Table B- 6 Crop Cultivetion and Input Material

rops	· · · ·	Name of	Yorking	Nane of	Yoluse
i anti	Ka, Crops	Operation	Tine	laterial	per fed
real	1 Meat	Soving	16-30/November		70 Kg
		Fertilizer	-do- 2012 - 2013	Annonium sulphate204)	375 Kg
			·da-	Superphoshate(15V)	140 Kg
		Revolution application		Promin	i lit
		Germicide/pesticide	Farly of Apr.	Tanaroo	1.3 lit
			End of March	Ander	0.2 lit
	2 Barlay	Sowing	16-30/November		40 Kg
		Fertilizer	-00-	Annonium sulphate(20%)	905 V.
			-du-	Superphoshate(15%)	100 Kg
		Norhieldo apolication		Promin	1 lit
. [Cernicide/pesticide		Verachion	1.3 lit
		white the pearter be	End of Warch		
	3 Maize	V. du I w.v	1. 1. 1. 1. 1. 1. 1. 1. 1.	Ander	0.2 lit
	1	Suring	1-15/Way	Seed	25 Kg
	- โรเลเอง -	ferulizer	da	Associum sulphate(20%)	
•			do	Superphoshate(154)	100 Kg
		Nerbicide application			ं <u>।</u> 11त
·		Genuicide/pesticide	Hiddle of Julay	Tanaa cu	1.3 lit
			liddle of Julay	Xerachion	<u>1.3 lit</u>
odder	4 Soringhum	Sowing		Seed and the set	: 35 Kg
	Guerat	Fertilizer	-da -	Brea(46%)	225. Xg
			-00-	Superphoshate(15%)	100 Kg
1.1		Herbicide application	Innediately sow	Gasain	0.75 tit
		Herbicide application Gernicide/pesticide	Middle of Julay	Tanaron	1.3 fit
2 N	5 Berseen	Soming	1-15/October	Seed	3 kg
	(Long)	Fertilizer	-do-	Brea(46%)	65 kg
		지수는 나는 것이 가지 않는 것을 수 있다.	-do-		100 kg
1		Gernicide/pesticide	Post-emergence	Panneto	0.3 lit
199	6 Berseen	Sowing	1-15/0ctober	Ranneto Seed	3 kg
	(slort)	Fertilizer	-do-	Urea(46%)	5 kg
1.1			da-	Superphoshate(15%)	
			-da-	Potassium chloride(484	
		Constraint de la constraint de			
	7 Fodder	Comicide/posticide	Post-energence	and the second	0.3 lit
	1 · · ·	Soving	1-15/October	Seed	6 kg
	beet	Fertilizer	da	Annonium sulphate(20%)	150 kg
÷.,			• 0 0 -	Superphoshate(15%)	230 kg
1			foor see	Potassium chiuride(48%	
		lerbicide application			🖉 2 kg
~	[Germicide/pesticide	Post-emergence		0.2 111
			Growing scason	Tagaron	- 1.3 11
	1 - A - A - A - A - A - A - A - A - A -		:00-	Paisea	1.5 lit
			do	Purinar	0.4 lit
Jil 🚊	8 Soylaraa	Sovieg	1:15/June	Seed	40 kg
Crops		Fertilizer	do	Associan sulphate(20%)	
			do	Superphashate(150)	
	1	an a tribun a trib	-da-	Potassium chloride(48)	() 43 ka
	1	llerbicide application		Gasain	0.75 11
		Gernicide/pesticide	Podding time	Kanneto	3.3 lit
	9 Sesane	Soving	1-15/Hay	Seed 5 1 1 1 1 1 1 1	
· .		Fertilizer	do-	Annonium sulphate(20%)	4 kg
			-00		· · ·
1.5		Herbicide spolication		Superphysicate(15%)	5 150 kg
1.1		Replicide application			2 111
		Comicide/posticide	browing season	Tanaron	🔄 1.3 lit
	1 19		-do-	Duisen	- 1.3 lit
			Podding time	Dakonil	5 kg
Pulses	10 Broadbean	Suving	1-15/November	Seed	60 kg
	. .	Fertilizer	- do -	Asmonium sulphate(20%)	
			-du-	Superphoshate(15x)	200 18
	1	Germicide/pesticide	Podding time	Paísen	_1.3 lit

njis.	•	Name of	Torking		oluge
TOUP	No. Crops	Operation	Tine		er fed
	il Torato	Soving	1-15/February	Seed	5 kg
bles	(fresh)	Fertilizer/Planting	1-15/June	Annonium sulphate(20%)	950 kg
		· · · · · · · · · · · · · · · · · · ·	-do-	Superphoshate(15%)	800 k)
		· ·	-00-	Potassium chloride(48%)	185 k
		Berbicide application	Growing season	Acterik	1.6 1
			-do-	Marshal	1.5 1
		Cermicide/pesticide			1.31
~		in the second	-do-	fosterson	
	12 Treato	Soving	26-30/April	Seed	5 k
	(processig)Fertilizer/Planting	16-31/Nay	Vrea(46%)	260 k
			-do-	Superphoshate(15%)	400 k
2.54			-do-	Putassium chloride(48%)	-
<u>`</u>		llerbicide application	Growing season	Acterik	1.61
		Germicide/pesticide	do	Yarshal	1.5 1
·			-da-	Fosterson	1.3 1
	13 Cantatoupe	Servind	11-15/Narch	Seed	6 k
	ta cantatoupo		16-31/April	Annonium sulphate(20%)	100 k
 		Fertifizer/Planting	-	Superphoshate(15%)	300 k
			-du-		
•		a filling and a state	-du-	Potassium chloride(48%)	
142		Gennicide/pesticide	Growing scason	Karshal	1.5 1
			-60	Fosterson	1.3
÷,	14 Vaternelon	Sowing	26-31/March	Seed	. 5 k
-0.12		Fertilizer/Planting	1-15/Nay	Urea(46%)	43 k
11.00		· · · · · · · · · · · · · · · · · · ·	-do-	Superphoshate(154)	300 1
	. :	a fight and fight	-du	Potassium chloride(481)	
	and the stand	Gennicide/pesticide			1.5
		betanciae/pesticide	Growing season		1.3
			do-	Fosterson	
- ÷ ÷	15 Squash	Sering	l-15/¥ay	Seed	5 5
		Fertilizer	1-15/Kay	Amonium sulphate(20%)	125 1
			-do-	Superphoshate(15%)	300 I
			-do-	 Potassium chloride(485)) 101
		Gernicide/pesticide	Growing season	Marshal	1.5
	16 Green	Sowing	1-15/July	Seed	5 1
14.5	реррет	Fertilizer/Plaating	1-15/Augast	Annoaium sulphate(20%)	125 1
	I INTRA-		-00-	Superphyshate(15%)	300 1
-			-40-	Potassium chloride(483)	
- (1 ÷ -					
1		Germicide/posticide	Growing season		1.5
100 A. 100 A.	17 Uabbege	Staving	1-15/October	Seed	51
- <u>1</u>		Fertilizer/Planting	I-15/November	Auxonium sulphate(204)	
<u>,</u>		the second s	-do	Superphoshate(15%)	300 1
			·da-	Potassium chloride(48%) 10
		Berbicide application		Gool	2
	1 8.14	Gernicide/pesticide	Gruving season		3 4
	10 11.		1-15/February	Seed	60
	18 foicto	Sowing			
	1	Fertilizer	I-15/Narch	Amonium sulphate(204)	
- ÷		and the second	, - do- , , , ,	Superphyshate(15%)	400
•			-do	Potassium chloride(48%	
	1 ·	Ilerbicide application	Post-planting	Actorik	1.5
	1	Cernicide/pesticide	Gioving seasor	n Binul	1.5
	1 . ¹		-da-	Daisen	Į
	19 Onton	Soving	[-15/September		4
1.1		Fertilizer/Planting	I-15/November		
		reststrates and the set	-q0. 1-19180Acenoct	Superphoshate(15%)	200
с. ¹		•			
114			-da-	Putassium chloride(484	-
		Herbicide application			1.5
1.1	a da a contra da	Gernicide/pesticide	Growing season		3.4
ledic	al20 Cusin	Scillag	1-15/September	r Seed	4
pla	2 A 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Fertilizer	do-	Annonium sulphate(20%)	150
	1		-da-	Superphoshate(15%)	150
	.		-do-	Potassiva chloride(481	
1 - E	•	en al service and services and services and			

iups		Nanc OF	Totking		Yolune
Group	No. Crops	Operation	Tine		per tea
raits.	21 Absord		· · · · · · · · · · · · · · · · · · ·	Nursery stock	100 tree
1.		Manure application	January	Nanure	 10 toa
		Fertilizer	Farly of Februar	Annonium nitrate(33%)	125 kg
				Superphoshate(15%)	312 kg
1. A.				Potassium sulphate(48%)) 125 kg
· · ·		Gernicide pesticide	Farly of March	Gernieide	
	1 N	an gan ta ta Managara ang sa		Pesticide	÷ .:
	22 Peach	and the second			150 tree
		Manure application	Novemer	Manure	15 ton
	1	Fertilizer	da	Annonium nitrate(33%)	60 kg
:	1			Superphoshate(15%)	320 kg
1997 - 1997 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	terrar dage	ga the end of the		Potassium sulphate(48%	_
	1	Germicide/pesticide	Early of March	Sarichion	1.5 18
1.2		of the other providence of the other others		Gichiaoon	1.5 151
< .	23 Grape			Karsery stock	200 tree
÷ +		Yanure application	Revence	Vanue	20 tun
1.11		Fertilizer	-iki	Annonion sulphate(200)	
				Superphoshate(15%)	250 kg
	1		an an tha Aristo	Putassian sulphate	- 100 kg
1.15		Gernicide/pesticide	Early of June	Gernicide	-
		ocumentory pesticitoe	nally of some	Pesticide	1.11
			an a	Nursery stock	80 tre
	21 01 ive				
		Manure application	Farly of Narch		8 ton
		fectilizer	do -	Assonium nitrate(334)	110 kg
				Superphoshate(15%)	100 kg
				Potassium sulphate(48%) 130 kg
		fermicide/pesticide	Farly of August		
				Pesticide	
1.1	25 Drange			Kursery stock	120 tree
10.00		Manure application	End of March	Manare	15 Ion
• •	· · ·	Fertilizer	-do	Annonium mitrate(33%)	150 kg
	1.1.1.1.1	ente que transfer en est		Superphoshate(15%)	200 kg
1.1		and the second		Potassium sutphate(48%) 100 kg
11	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	fernicide/pesticide	September	Gernicide	
1.1	1		n injag ter systems	Pesticide	anta 🗕 👘

B-6

Table B-7 Summary of Seedling Plan

There are five crops such as Tomato, Green pepper, Water melon, Cantaloupe and Cabbage which require nursery works to secure the health of the seedling. The seedling for shall be grown in vinyl house nursery beds so as to protect the weather.

Nursery of fresh tomato planting shall be grown by under plastic tunnels, and Nursery of processing tomato and ather nursery are grown in open culture.

Nursery of Tomato, Green pepper and Cabbage are used by tranplanter but other nurserys by hand. Summary of Seedling Plan is as follows:

Nursery bed of Tomato, Green pepper, water melon, Cantaloupe.

Owned jointly vinyl house on 10 (Small farmer/Graduates) farmer house hold. Nursery bed of Cabbage

Vinyl house buildings by each investors farmer house hold.

Required period about 30 day and seedling height 15 cm

• Required area 50 m^{*}

Required Acrages of nursery beds 21 m per feddan

· Required bed soil of raising seedling 75kg per feddan

Required machinery

Prepareing of seedling boxs 630 pre feddan Seeding machine 1 (working capacity: 50 boxs/hr) Required labour 6 person per Seed machine

Seeding Machine

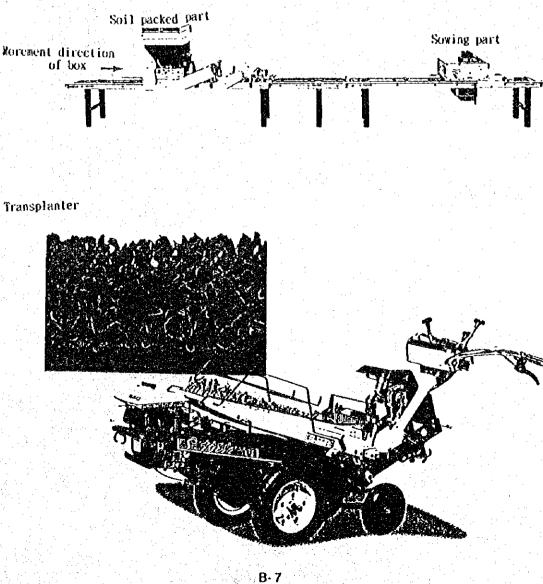


Table 8-8 Agricultural Machinery Efficiency and Number of Machinery (Small Farmer and Graduates)

Operation Oper	. Small	Gradu	ates	
e se an stag width of Pow	er Farmer	Yégeta. †	Yegeta.	
Machinery (n) (ps	<u>)</u>	Livestock	<u>t Frui</u>	Total
Hand Tractor 8ps	N 1	1 . 1	1 1	2,775
Rotaly 60cm< 8ps	1 J	t	1	2. 115
Linesover 1.5×1.1×05-8	ps I	1	1 1 2	2. 775
Fertilizer/Drill, 4 Line 👘 4-1	Ops 📘 🗌	1	1 1 M	2, 775
Planter Line 7ps	+1/10	*1/10	*1/10	278
Sprayer 2.5 × 1.1 × 15-8	ps +1/ 5	+1/ 5	1.1	999
Combine.auto-thres4 Line 25-	32 · 1	1.1	1 I C	2, 775
Band Nover 1-2	1	1. 1		2. 220
Trailer 0.5ton/8km/8ps		1	ł	2.775
No. of Household	1.665	555	5 55	2.775

1. Start 1.	Operation –	Oper.		Sea	H Invi	estor	111	•	larg	e In	vestor	· · ·	1 - E	6 B.C.
·	width	•	Beef	Ca	Fruit	Sub-	land	l Use	િવિવ	E¥.	Beef	Fruit	Sub	Tota
Achinery	(a)	(ps)_	Weg	eta	Weget	a. tota	l <u>Č</u> re	ips	Call	le	Cattle		total	112
Tractor		50ps	1		1	166	: 1	7	1		7	- 7	614	810
Botom ptow	16inch×3	50ps	1		1	- 166		3	ં 3	· · · ·	3	-	276	412
Rotaly	2. 4a	50ps	1	1	· • 1.	166	÷	3	3		3 .		207	- 373
Amore spreader	LS ton	50ps	11		1	166		3	`⊷ 3		· 3 ·	2	253	419
Broodcaster	300 Litter	50ps	1 I.		11	166		3	ેંટ 3	11	3	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	207	373
Linesower	2.1m	50ps	° 1.		1	166		3	3	1	3	.E	207	373
Fortilizer/Drill.	13 Line	50ps	1		1	166	· .	1	2	2	· 4		138	301
Poteto planter	2 Line	50ps	1 L		1	166		2	-	· · ·	1.1	-	- 16	212
Trance Planter	1 Line	1.00	1		1	166	- i- i	3			-	· -	69	235
Cultivator	2. 5m	50ps<	i 1		· 1.	166		2	2	2	2		92	258
Swerth Sprayer	600 Litter	50ps	1		1	166		2	2	2	2	2	181	350
Combine	300 380cm		1	174	* 1/4	42		I .	1 i 1	N.	е, Г	с. с . н	69	- 111
Rean harvestor	4. 5m		· *	174	+ 1/4	42		l					23	65
Com viker 👘 🗄	1-2 Line	50ps	· _	1.1				1	· · · 2	2	2		115	11,5
Poleto harvester :	1 toa		1		1	168		5.				•	115	- 281
Beet harvestor	Line	50ps			· .			e 3	2	<u> </u>	1 i		69	69
Rotaly Rover	1.7n	50ps	1	1.1	1.00	83			2	2	2		92	: 175
Tedder Rake	1. Oa	1	1 . 1	* .	1	83		÷.	3	l .	2		- 69	152
Trencher			1.			1. A.		•			1 - E	2	- 16	- 46
Pruning machine	tere e				- 75			- '		•		- 4	92	92
Truck	6 ton) i		1	16(1 ¹ 1	- -						- 166
Truck 👘	10 ton		. •					1	·	1	- 1 -	2	161	16
Trailer	1.5 ton		1		' - 1	166	, 1			•		1. I.	11 - A 1	166
Trailer	3.0 ton		1					?	1	1	1	1	614	614
No. of Household			8	3	83	16	5 2	3	2	}	23	23	92	258

bha stèirea

Table B-9	Proposed Labour	and Mechanization	on Small Farmer

<u> </u>	· · · · · · · · · · · · · · · · · · ·	Operation	Nase of		nted area		
i de la	Operation	time	Farm Machinery	Machinery			
Crops				<u>(hr)</u>	<u>(lur)</u>	<u>(hr)</u>	fotal
Theat	Manure spreading	1-15/Nov.	Band Tractor8ps/Trailer	30.0	30.0	37.5	67.5
	Ploving	1-15/Nov.	Band Tractor8ps/Rotaly	4.7	4.7		47
	Fertili. application		Rand Tractor8ps/	2.1	~ 2. I	2.6	47
	Soving	16-30/Nov.	Fertilizer Drill seeder	0.0	0.0	19-1	0.0
	Taler manegment	16/Nov-5/Nay		0.0	0.0	12. 1 2. 3	4.1
	Disease control	[-10/Ap]	lland nove Sprayer2ps	1.8	1.8	2.3	4.1
	Teeding	16-30/Nov.	Hand nove Sprayer2ps	1.8			4. 1 2. 5
	Rarvesling	16-31/Kay	Cosbine, auto thresher8ps) 1.1	1.4	27.0
1 2 3 4	Carrying	16-31/Xay	Hand Tractor/Trailer	12.0	12.0 53.5	73.1	126.6
	Sub-total			53.5		93.8	168.8
Sorghu	Manure spreading	6-31/Xay	Hand Tractor8ps/Trailer	75.0	11.8	39-0	11.8
	Plowing	6-31/Nay	Hand Tractor8ps/Rotaly	11.8	5.3	6.6	11.0
	Fertili.application		Band Tractor8ps/	5.3	0.0	0.0	0.0
	Soving	16-31/Bay	Fertilizer-Drill seeder	0.0	0.0	32.0	32.0
	Tater manegment		p Hand move Sprinkter	4.5	4.5	2.3	6.8
	Teeding	16-31/May	lland nove Sprayer2ps Hand nove Sprayer2ps	4.5	4.5	2.3	6.8
	Disease control	1-15/Jun 25/Jun-30/Sc		10.5	10.5	10.5	21.0
	Catting		p Band Tractor8ps/Trailer	30.0	30.0	37.5	67.5
1.00	Carrying	207 Jun - 507 Se	h Band Haccorobas Harier	141.5	141.5	181.8	326.3
	Sub-total	91-91/04	Hand Tractor8ps/Trailer	75.0	75.0	56.3	131.3
	a Manure spreading	21-31/0ct	Hand Tractor8ps/Kotaly	11.7	11.7	00.0	11.7
CSIOT	t)Plaving	1-15/0ct	Lain soiler	5.3	5.3	3.9	9.2
	Fertili.application		by hand	0.0	0.0	0.7	0.7
	Suring	_ [-15/0ct * 170ct-10/Fet		0.0	0.0	13.6	13.6
	Water manegeent	11-25/0ct	lland nove Sprayer2ps	4.5	4.5	2.7	7.2
	Disease control		b Hand Nover	4.5	4.5	2.7	1.2
1 1	Cutting		b Hand Tractor8ps/Trailer	10.5	10.5	7.9	18.4
	Carrying	1111001-10114	W Hand Tractoropay Hurter	111.4	111.4	87.8	199.2
	Sub-total Prep. of norsery be	1.967Nor-15Vas	y by Vinil house	23.8	23.8	29.7	53.4
ater	7 A I	21-30/Apr	Hand Tractor8ps/Trailer	75.0	75.0	93.8	163.8
- BG10	n Manure spreading Ploying	21-30/Apr	Hand Tractor8ps/Kotaly	117	11.7		11.7
8 - B	Fertili.applicatio		by hand	53	5.3	6.6	11.8
e - 1 - 4	Planting	1-15/¥ay	by hand	0.0	0.0	30.0	30.0
- 1 - 2 - 2	Vater nanegoent	1/Xay-10/Set	-	0.0	0.0	20.2	20.2
- 11 - 11 - 11 - 11 - 11 - 11 - 11 - 1	bisease costrol	1/Jun-31/Ju		44	4.1	5.5	9.8
	Teeding	-	by hand	0.0	0.0	1 - E - E	0.0
* 1	Rarvesting	1-15/Sep	by hand	0.0	0.0	210.9	210. 9
	Carrying	15/Sep	Band Tractor8ps/frailer	80.8	80.8	111.0	191.8
5 F	Past-freatment	16-20/Sep	Hand Tractor8ps/Trailer	and the second se			59.5
	Sub total	10 201.00		260.4	260.4	507.5	767.9
Tosato		d 26/1an-15/1	ar by Viail bouse	23.8		29.8	53.6
I CRART L C	Kanare spreading	21-30/Fcb	Hand Tractor8ps/Trailer	1 M 1 M 1 M 1 M 1 M 1 M 1 M 1 M 1 M 1 M		93.8	168.8
		21-30/Feb	Hand Tractor8ps/Rotaly	11.7			11.7
8 3	Fertili.applicatio		by hand	5.3		6.6	11.8
	Planting	1-15/Xar	Planter	7.0			7.0
	Plastic tunnels co		by hand	20.0		25.0	45.0
	- Trastic conners co	1/Var-25/Ju	•	0.0		22. 3	22. 3
	Discase control	1/Jun-31/Ju		4 4		4.4	S. 8
N	Teeding	Three Athen	by hand	0.0			0.0
5 J - 2	Harvesting	16/Jun-31/J		0.0		1, 238. 0	1. 238. 0
	Carrying	16/Jun-31/J	ul Hand Tractor8ps/Trailer				400.0
1. 1 . 14	Post-treatment	- 1-S/Aug	Band Tractor8ps/Trailer			111 J.	40.0
			a ser a ser a ser a angeneration a ser	387.1	387.1	1 416 4	2.006.8

<u>.</u>		Operation	Nage of	P	lanted are	<u>.</u>	
	Operation	tine	Farn Machinery	Machinery	Operator	Assistant	Labour
Ccops		en e		<u>(hr)</u>	<u>(hr)</u>	<u>(hr)</u>	<u>Total</u>
reen	Prep. of nursery bed	26/Jun-15/Aug	by Yinil house	6.3	··· 6. 3	29.8	36. (
pepper	Fanure spreading	21-31/Je1	Hand Tractor8ps/Trailer	75.0	75.0	93.8	168.8
	Plosing	21 31/Jul 👘	Band Tractor8pszKotaly	11.7	11.7) in 7
· * *	Fertili, application	1-15/Aug	Hand Tractor8ps/Ferti.ap.	5. 3	5.3	- 6.6	11.8
1.1	Planting	1 15/Aug	Plaster	7.0	7.0		7. (
	Vater manegment	LANG 10/Nov	Drip Irrigation	0.0	0.0	17.7	17.1
÷ *	feeding		by hand	0.0	0.0		· 0. (
	Disease control	1-15/Sep	Rand move Sprayer2ps	4.3	4.4	1. 4 4	8.8
111	Barvesting	1 15/Nov	by hated	0.0	0.0	166.6	166. (
1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	Carrying	1-15/Nov	Band Tractor8ps/Trailer	35.0	35.0	35.0	70. (
1.175	Post treatment	16-20/Nov	Bind Tractor8ps/Trailer	12.5	12.5		12.5
	Sob total			157.1	157.1	353.7	510.1
ind	Kinute spreading	6 30/Nov	lland Tractor8ps/Trailer	75.0	75.0	93.8	168.3
	Ploving	6 30/Nov	Hand Tractor8ps/Rutaly	11.7	0.1	1. S.	· 11.
	Fertili application		Hand Tractor8ps/Ferti.Pri	i 5.3	5.3	6.6	11.
	Section	6 39/Nov		0.0	0.0		0
	Vater manegment		Brip Irrigation	0.0	0.0	22.7	22
·	Feeding	10 101 10110	by hand	0.0	0.0		0.
	Discase control	1 15/Feb	Hand nove Sprayer2ps	4.4	4.4	4:4	8.
1.1	Barvesting	1-15/Apr	by hand	0.0	0.0	206. 0	206.
111	· · · · ·	1 15/Apr	Rand Tractor8ps Trailer	13.3	13.3	13.3	26.
· · · ·	Carrying	s sande	by hand	0.0	0.0	60.0	60.
	Processing/grading	2.00	LIV NATIO	109.6	109.6	406.6	516.
	Sub total	a da a	A	23.8	23.8	29.8	53.
aata	Peep of nursery bed			23.8 75.0	25.0	29. 8 93. 8	168.
Toshe	Namure spreading	6-15/Apr	Hand Tractor8ps/Trailer				
6 <u>-</u> 1	Ploving	16-30/Apr	Hund Tractor8ps/Rotaly	1.7	11.7	14.6	26.
	Fortili application			0.0	0.0	100 0	0.
	Planting	16 30/Apr	by hand	0.0	0.0		175.
	Tater saseguest		g Drip Trrigation	0.0	0.0	20. 2	20.
	Disease control	1/100 31/101		8.8	8.8	10.9	19.
	Texting		by hand	0.0	0.0		0.
	Horvesting	16 31/Aug	by hand	0.0	0.0	419.0	419.
	Carrying	15-31/Aag	lland Tractor8ps/Trailer	50.0	50. Q	50, 0	100.
	Sub total			169.2	169.2	813.3	982.
ledical	1 Manure spreading	6-15/0ct	Hand Tractor 8ps/Trailer	75.0	75.0	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	75.
plant	Ploving	6-15/0c1	Hand Tractor8ps/Rotaly	11.8	11.8		- U.
1.1	Fertili.application	16-31/0.1	Hand Tractor8ps/Ferti.Dr	i 5.3	5.3	6. 6	- H.
•	Sowing	16 31/001	by hand	0.0	0.0	6.0	6
	Tater manegment	-1640et 25/Wa	r Hand move Sprinkler	0.0	- 0.0	25.2	25.
	Teeding	and the second sec	by hand	0.0	0.0		0.
1	Disease control	1-10/Feb	fland move Sprayer2ps	8.8	8.8	10.9	्र ा । १ .
	Harvesting	16-31/Xar	by hand	0.0	0.0	325.0	325.
	Carrying	16-31/Mar	Hand Tractor8ps/Traiter	11.0	· · · · · · · · · · · · · · · · · · ·		22.
	Sub-total			\$11.8			496.
		•••		1, 501	1, 501	4. 431	5. 93

Table 8-10 Proposed Labour and Acchanization on Graduates(Vegetable + Beef Cattle)

È

		Operation	Name of	Planted			Labour
Crops	Operation	tine	Farm Machinery			Assistant	
	· · · · · · · · · · · · · · · · · · ·			<u>(hr)</u>	<u>(hr)</u>		169
Sorghua	Manure spreading	5-31/Nay	Hand Tractor8ps/Trailer	15	75		103
	Ploving	5 31/Hay	Hand Tractor8ps/Rotaly	12	. 12		12
	Fertili.application	16-31/Nay	Band Tractor8ps	5	5	. í	12
	Sewing		/Drill-Fertilizer				-
1	Water manogment		fland nove Sprinkler		~	32	-
	feeding	16-31/Xay	Band nove Sprayer	. 5	5		
- 19 A	Disease control	1-15/Jun 🚬 👘	Hand nove Sprayer	5	5		
	Cutting	-26/Jun-30/Sep		$ =$ $ \mathbf{H}$			
1	Carrying	-26/Jun-30/Sep	Hand Tractor8ps/Trailer	30			
	Sub-total		and the second second	112	-		
ersec.	Manure spreading	1-30/Sep	Band Tractor8ps/Trailer				
Short	Ploving	1-15/0ct	Hand Tractor8ps/Rotaly	12			-
1	Fortili. application	n 1-15/0ct	Line sovers	- 5	5	4	-
1.11.21	Sening	1-15/0et	by hand				0
	Tater nanegachi	1/0c1-25/Feb	Hand nove Sprinkter			14	
1	Disease control	1-31/0ct	Hand nove Sprayer	5	5		
1 .	Cutting	11/Nov-28/Feb	Hand nower	5	, E		
	Carrying		Hand Tractor8ps/Trailer	· 11	- 1 I	8	811
	Sob-total	····		112	112	87	199
Squash		1-30/Apr	Hand Tractor8ps/Trailer	75	n an de 7 8	75	i 150
Digina Site	Ploying	21-30/Apr	Hand Tractor8ps/Rotaly	12	! 1 2	2 0) 12
	Fertili, applicatio		by hand	· · · 5	i (5 5	$i \ge 11$
	Sorieg	1-15/May	by hand) ```() 5	; 5
	Valer manegment	1/May-10/Sép	Drip Irrigation) () 16	5 16
	Teening	timaj turnep	by hand	1. I.		· · ·	. 0
	Disease control	26-31/Nay	Band move Sprayer			5 5	; 9
		1-15-Sep	by hand	- 48		3 5:	1 90
	Harvesting	1-15/Sep	lland Tractor8ps/Trailer			-) 60
	Carrying Post treatment	16-20/Sep	Rand Tractor8ps/Trailer			•) 39
	Sob total	10.745.0016	land meetitops/ mutic	21		8 179	9 390
		4 96/ Jun - 15/Na	by Winil bose	2			0 5d
Tomato		1-28/Feb	Rand Tractor8ps/Traile			5 9	
	Manure spreading	1-28/Feb	Hand Tractor8ps/Rotaly				0 12
	Ploying		/Drill Fertilizer				7 12
	Fertili.applicatio		Planter Planter		1		0
	Plasting	5/¥ar	by hand		•	•	5 4
	Hastic tunnelse e			· · · · -		-	2 2
	Water manegment	1/Rar 25/Jul			v	₹	4
	Teeding		by hand	1 a 1	с ¹		0
	Discuse control	- 1/Jun 31/Jul			5		3 1.23
	larvesting	161an 31/1al	· · · · · · · · · · · · · · · · · · ·		0 .		
	Carrying	16Jun 31/Jel					
	Post treatment	1-15/Aug	Nand Tractor8ps/Traile				0 1
	Sub-total			38	138	1.62	0 2.00

, ¹¹ -	· · · · · · · · · · · · · · · · · · ·	Operation	Nane of	Planter	Anea		Labou
ruos	Operation	line	Farm Machinery			Assistant	•
				(hr)	(hr)	(hr)	(hr)
C CD	Prep. of messery bed	26/Jun-15/Aug	by Vinil house	6	6	30	
coper			Hand Tractor8ps/Trailer	75	. 75	94	169
		1-15/Aug	Band Tractor8ps/Rotaly	12	12	0	12
	Firtili application	1-15/Aug	/brill-Fectilizer	5	5	7	ំដ
	Planting	1 15/Aug	Planter	7	1	Ü)
	Vater manegment	1/Aug-10/Nov	Drip Irrigation	0 11 12	0	18	i 11
	Reeding		by hand		· ′ _		
1 - E	Disease control	1 15/Sep	lland nove Sprayer	5	5	4	
	Barvesting	15/0c1-15/Nov	by hand	0	0	167	/ 16
	Carrying	1-15/Nov	Band Tractor8ps/Trailer	35	35	35	7
	lust treatment	16 30/Nov	Band Tractor8ps/Trailer		13	C	
	Sub total			157	157		
uad	Xasure spreading	1-30/Nov	Hand Tractor8ps/Trailer		75		
can	Ploving	16 30/ Nov	Hand Tractor8ps/Rotaly	12			
	Fritili, application		Rand Tractor 8ps/Rotaly	5			
	Soviez	16-30/Nov	Drill-Fertilizer	0			
	Tates subegrent		Drip Irrigation	Ű	•		-
	Yerding	10.001.001001	by hand				,
	Disease control	1-15/Feb	lland move Sprayer	5	5		
	Barvesting	1-15/Apr	by hand	0			
$\mathcal{T}_{\mathcal{H}} = \{$	Carrying	1-15/Apr	Nand Tractor8ps/Trailer	~	÷		
	Processing/grading		by hand	10			
	Sub total	10.005.000	ur nanu	119			
÷	Prep of narsery led	11/8	bu Wints being	21		2	
nto							
oupe	Namure spreading	•	Hand Tractor8ps/Trailer				
	Ploving	16-30/Apr	Band Tractor8ps/Rotaty	12			
	Fertili. application		/Driff-Festilizer	(
	Planting	16-30/Aps	by hand	0			
	Tater nancgaeat 👋	10/Apr 25/Apg	Prip Trrigation	C	•) 2(0 2
1 A.	Teching		by hand	* : · · :			
	Discase control	1/Jun-30/Ju1		9			1
	Buvesting	16-31/Aug	by hand	0		1	
	Carrying	16-31/Aug	lland Tractor8ps/Traiter				
	Seb total			169			
	Manare spreading	•	i lland Tractor8ps/Trailer	a parti di su			0 1
plant	Plowing	1 15/0c1	Hand Tractor8ps/Rotaly	12			0 1
÷.,	Fertili application		/Drill Fertilizer	1 - 1 - 1 - 1		•	7
	Spring	16/31/001	by hand		8 1 B.		6 👘
	Vater manegment	: 16/0c1_25/M ai	r Hand nove Sprinkler	() - Constant Sector) 2	5 1
	Reading		by hand				
·	Disease control	1 15/Feb	Hand nove Sprayer) () () () (() () () () () ()	1 - 1
- -	Harvesting	16-31/Mar	by hand) i ^{na s} an () 32	
	Carrying	16-31/Mar	- Hand Tractor8ps/Trailer	r (, , , , ,)	¹	1 N S S 1	1 :
¹ 1	Sub-total			11	2 11	2 38	5 4
	Total(hr)			1.40	1, 40	7 4, 03	0 5.4

-		Operation	Nane of		Planted A		labour
Crops	Operation	tine	Farm Machinery	Machinery	Operater	Assistant	
Crups .	optimition			(hr)	(hr) -		(hr)
Squash	Manure spreading	21-30/Apr	Hand Tractor8ps/fraite	r 75.0	75 0	75.0	150
oquan	Ploving	21-30/Apr	Hand Tractor8ps/Rotaly	11.8	11.8	0.0	12
	Fertili, application		by hand	5.3	5.3	5. 3	- 11
		1-15/Jay	by hand	0.0	0.0	5.3	5
	Tater manegment		Drip Irrigation	0.0	0.0	16.0	16
	for the former of the former o	The for the former	by hand	0.0	0.0	0.0	. 0
		26-31/May	lland nove Sprayer	4.5	4.5	4.5	. 9
1	Disease control	1-15/Sep	by hand	42.5	42.5	53.1	96
1	Barvesting	- 1-15/Sep	Hand Tractor8ps/Traile		40. 0	20.0	60
	Carrying	16-20/Aug	Hand Tractor8ps/fraile		38.5	0	39
	Post-freatment	10 ZULAUK	Rand Hactoropsystemic	217.5	217.5	179.2	397
	Sub-total	90 Lan 16 /Mar	- Su Vinil house	23.8	23.8	29.7	53
ficerato .	Prep of nursery bed				15.0	93.8	169
	Manure spreading	21-30/Feb	Hand Tractor8ps/Rotal)			0.0	12
	Ploving	21-30/Feb		5.3		6.6	12
1 2	Fertili.application		by hand	7.0			7
1 .	Planting	1-15/Kar	Planter	0.0		25.0	25
	Plastic tunnels cul	. L-15/May	by hand			22.3	22
i.	Water manegment	/Mar 25/Ju	Drip Irrigation	0.0	, – –	4.0	- 4
	Disease control		I lland nove Sprayer	0.0			-
	Teeding	e i se se se	by hand	0.0		- 18 T. T. T. T.	
	Marvesting	- 16Jon-31/Ju	1 by hand	0.0			-
	Carrying	- 16Jun-31/Ju	1 Hand Tractor8ps/Traile	er 200.0			
· · · ·	Post-treatment	1-5/Xog	Iland Tractor8ps/Trail				
	Seb total			362.8	- F 27		
Lireen	Prep. of nursery bei	1 26Jun-15/Au	g by Yinil house	6.3	-		
ocpper		21-31/Jul	Band Tractor8ps/Trail				
PUPP	Ploying	21-31/Jul	Hand Tractor8ps/Rotal	y 👘 🚹 8			
	Fertili.application	n 1-15/Aug - 5	by hand	5.3			• -
	Planting	1-15/Aug	by hand	7.0	1 7.0	0.0	
	Tater manegment	17Aux-10/No	w Drip Irrigation	0.0) 0.0		18
	Reding	-	by hand	0.0) 0.0	L. : 0.0	0
1.01	Disease control	1-15/Sep	fland nove Sprayer	4. 5	4.5	44	- 9
	llarvesting	1-15/Nov	Ly hand	0 () 0.0	166.6	167
	Cartying	1 15/ Nov	Hand Tractor8ps/Trail			35.0	1 70
	- Cartying Post treatment	16-20/Nov	land Tractor Sps/Trail) - 13
	* ·	14 COV 1101	the stresses for the	157.3			511
	Sub total	1-15/Nov	Hand Tractor8ps/Trail				
store	Kanure specading	15 30/Nov	Band Tractor8ps/Rotal				
bean	Ploving		Hand Tractor8ps/Rotal				
	Fertili.applicatio		/Drill-Fertilizer	0.1			
- 1 - 2 - 2 -	Sovieg	 16-30/Nov. 				22.8	
	Water ganegment	1920A - 161 Y	pr Prip Irrigation	Ð. I	0 0. (
	Teeding	1 15 M.1	by hand	4	•		
	Disease control	1-15/Feb	Hand move Sprayer	4. ().			
	llarvesting	1-15/Apr	by hand		*		*
	Carrying	1-15/Apr - 1	fland Tractor8ps/frai				
	Processing/grading	g 16-25/Apr	by hand	0.			
i di sul	Spb-total	1997 - N. 1997 - A. 1		109.	<u>8 109.</u>	8 407.1	n 311

Table 8-11 Proposed Labor and Rechanization on Graduates(Vegetable + Fruit)



		Operation	Name of	Pla	nted Area		Labour
roos	Operation	tine	Farm Machinery	Machinery	Operater	Assistant	Total
			· · · · · · · · · · · · · · · · · · ·	(hr)	(hr)	<u>(hr)</u>	<u>(hr)</u>
inta	Prep of nursery bed	HWar 30/Apr	by Vinit house	23.8	23.8	29.8	54
loope			Hand Tractor8ps/fraile		93.8	93.8	188
	Ploying	16-30. Apr	Rand Tractor8ps/Rotaly	11.8	14.7	0.0	- 15
	Fertili application	16 30/Apr	by hand	v (d 0.0	0.0	35.0	- 35
1.1	Phasting	16 30/Apr	by hand	a (a 0.0		110.0	140
	Vater minegrent	163pr 25/Aug	Drip Icrigation	0.0	0.0	· 20. 2	- 20
· · ·			Hand nove Sprayer	8 B. 8 8	8.8	8.8	18
	Veeding		by hand	0.0	0.0	0.0	0
1.1	Revesting	16 31/Aug	by hand	0.0	0.0	419.0	419
	Carrying	16-31/Aug	Hand Tractor8ps/Traile	s 🔅 50. 0	62.5	50.0	113
1	Sub_tutal		and the second second	169.3	203.5	796 6	1.000
ofical	Rampre spreading	6-15/0.1	Hund TractorBps/Traile	ar 75.0	93.8	0 0	9
plant	Plowing	6-15/0ct	Hand Tractor8ps/Rutal)	11.8	° H. 7	00	19
	Fertili. application	16-31/0et	by hand the second	5.3	6.6	6.6	E
1.		16 31/0 t	by hand	0.0	0. 0	6.0	1
	Vater manegment	160ct-25/Яат	Hand move Sprinkler	10.21		25.2	23
	Veeding	· · · · ·	by hand	0.0	0.0	0.0	. i
	Disease control	1 10/Feb	Hand nove Sprayer	8.8	8.8	10.9	2
1.1	Harvesting	16-31/Mar	by hand	0.0	0.0	325.0	32
	Carrying	[6-3]/Har	Hand Tractor8os/fraile	er 11.0	13.8	E 11.0	2
•	Sub total				137.6	384.7	52
leach	Manure spicading	1-30/Nov	Rand Tractor8ps/Trail	er 100.0	100.0	100.0	20
·	Fertili, application		by hand	0.0	0.0	12.5	1
1.1		11-30/Dec	Ly hand	0.0	0.0	75.0	7
· .	Fiuit thinsing	26Fcb 10/Iar		0.0		50.0	5
1000	Yater nanegment		Drip Irrigation	0.0	0.0	62 5	6
	Disease control		Band move Sprayer	4.5	4.5	0.0	
	Teeding		Hand Tractor8ps/Kotal		12.0	0.0	1
	Harvesting	268a1 31/Ray	•	0.0	0.0	80.0	8
	Carrying		Hand Tractor8ps/Trail			11.6	. 4
	Sub total	manue arrent		152.8			54
	Total(br)		والموجد تشالي والشابو مواد الاران	1, 281, 1	1 311.1	4. 137. 3	and a second second second

§; 8- 14

				Planted	Area	1	abbur
		Operation	Nane of	Nachinery C		ssistant	total
	America & Low	time	Farm Machinery	(hr)	(hr)	(hr)	(hr)
	Operation	1-15/Nov	Tractor50ps/Manure spreader	26	26	79	105
ai ley	Manure spreding	1-15/Nov	Tractor50ps/kotaly	15	15	15	3(
	Ploving	16-30/Nov	Fertilizer/Prill seeder	iš	13	27	4
	Ferti application		fertilizer/pitti secaei	10			
1	Sowing	16-30 Nuv	Laterated register		. 0	36	3
	Vater manegment		Automated sprinkler		4	9	Ĩ
- A	Disease control	1_15/Xan	Swerth sprayer	12	12	. 0	i
	reeding	1 15/Feb	Cultivater		- 11	21	3
	Harvesting	1-15/Nay	Combine	25	25	50	. 7
	Carrying	1 15 Xay	Tractor50/trailer		106	237	3
	Sub-total	· . · ·		106			
and grock	Manure spreding	- 1-31/¥ay	Tractor50ps/Manure spreader		26	79	Į
14	Plowing	1 15 Jun	Tractor50ps/Rotaly	15	15	15	1
	Ferti application	1-15/Jun	Fertilizer/Drill_seeder	13	13	21	4
	Soring	1-15/Jun				- 4 m	
	Tater manegment	1/Jun-30/Sep	Automated sprinkler	· 0	0	21	
	Teeding	s t-15/Jul	Cultivater	4	1	. 9	İ
	Cutting	16/Jul-30/Sec	Rotaly nover	16	16	32	. •
	Carcying		Tractor50/trailer	25	25	50	
	Sub-total		a la callette de la second	99	99	236	3
Jeres con	Manure spreding	1-30/Sep	Tractor50ps/Manure spreader	26	26	79	I
IA LOCCA	Ploving	1-15/0ct	Tractor50ps/Retaly	15	15	15	
	Ferti.application	1-15/0c1	Line sovers	13	13	27	· .
	Soving	- 1-15/0ct	by hand		1.1.1.1.1		1.1
	Yater manegment		Automated sprinkler	0	. 0	- 29	
	Teeding	6-31/0ct	Cultivater	4		9	
			b Rotaly nower	16	16	32	
1	Cutting		b Tractor50/trailer	25	25	50	•
	Carrying	101001-50116		99	- 99	241	
l	Sub-total	A 00 (01- 16 (N)-	a har Vinil Land	238	238	238	
Cabbag	e Prep. of nursery b		v by ffifff nooc v Tractor50ps/Nanute spreade		26	- 79	-
I 1	Manure spreding			· - 15	15	15	
1	Ploving	1-15/8ov	Tractor50ps/Kotaly	13	13	27	
I .	Ferti.application		Fertilizer/Drill seeder	32	32	61	
	Planting	1-15/Nov	Trance planter	32 ()	0	25	
	Tater manegacet		Automated sprinkler	12	12	23	
1	Feeding	L 15-Xar	Cultivator			9	
1	Disease control	1-15 Dec	Swerth sprayer	4			
1	Baryesting	16-31/Mar	Combine	0	_	213	
	Carrying	16-31/Mar	Tractor50/trailer	125		125	
1	Sub total	14 - 25 - 25 C	and a sub-sector of the	165	465	795	1.2

Table B-12 Proposed Labour and Mechanization on Small Scale Investors(Regeta, Heef Ca.)

		La Addition	and the second second second second	Planted			abour
		Operation	Name of	Rachinery D		ssistant	iotal
mas	Operation	tine	Farm Machinery	<u>(hr)</u>	<u>(hr)</u>		<u>(hi)</u>
	Janure spieding	-16/Kay-15/Jun	Tractor50ps/Manure spreader	26	26		
1	Ploving	1-15/Jun	Tractor50ps/Rotaly	. i 15	5 15	15	30
. A	Ferti application	16 30/Jua	Fertifizer/Driff scoler	13	13		40
	Soving	16-30/Jon			e nga si	i seren en	(
	Tater asnegacat	16/Jun 30/Oct	Automated sprinkter	0	0	24	2
	Trading	1 15/Jul	Cultivator	13	13	13	2
	Disease control	1-15/Aug	Sverth sprayer	4	- 1	9	ъ 1
	Barvesting	- 16-31-Oct	Cambine	8	8	23	3
	Lariving	16 31/001	Tractor50/trailer	8	8 .	15	2
	Sub total			87	. 87	205	29
aato		at 26 31 (Jan	by Vinil houe	238	238	238	47
	Nanuce spreding	1-15/Kay	TractorS0ps/Manure spreader	26	26	26	5
	Ploying	1 15/Ray	Tractor50ps/Rotaly	13	: 1 3	27	4
	Ferri application	· · · ·	Fertilizer/Drill seeder			1.1	
	Planting	16-31/Jay	Trance planter	32	32	61	. 5
	Tater sancesual		Automated sprinkler	0	0	36	
	Teching	6 31/Jul	Cultivater	12	12	12	
·	Biscase control		Sverth sprayer	-1	4	. 9	$\mathcal{A}^{(i)}$
	Rarvesting	- 1/Aug-31/Oct	Combine	0	0	3, 950	3, 9
ст. н. Н	Carrying	17 ha 31/6-1	Tractor50/trailer	100	100	200	ં 3
	· Sub total	Wung Officer		425	425	4, 552	4.9
	1	1678 a. 1574 a.	r Tractor50ps/Nanure spreade	. 26	26	79	1
oteto		16-30/Apr	Tractor 50ps/Rotaly	13	13	- 25	÷.
·	Howing		Fertilizer/Drill seeder	18	18	35	
1.0	Ferti.application	16-30/Apr	Trance planter	0	0	0	
11			g Automated sprinkler	0	0	60	
	Vater sonegment .		Cultivater	12	12	12	
	Teeding	16:31/¥ay	Combine	58	58	175	2
	Barresting	- 1-15/Aug	Tractor50/trailer	15	15	150	2
1 ÷ .	Carrying	I IS Aug	Tractorso/marici	202	202	536	1
	Sab total		Tractor50ps/Rotaly	5	5	5 S S S S S S S S S S S S S S S S S S S	- 3
kniese	Prep of nursery 1	20 16 25/ ocp	Tractor50ps/Manure spread		26	26	
	Namure spreding	1 31/0e1 = 1 1 15/Nov	Tractor 50ps/Rotaly	13	13		1
	Proving		Fertilizer/Drill seeder				
н. "1	Ferti, application		Trance planter	0	0	1, 168	3.1
	Soring	1 15/Nov		0			
e e si	Tater manegment	1/Nov-15/Apr 1/Nov-15/Apr	swerth sprayer	4			
	Yeeding	1 15/Dec		58			
	Revesting	1-15/Apr	Reaping machines	30			
	Garrying	L 15/Apr	Tractor50/Trailer	136			
E 👘	Sub total			1.619			

Operation Line Far Bachiery Eachiery			Operation	Name of	Plante	d Area	•	Labour
Chros Chr.) Chr.) <th< td=""><td>i .</td><td>Operation</td><td>•</td><td></td><td></td><td></td><td>Assistant</td><td></td></th<>	i .	Operation	•				Assistant	
Cabbage Prop. of massery bed 25/Sep 15/kby by Yinii house 190.0 190.0 190.0 190.0 380.0 384 Proving 21-31/Cot Tractor505x/Rotaty 12.0 12.0 22.0	· · Cross	oprimition						
Knowe spreading 21-31/Act TractorSops/Knowe spreader 21.0 21.0 22.0 <th22.0< th=""> 22.0 22.0<!--</td--><td>Tablews</td><td>Pree of nursery bed</td><td>25/Sep-15/Nov</td><td>by Vinil house</td><td>190.0</td><td>190.0</td><td>190.0</td><td>380</td></th22.0<>	Tablews	Pree of nursery bed	25/Sep-15/Nov	by Vinil house	190.0	190.0	190.0	380
Proving 21-31/Oct Tractor Sops/Rotaly 12.0 12.0 22.0 32.0 Penting 1-55/Nov Trace enables 0.6 10.6 21.2 32 Planting 1-55/Nov Trace planter 25.4 25.4 25.8 32 Teator subsystem 16 31/Kar by hand 0.0 0.0 600.0 600 Carrying 16 31/Kar ty hand 0.0 10.0 100.0 100.0 600 Carrying 5 15/Ina Tractor50ps/Railer 10.5 10.5 31.5 42 Proving 5 15/Ina Tractor50ps/Railer 0.0 0.0 0.0 10.5 31.5 42 Proving 16 30/Ina Tractor50ps/Railer 0.0 0.0 0.0 0.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 <t< td=""><td>l</td><td>Wannie spreading</td><td></td><td>Tractor50ps/Nanure spreader</td><td>21. 0</td><td>21.0</td><td>63.0</td><td>84</td></t<>	l	Wannie spreading		Tractor50ps/Nanure spreader	21. 0	21.0	63.0	84
Pre-til:application 1-15/Nov France planter 26.4 20.8 76 Planting 1-15/Nov France planter 26.4 25.4 50.8 76 tater subsystem 1/Nov-25/Rar Autosatel Sprintler 0.0 0.0 28.0 28 tecding 0.1 16 31/Kar Tractor50ps/Lupre spreader 10.5 10.5 10.6 0.0	:				12.0	12.0	12. 0	24
Planting 1-15/Nov Trace planter 25.4 <th25.4< th=""> 25.4<</th25.4<>	1				10.6	10.6	21.2	32
Tatter anergenet 1/Nov 25/Kar Automated Sprintler 0.0 0.0 28.0 28.0 teching Collivater 9.4 9.4 9.4 19.4 19.4 Barresting 16.31/Kar tractor50ps/Trailer 100.0 100.0 100.0 200 Total 5.15/Jun Tractor50ps/Lunvre spreader 10.5 10.5 31.5 42 Proving 5.15/Jun Tractor50ps/Lunvre spreader 10.5 10.6 <t< td=""><td></td><td></td><td></td><td></td><td>25.4</td><td>25.4</td><td>50.8</td><td>76</td></t<>					25.4	25.4	50.8	76
Teching Cultivater 9.4 Barvesting 16.31/2tr Tractor50ps/fault 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 Correspond <t< td=""><td></td><td></td><td></td><td>Automated Sprinkler</td><td>0.0</td><td>0. 0</td><td>28. 0</td><td>28</td></t<>				Automated Sprinkler	0.0	0. 0	28. 0	28
Barresting 16.31/Bar by hand 0.0 0.0 000.0 000.0 000.0 200 Soyle fail Sign Renure spreading S-15/Jun Tractor50ps/Knivper spreader 10.5 11.5 14.7 10.5 10.5 11.5 14.7 10.5 10.5 11.5 14.7 10.5 10.5 11.5 11.5 14.7 10.5 11.5 11.5 11.5 11.5 11.5 11.5 11.5 11.5 11.5 11.			-		9.4	9.4	9.4	19
Carrying 16-31/Mar Tractor50ps/Trailer 100.0 100.0 100.0 200 Total 368.4 388.4 10/1.4 1.4			16-31/Nar	by hand	0.0	0.0	600. 0	600
Total 368.4 368.4 1074.4 1.413 konner spreading 5-15/Jun Tractor50ps/Kanore spreader 10.5 10.5 10.5 11.5 42 Proving 5-15/Jun Tractor50ps/Kanore spreader 10.5 10.5 10.5 11.5 42 Proving 16-30/Jun Fortillzer/Drill seeder 5.3 5.3 10.6 12 Proving 16-30/Jun Fortillzer/Drill seeder 5.0 5.0 10 0.0 0.0 0.0 12.0 <td>- N.</td> <td>-</td> <td>16-31/Mar</td> <td>Tractor50ps/Trailer</td> <td>100.0</td> <td>100. 0</td> <td>100. D</td> <td>200</td>	- N.	-	16-31/Mar	Tractor50ps/Trailer	100.0	100. 0	100. D	200
System Runner spreading 5-15/Jun TractorSps:/Kotaly 6.0 5.0 3.1.5 42 Proving 5-15/Jun TractorSps:/Kotaly 6.0 0.0 <td>1 1</td> <td></td> <td>- :</td> <td></td> <td>368.4</td> <td>368.4</td> <td>1074 4</td> <td>1, 443</td>	1 1		- :		368.4	368.4	1074 4	1, 443
Proving 5-15/1va Tractor 50s/Kitaly 6.0 6.0 6.0 12 Fertilizeptication 16/30/1va Fertilizer/Drill sceder 5.3 5.3 10.6 16 Soning 16/30/1va 25/0t Automated Sprinkley 0.0 0.0 12.0 12 Vecting Cultivater 5.0 5.0 5.0 10.0 10.0 20.0 30 Carrying 16/31/0ct Bean baryester 6.4 6.4 18.4 25 Carrying 16/31/0ct Bean baryester 6.4 6.4 18.4 25 Carrying 16/31/kay Tractor50ps/Kotaly 6.0 6.0 12 Ferritit.application 16/1an Ferrititzer/Barititer 0.0 0.0 0.0 0 12 12 Vecting 1-16/2ba Ferrititzer/Barititer 0.0 0.0 12 12 12 12 12 12 12 12 12 12 12 12 12 12	Sovieran		5-15/Jun	Tractor50ps/Nanure spreader	10.5	10.5	31.5	42
Fertilizer/Drill sceder 5.3 10.6 16 Sowing 16/30/Jun 0.0 0.0 0.0 0.0 0.0 Tester manegacht 15/Jun-25/Oct Automated Sprinkley 0.0 0.0 0.0 12.0 12 Vecting Cultivater 5.0 5.0 5.0 10.0 12.0 12 Barvesting 16/31/Oct Pan hurvester 6.4 6.4 18.4 18.4 25 Carrying 16/31/Oct Tractor50ps/Kanure spreader 10.5 31.5 42 Ptoring 21/31/Kay Tractor50ps/Kanure spreader 10.5 31.5 42 Ptoring 21/31/Kay Tractor50ps/Kanure spreader 10.5 31.5 42 Ptoring 11/1/10/10/Oct Autosated Sprinkler 0.0 0.0 12.0 12 Cutting 1-15/Oct Yinder 47 4.7 4.7 4.7 4.7 4.7 4.7 4.7 4.7 4.7 4.7 4.7 4.7 4.7			5-15/Jua	Tractor50ps/Rotaly	6.0	6 0	6.0	12
Soving 16.30/Jun 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 12.0 Ratesting 16.31/Oct Rean harvester 5.0 5.0 5.0 10 Barvesting 16.31/Oct Rean harvester 6.4 6.4 18.4 25 Carrying 16.31/Oct Rean harvester 6.4 6.4 18.4 25 Carrying 16.31/Au Tractor50ps/Motaly 6.0 6.0 6.0 12.0 Vising 21.31/Kay Tractor50ps/Motaly 6.0 6.0 6.0 12.0 12 Coting 1.16/Jun Pertilizer/Diliscyder 5.3 10.6 16 Soving 1.16/Jun Pertilizer/Diliscyder 4.7 4.7 4.7 9 Cuting 1.5/Oct Tractor50ps/Mather 0.0 0.0 2.0 2.0 Cuting 1.5/Oct Tractor50ps/Mather 0.0 0.0 2.0 3.5 1.0 Carrying	1	Fertili application	16-30/Jan	Fertilizer/Drill_sceder	5.3	5.3	10.6	
Teeding Cultivater 5.0 5.0 5.0 100 Barvesting 16-31/Oct Bean barvester 6.4 6.4 18.4 25 Carrying 16-31/Oct Tractor50ps/frailer 10.0 10.0 20.3 30 Total				* · · · · ·	0.0			
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Scane Konure spreading 21-31/Kay Tractor50ps/Kotaly 6.0 6.0 6.0 12 Plowing 21-31/Kay Tractor50ps/Kotaly 6.0 6.0 6.0 12 Portili.application 1.16/Jun Fertilizer/Dcill seeder 5.3 5.3 10.6 15 Soring 1.16/Jun Fertilizer/Dcill seeder 6.0 0.0	1	Carrying	16-31/0et	Tractor50ps/Trailer				
Plowing 21-31/Kny tractor50ps/Kotaly 6.0 6.0 6.0 12 Proting 21-31/Kny Fertilizer/Drill sceder 5.3 5.3 10.6 16 Soring 1-16/Jun Fertilizer/Drill sceder 5.3 5.3 10.6 16 Soring 1-16/Jun Autosuted Sprinkler 0.0 0.0 12 12 Cutting 1-15/Oct Zultivater 4.7 4.7 4.7 9 Cutting 1-15/Oct Tractor50ps/Trailer 10.0 10.0 20.0 30 Total 78.5 78.5 81.8 163 Formato Proc. of nersery bed 26-31/Mar by Yinii house 95.0 95.0 190 Roure spreading 5.15/Kay Tractor50ps/Kotaly 5.3 5.3 10.6 16 Fertilizer machine 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 16.0 18.9 18 18.9 18.9 18.9 16.3 10.5 10.5 10.5 <td< td=""><td></td><td>· -</td><td></td><td></td><td>19 J. J. J.</td><td></td><td></td><td></td></td<>		· -			19 J. J. J.			
Interface 16/Jun Fertilizer/Drill seeder 5.3 5.3 10.6 16 Soring 1-16/Jun 0.0	Sesame	Manure spreading	21-31/Kay		1 A A			
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Harvesting 1/Aug 31/Oct by hand 0.0 0.0 1580.0 1.580 Carrying 1/Aug-31/Oct Tractor50ps/Irailer 40.0 40.0 80.0 120 Total 169.9 169.9 1827.6 1.998 Interverspreading 1 15/Apr Tractor50ps/Manure spreader 10.5 10.0 15 Proving 1-15/Apr Tractor50ps/Manure spreader 10.5 10.0 15 Proving 1-15/Apr Tractor50ps/Manure spreader 10.5 0.0 11 Proving 1-15/Apr Tractor50ps/Manure spreader 10.0 0 0 0 Sering 16.30/Apr Poteto planter 0 0.0 0.0 0 0 Vacting 1/Aug-15/Aug Poteto harvester 23.3 23.3 0.0 23 Revesting 1/Aug-15/Aug Tractor50ps/Trailer 30.0 30.0 60.0 90 Total 73.5 73.5 86.7 160 Inion Prep. of nursery bcd 16-25/Sep Nursery bcd 0.0 0.0 21.0 <td></td> <td>Disease/pest_colro</td> <td>l 26/Jun-25/Ju</td> <td></td> <td></td> <td></td> <td>and the second /td> <td>-</td>		Disease/pest_colro	l 26/Jun-25/Ju				and the second	-
Carrying 1/Aug-31/Oct Tractor50ps/Kailer 40.0 40.0 80.0 120 Total 169.9 169.9 1827.6 1.998 Inteto Kanure spreading 1 15/Apr Tractor50ps/Kanure spreader 10.5 10.5 0.0 11 Plowing 1-15/Apr Tractor50ps/Kotaly 5.0 5.0 10.0 15 Fertifi.application 16-30/Apr Fortifizer machine 0.0 0.0 0.0 0.0 0 Sweing 16-30/Apr Fortifizer machine 0.0<		Teeding						
Total 15/Apr Tractor50ps/Manure spreader 10.5 10.5 0.0 11 Ploring 1-15/Apr Tractor50ps/Manure spreader 10.5 10.5 0.0 11 Ploring 1-15/Apr Tractor50ps/Kotaly 5.0 5.0 10.0 15 Fertifi.application 16-30/Apr Fertifizer machine 0.0 0.0 0.0 0 0 Saring 16-30/Apr Poteto planter 0 0.0 0.0 0.0 0 0 Water management 16/Apr 10/Aug Automated sprinkler 0.0 0.0 0.0 12.0 12 Water management 16/Apr 10/Aug Automated sprinkler 0.0 </td <td></td> <td>larvesting</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		larvesting						
bitch Kanure spreading 1 15/Apr Tractor50ps/Manure spreader 10.5 10.5 0.0 11 Plowing 1-15/Apr Tractor50ps/Kotaly 5.0 5.0 10.0 15 Fertili.application 16-30/Apr Fertilizer machine 0.0 0.0 0.0 0 Soring 16-30/Apr Foteto planter 0 0.0 0.0 0 0 Vater manegeent 16/Apr 10/Aug Automated sprinkler 0.0 0.0 12.0 12 Vater manegeent 16/Apr 10/Aug Automated sprinkler 0.0 0.0 0.0 23 Vater manegeent 1/Aug 15/Aug Poteto harvester 23.3 23.3 0.0 23 Carrying 1/Aug 15/Aug Poteto harvester 30.0 30.0 60.0 90 Total 73.5 73.5 86.7 160 Prop. of nursery bed 16-25/Sep Nursery bed 0.0 0.0 21.0 0.0 21.	1.1		1/Awg-31/Oct	Tractor50ps/frailer				
Plowing 1-15/Apr Tractor50ps/Rotaly 5.0 5.0 10.0 15 Proving 1-15/Apr Tractor50ps/Rotaly 5.0 5.0 10.0 15 Soring 16-30/Apr Poteto planter 0 0.0 0.0 0 0 Vater management 16/Apr 10/Aug Automated sprinkler 0.0 0.0 12.0 12 Vater management 16/Apr 10/Aug Automated sprinkler 0.0 0.0 12.0 12 Vater management 16/Apr 10/Aug Automated sprinkler 0.0 0.0 0.0 12.0 12 Vater management 16/Apr 10/Aug Automated sprinkler 23.3 23.3 0.0 23.3 Carrying 1/Aug-15/Aug Poteto harvester 23.3 23.3 0.0 23.0 Total 73.5 73.5 86.7 160 160 16.2 25.0 252.0 252.0 252.0 252.0 252.0 252.0 252.0 252.0 252.0 252.0 252.0 252.0 252.0 252.0 <	- 194 N							
Fortifi application 16.30/Apr Fertifizer machine 0.0 0.0 0.0 0.0 Swring 16.30/Apr Fortifizer machine 0.0 0.0 0.0 0.0 0.0 Water macgoent 16/Apr 10/Aug Automated sprinkler 0.0 0.0 12.0 12 Water macgoent 16/Apr 10/Aug Automated sprinkler 0.0 0.0 12.0 12 Water macgoent 16/Apr 10/Aug Automated sprinkler 0.0 0.0 12.0 12 Water macgoent 16/Apr 10/Aug Automated sprinkler 23.3 23.3 0.0 23 Carrying 1/Aug-15/Aug Fortifizer 30.0 30.0 60.0 90 Total 73.5 73.5 86.7 160 Iorin Prep. of nursery bed 16-25/Sep Nursery bed 0.0 0.0 21.0 0.0 21.0 Manure spreading 6-15/Nov Tractor50ps/Wanure spreader 21.0 21.0 0.0 21.2 32 Porting 16-30/Nov Tractor50ps/Kotaly 10.6	lotetu							
Sowing 16 30/Apr Fototo planter 0 Water manegment 16 /Apr 10/Aug Automated sprinkler 0.0 0.0 12.0 12 Water manegment 16 /Apr 10/Aug Automated sprinkler 0.0 0.0 12.0 12 Weter manegment 16 /Apr 10/Aug Automated sprinkler 0.0 0.0 12.0 12 Weter manegment 16 /Apr 10/Aug Automated sprinkler 23.3 23.3 0.0 23 Marvesting 1/Aug 15/Aug Poteto harvester 23.3 23.3 0.0 23 Carrying 1/Aug-15/Aug Tractor50ps/Trailer 30.0 30.0 60.0 90 Total 73.5 73.5 86.7 160 Inion Prep. of nursery bed 16 -25/Sep Nursery bed 0.0 0.0 252.0 252 Wanter spreading 6 -15/Nov Tractor50ps/Kanure spreader 21.0 0.0 21.2 32 Plowing 16 -30/Nov Fertilizer machine 0.0 0.0 0.0 0 Planting 16 -30/Nov Fertilizer machine 0.0 0.0 30.0	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							
Water munegent 16 30/Fy Interemuter optimizer 0.0 0.0 12.0 12 Water munegent 16/Apr 10/Aug Automated sprinkler 0.0 0.0 12.0 12 Weater munegent 16/Apr 10/Aug Automated sprinkler 4.7 4.7 4.7 9 Water sting 1/Aug 15/Aug Poteto harvester 23.3 23.3 0.0 23 Carrying 1/Aug-15/Aug Tractor50ps/Trailer 30.0 30.0 60.0 90 Total 73.5 73.5 85.7 160 Inion Prep. of nursery bed 16-25/Sep Nursery bed 0.0 0.0 252.0 252 Water spreading 6-15/Nov Tractor50ps/Wanure spreader 21.0 21.0 0.0 21.2 Plowing 16-30/Nov Tractor50ps/Kotaly 10.6 10.6 21.2 32 Pertilizer machine 0.0 0.0 0.0 0.0 0.0 0.0 Planting 16-30/Nov by hand 0.0 0.0 30.0 30.0 Water manegment 16/Nov-10/Apr Automated sprinkter				L	<u>v</u> . v	0.0	U. U	
Yeeding Cultivater 4.7 4.7 4.7 9 Harresting I/Aug 15/Aug Poteto harvester 23.3 23.3 0.0 23 Carrying I/Aug-15/Aug Tractor50ps/Trailer 30.0 30.0 60.0 90 Total 73.5 73.5 73.5 86.7 160 Inion Prep. of nursery bed 16-25/Sep Nursery bed 0.0 0.0 252.0 252 Hanure spreading 6-15/Nov Tractor50ps/Manure spreader 21.0 0.0 21.2 32 Plowing 16-30/Nov Fertilizer machine 0.0 0.0 0.0 21.2 32 Pertili, application 16-30/Nov Fertilizer machine 0.0 0.0 0.0 0 Planting 16-30/Nov Fertilizer machine 0.0 0.0 0.0 0 Planting 16-30/Nov by hand 0.0 0.0 30.0 30.0 Tater manegment 16/Nov-10/Apr Automated sprinkter 0.0 0.0 30.0 30.0 Veeding Marvesting <					n 0		19 0	-
Harvesting 1/Aug 15/Aug Poteto harvester 23.3 23.3 0.0 23 Carrying 1/Aug-15/Aug Tractor50ps/Trailer 30.0 30.0 60.0 90 Total 73.5 73.5 73.5 86.7 160 Inion Prep. of nursery bed 16-25/Sep Nursery bed 0.0 0.0 252.0 252 Hanure spreading 6-15/Nov Tractor50ps/Manure spreader 21.0 21.0 0.0 21 Plowing 16-30/Nov Tractor50ps/Kotaly 10.6 10.6 21.2 32 Pertili.application 16-30/Nov Fertilizer machine 0.0 0.0 0.0 0 Planting 16-30/Nov by hand 0.0 0.0 0.0 0.0 Planting 16-30/Nov by hand 0.0 0.0 30.0 30.0 Tater manegment 16/Nov-10/Apr Automated sprinkter 0.0 0.0 30.0 30.0 Vecding 1/Apr-15/Apr Keaping machines 46.6 46.6 1340.0 1.387 Rarvesting 1/Ap			16/Apr 19/Au					
Carrying 1/Aug-15/Aug Tractor50ps/Trailer 30.0 30.0 60.0 90 Total 73.5 73.5 73.5 86.7 160 Inion Prep. of nursery bed 16-25/Sep Nursery bed 0.0 0.0 252.0 252 Nature spreading 6-15/Nov Tractor50ps/Manure spreader 21.0 21.0 0.0 21 Plowing 16-30/Nov Tractor50ps/Kotaly 10.6 10.6 21.2 32 Fertili.application 16-30/Nov Fertilizer machine 0.0 0.0 0.0 0 Planting 16-30/Nov by hand 0.0 0.0 0.0 0.0 Planting 16-30/Nov by hand 0.0 0.0 0.0 0.0 Vecting 16-30/Nov by hand 0.0 0.0 30.0 30.0 Vecting 16-30/Nov by hand 0.0 0.0 30.0 30.0 Vecting 16-30/Nov by hand 0.0 0.0 30.0 30.0 Vecting 16-30/Nov Isymptote sprinkter 0.0<								
Total 73.5 73.5 86.7 160 Inion Prep. of nursery bed 16-25/Sep Nursery bed 0.0 0.0 252.0 252 Nature spreading 6-15/Nov Tractor50ps/Manure spreader 21.0 21.0 0.0 21 Plowing 16-30/Nov Tractor50ps/Manure spreader 21.0 21.0 0.0 21 Pertili.application 16-30/Nov Fertilizer machine 0.0 0.0 0.0 0 0 Planting 16-30/Nov Fertilizer machine 0.0 0.0 0.0 0 0 Planting 16-30/Nov by hand 0.0 0.0 0.0 0.0 0 Vecting 16-30/Nov by hand 0.0 0.0 30.0 30. Vecting 16/Nov-10/Apr Automated sprinkter 0.0 0.0 30.0 30. Vecting 1/Apr-15/Apr Keaping machines 16.6 46.6 1340.0 1.387 Rarvesting 1/Apr-15/Apr Tractor50ps/Trailer 80.0 80.0 140.0 220					23.3	23.3		
Inion Prep. of nursery bed 16-25/Sep Nursery bed 0.0 0.0 252.0 252 Manure spreading 6-15/Nov Tractor50ps/Manure spreader 21.0 21.0 0.0 21 Plowing 16-30/Nov Tractor50ps/Manure spreader 21.0 21.0 0.0 21 Fertili.application 16-30/Nov Fertilizer machine 0.0 0.0 0.0 0 Planting 16-30/Nov by hand 0.0 0.0 0.0 0.0 0 Tater manegment 16/Nov-10/Apr Automated sprinkter 0.0 0.0 30.0 30. Vecding I/Apr-15/Apr Keaping machines 46.6 46.6 1340.0 1.387 Rarvesting 1/Apr-15/Apr Tractor50ps/Trailer 80.0 80.0 140.0 220			1/Aug-15/Aug	tractorsops/traffer				
Wanure spreading 6-15/Nov Tractor50ps/Wanure spreader 21.0 21.0 0.0 21 Plowing 16-30/Nov Tractor50ps/Wanure spreader 10.6 10.6 21.2 32 Fertili.application 16-30/Nov Fertilizer machine 0.0 0.0 0.0 0 0 Planting 16-30/Nov by hand 0.0 0.0 0.0 0 0 Tater manegment 16/Nov-10/Apr Automated sprinkter 0.0 0.0 30.0 30. Vecding Swerth sprayer 3.4 3.4 7.2 11 Navesting 1/Apr-15/Apr Keaping machines 46.6 46.6 1340.0 1.387 Carrying 1/Apr-15/Apr Tractor50ps/Trailer 80.0 80.0 140.0 220			1 1 C OC 20	Nuranni tot				
Plowing 16-30/Nov TractorSOps/Kotaly 10.6 10.6 21.2 32 Fertili.application 16-30/Nov Fertilizer machine 0.0 0.0 0.0 0 0 Planting 16-30/Nov by hand 0.0 0.0 0.0 0.0 0.0 0.0 Tater manegment 16/Nov-10/Apr Automated sprinkter 0.0 0.0 30.0 30. Vecding Swerth sprayer 3.4 3.4 7.2 11 Navesting 1/Apr-15/Apr Keaping machines 46.6 1340.0 1.387 Carrying 1/Apr-15/Apr TractorSOps/Trailer 80.0 80.0 140.0 220	DATOR							
Fertili.application 16-30/Nov Fertilizer machine 0.0 501.0 504 0.0 0.0 30.0	- I 📝							
Planting 16-30/Nov by hand 0.0 0.0 501.0 504 Vater manegment 16/Nov-10/Apr Automated sprinkter 0.0 0.0 30.0 30. Vecting Swerth sprayer 3.4 3.4 7.2 11 Narvesting 1/Apr-15/Apr Keaping machines 46.6 46.6 1340.0 1.387 Carrying 1/Apr-15/Apr Tractor50ps/Trailer 80.0 80.0 140.0 220								
Tater managment 16/Nov-10/Apr Automated sprinkter 0.0 0.0 30.0 30. Vecding Swerth sprayer 3.4 3.4 7.2 11 Harvesting 1/Apr-15/Apr Keaping machines 46.6 1340.0 1.387 Carrying 1/Apr-15/Apr Tractor50ps/Trailer 80.0 80.0 140.0 220								
Vecding Swerth sprayer 3.4 3.4 7.2 11 Harvesting 1/Apr-15/Apr Keaping machines 16.6 16.6 1340.0 1.387 Carrying 1/Apr-15/Apr Tractor50ps/Trailer 80.0 80.0 140.0 220	44 🖡 🗍 12							
Narvesting 1/Apr-15/Apr Reaping machines 46.6 46.6 1340.0 1.387 Carrying 1/Apr-15/Apr Tractor50ps/Trailer 80.0 80.0 140.0 220			10/804-10/80					
Carrying 1/Apr-15/Apr Tractor50ps/Trailer 80.0 80.0 140.0 220			1/105-15/10-					
	. .							
		Total	ttyhr fatyhr	MUNITER STORES				

Table B-13 Proposed Labour and Rechanization on Small Scale Investors(Vegeta, (Fruit)

		UKTALION	Nance of		ed Area		Tabour
Crops	¹² Operation	Ciac	Faim Machinery	Michinery		Assistant	total
	gen an menergen alle	سيب بريح رأر	أرواعته فتصارو عربانا بعسا بالمتقادمة	(hr)	<u>(hr)</u>	<u>(hr)</u>	<u>(hr)</u>
aapes	Manure spreding	1 30/Nev	Tractor50ps/Manure spreader	21.0	21.0	42.0	63
	Fertili, application		Trencher/by hand	21.0	24.0	21.0	. 42
÷	Probles	1 15/Jan	by hand	· 0.0	0.0	480.0	480
	Yater manegrant	I/Jan 31/Dec	Drip irrigtica	0.0	0.0	73.0	73
	Disease control	1 10/Jul 👘	Szerth Sprayer	24.0	24.0	24.0	48
· · · ·	Tecoling	1	Cultivator	30.0	30.0	30.0	60
	Barvesting	16/Jul 30/Sep	by hand	0.0	0.0	2016.0	2,016
	Carrying	16/Jul-30/Sep	Tractor50ps/frailer	108.0	108 0	61.8	173
	Sub total	2.5		204. O	201.0	2750.8	2,955
live	Manure spreding	1-10/ Kar	Tractor50ps/Manure spreader	21.0	21 0	42.0	63
	Fertili, application	1-10/Mar	Trencheryby hand	21.0	21.0	21.0	42
	Praning		by hand	0.0	0.0	0.0	0
	Vater musegeent	1/Jan 31/0.cc	Drip irrigtion	0.0	0.0	73.0	73
•	bisease control	1-10/Aug	Sverth Sprayer	21.0	24.0	24.0	48
	Teching	n de la constante Notas de la constante de la cons	Cultivator	9.4	9.4	9.4	19
	Barvesting	1/Oct 30/Nov	by hand	0.0	0.0	2680.0	2.680
	Carrying	1/0c1-30/Nov	Fractor50ps/Trailer	94.0	91.0	56.0	150
	Sub-total	1. S. 1. S. 1.		169.4	169.4	2905.4	3, 075
bunge	Manure spreding	16-25/Mar 👘	Tractor50ps/Masure spreader	21.0	21.0	42.0	63
	Fertili. application	16-25/Mar	Treacher/by hand	21.0	21.0	21.0	. 42
	Prosting	16 31/Jan	by hand	0.0	0.0	168.0	168
	Yater manegment	1/Jan 31/Dec	Drip irrigtion	0.0	0.0	73.0	73
111	Discase control	1-20/Sep	Swerth Sprayer	3.4	3.4	6.8	· ? IŬ
	Teeding		Cultivator	9.4	9.4	9.4	19
	Harvesting	16/Nov-31/Dec	by hand	0.0	0.0	2160.0	2, 460
	Carrying		Tractor 50ps/Trailer	100 0	100.0	60.0	160
	Sub_tutal	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		151.8	151.8	2810.2	2.995
	Total			1423 3	1423 3	13967.8	15.391

Continuation

		Operation	Nage of		ed Area		Labour
Crons	Operation	time	Farm Machinery	-	-	Assistant	total
		2011 B. 198	and the second	<u>(hr)</u>	<u>(hr)</u>	<u>(hr)</u>	<u>(hr)</u>
heal	Manure spreading	1-30/Nov.	Tractor50ps/Manure spreader	189	189	378	567
	Ploving	1-30/Nov.	Tractor50ps/Rotaly 2.4n	108	108	108	- 216
	Fertili, application		Tractor50ps	189	189	189	378
	Soving	16-30/Nov.	Fertilizer-Drill seeder	0	Ð	0	0
	Vater manegment		Automated Sprinkler	0	. <u>.</u> 0	168	- 188
	Disease control	16-30/Mar	Sverth Sprayer	31	31	61	92
1 - E	Teeding	10 30/ 831	Celtivator	85	85	85	169
1. 1. A.		16-31/Nay	Condine, auto thresher	76	26	151	227
	llarvesting	16-31/May	Tractor50os/Trailer	51	54	108	162
	Carrying	10-01/#49	112010100007 1141101	731	731	1.188	1.919
1.12	Sub-total	10 Rouge & Joom	Tractor50ps/Vanure spreader		: 189	378	567
aize	Ranne spreading	16Nay-5Jua		108	108	108	216
1.1.1		I-15/Jun.	Tractor 50ps/Kotaly 2.4m	189	189	189	378
	Fertili application	1-15/Jun.	Tractor 50ps		103	105	
1 - E - L	Sovies	1-15/Jun.	Fertilizer Drill seeder	· · _ 0	-	72	72
	Tater manegment	1/Jun-10/Oct.	Automated Sprinkler	0	÷ 0	. –	
	Disease control	1-15/Aug.	Swerth Sprayer	31	31	61	
	feeding	•	Cultivator	85	85	85	169
$\sim 10^{-1}$	Harvesting	1-15/0ct.	Combine, auto thresher	113	. 113	227	340
	Carrying	1-15/0ct.	Tractor50ps/Trailer	321	324	648	972
at sea	Sub-total	el la segui		1, 039	I. 039	1.768	2, 806
arley	Manure spreading	25/0c1-15/No	. Tractor50ps/Nanure spreader	189	189	378	567
	Ploving	1-15/Nov.	Tractor50ps/Botom plow	108	108	108	216
	Fertili application		Tractor50ps	189	- 189	189	378
1 ·	Soving	16-30/Nov.	Fertilizer-Drill seeder	0	0	0	. 0
2	Tater manegment	16/Nuv-5/May		0	0	67	67
	Disease control	16 25/Xar	Sverth Sprayer	31	31	61	92
÷		10 237 641	Cultivator	85		85	169
	Teeding	1 10 /11	Combine, auto thresher	76	• •	151	227
1.1	Baryesting	1-15/May	Tractor50ps/Trailer	51	· · · · · ·	108	
	Carrying	E-15/May	Tractoroops/ traffer	731		1 147	
	Sub total		T				
soy bea	n Manure spreading	5-14/Jun	Tractor50ps/Nanure spreade	109		2. T. T. T.	
	Plowing Second	5-14/Jan	Tractor50ps/kutaly				
	Fertili.applicatio		Tractor50ps/	95			
	Sowing	15-30/Jun	Fertili. Drill seeder	0			
1.11	Tater maneguent		t Automated Sprinkler				
i terti	Teeding	15-30/Jun	by Herbicide	31			
	Disease control	5-15/Aug	Sverth Sprayer	31			
	Harvesting	15-31/0ct	Bean harvester	5			
	Carrying	15-31/0ct	Tractor50ps/Trailer	- 14	14		
	Processing/grading		by hand	- 1 - 1 - 1 - 1 - ()	
	Seb-total			65	2 652	2. 356	5 - 3, 00

Table B-14 Proposed Labour and Mechanization on Large Scale Investors(Land Use Crops)

	1 - 1 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	Operation	Naue of		ed Area		labour
rops	Operation	tine	Farm Machinery		-	Assistant	total
	o na kaza guleta		التزيام بالمتفاق فيفتركهم هامان	(hr) -		<u>(h1)</u>	<u>(hr)</u>
S 151.	Manare spreading	•	Tractor50ps/Manure spreader	189	189	378	567
	Ploving 2.	16-39/Jon	Tractor50ps/Rotaly	108	108	103	216
	Fertifi.application		Fertili.Drill sçeder	95	95	j 😳 191	286
1.1	Soving	16-30/Jun		0	0	0	. (
1	Tater managment	17Jun-10/Oct	Automated Sprinkler	. a af 0	0	- 72	71
	Teeding		Celtivator	65	85	85	169
	Disease control		Swerth Sprayer	31	- 31	61	91
	Rarvesting	1-15/001	Vinder	756	756	1.512	2, 26
11	Cariyiog	1-15/0-1	TractorSOps/Trailer	108	108	216	32
1.1	Post-freatment	1-10/Nov	Tractor 50ps/Trailer	0	0	612	61
÷.*.	Seb_total			1, 372	1, 372	3, 235	4, 60
neto	Manare spreading	1 157Apr 🗄	Tractor50ps/Manure_spreader	189	:: 189	378	56
· ·	Howing	1-15/Apr	Tractor50ps/Rotaly	108	108	216	. 32
	Fertili. application	15-30/Apt	Fortilizer machine	0	. je po 🗘	i Ö	1919
	Sorring	15-30/Apr 💡	Poteto planter	126	126	252	37
	Nater wanegøent	15/Apr-10/Aug	Drip irrigtion	0	, O ,	63	6
	Reading	15-30/Apr	Swerth Sprayer	31	31	61	- 9
	Disease control	1-5/Apr	Swerth Sprayer	31	31	61	9
1.1	Harvesting	1-15/Aug	Poteto harvester	. atke 419	419	1, 258	1.67
1.1	Carrying	1-15/Aug	Tractor50ps/Trailer	1, 140	1, 440	1.440	2, 88
11	Sob-total and a	and the second	م مراجع المراجع المراجع والمراجع المراجع	2, 311	2, 344	3, 730	6, 07
i tion	Prep. of nursery led	16-30/Sep	Rotaly(Nursery bed)	22	22	43	6
	Manare spreading	1-15/Nov	Tractor50ps/Manure spreader	189	89	378	56
	Playing	16-30/Nov	Tractor50ps/Rotaly	108	108	216	32
	Fertili application	16-30/Nov	Fertilizer machine	· · · 0	: 0	. 0	
23	Planting	16-30/Nov	Ly hand	0	0	9,000	9,00
	Tater manegoont	16/Sux 18/Aor	Automated Sprinklee	0	0	81	1
	Yeeding		by hand	31	31	61	
	Barvesting	1 15/Anc	by hand	419	419	1. 258	1.67
	Carrying	1-15/Apr	Tractor506s/Trailer	684	681	1.080	1. 70
	Processing	16-30/Apr	by hand	0	0	2, 160	2, 10
	Sub total			1, 453	1.453	14.278	
ibbage		25/Sen 11/Non	Secder(in Vinil house)	1.710	1. 710	1 764	3.4
	- Wanure spreading	20 30/001	Tractor50ps/Kanare spreader		189	378	5
	Ploving	20 30/0ct	Tractor 50ps/Rotaly	103	103	108	2
	Fertili. application		Fertilizer machine	90	90	180	2
	Planting	1-15/Nov	Trance planter	231	234	468	7
	Tater manegment	1/Nov-25/Mar	Automated Sprinkler	201	231	400	
	Veeding	15-25/Nov	Swerth Sprayer	31	31	74 1	
a de la composición d Composición de la composición de la comp	Disease control	1-10/Dec	Swerth Sprayer	31	31 31		
	larvesting	15-31/Mar	by hand	្រា	31 0		
	•					5.010	5, 0
	Carrying	15-31/Mar	Tractor50ps/Trailer	1, 728	1. 728	2, 304	4.0
	Post-treatment	1-5Apr	Tractor50ps/Trailer	108	108	216	3
	Sub_total Total	· · · · · · · · · · · · · · · · · · ·		<u>4, 228</u> 12, 518	4. 228	10.652	<u>14.8</u> 50,9

			17 C 1 C 1 C 1 C		· · · ·
Table D IS Devessed	Inhusin and	Nochosiastics	1		F A1 Z F A A
- DRDHE DAID FLOHDSED		1111111111111111111111111111111111111	nn large	NO 10	Invoctored Duriev L
Table B-15 Proposed		The construction of the lot of th	VIII DAILYC	- uuuu	100000000000000000000000000000000000000

	Annuation	Bouralise	Name of	lachinery0	<u>ed Area</u> berateri		Labous total
TUDS	Operation	Operation	Farm Machinery	(hr)	(hr)	(hr)	(hr)
		tine			189	378	56
	Yanure spreading	1-15/Nov	Tractor50ps/Manure spreader	189			210
	Ploving	16-30/Nov	Tractor50ps/Rotaly	108	108	108	
	Fertili.application		Tractor50ps/Rotaly 2.4m	189	189	189	37
	Soving	16-30/Nov [Ferti-Drill secder(13Line)				
	Vater nanegoent	16/Nov-10/Xay	Automated Sprinkler	0	0	108	10
	Teeding		Cultivater(2.5m)	85	85	0	8
	Disease control	16-31/Mar	Swerth Sprayer	31	31	61	· 9
1999 - P. 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 199	Harvesting	16-31/Xay	Combine	76	76	151	22 22
	Carrying	16-31/May	Tractor50ps/Trailer(5 ton)	27	27	55	8
	Sub-total			705	705	1.049	1, 75
	Namure spreading	1/Apr-15/Kay	Tractor50ps/Kanure spreader		378	755	1.13
	Playing	1-31/Nay	Tractor 50ps/Rotaly	216	216	216	43
			Tractor 50ps/kotaly 2.4	378	378	378	
	Fertili, application				910	310	
	Sowing		Ferti-Drill seeder(13Line)				
	Fater manegoent	1/May-15/Sep	Automated Sprinkler	0	0	. 144	14
÷	Teeding	-	Cultivater(2.5a)	169	169	÷ 0	16
	Disease control	1-15/Aug	Sverth Sprayer	61	61	122	18
. `	llai vesting	1-30/Scp	Tractor50ps/Mover(3 time)	227	227	451	. 68
	Carrying	1-30/Sep	Tructor50ps/Trailer(5 ton)	324	324	618	97
÷. +	Sub-total			1. 753	1.753	2, 718	4.47
		H. (1) 1 - 15 - N	Tractor50ps/Manure spreader		189	378	56
nter	Manure spreading					108	21
	Ploying	1-15/Nov	Tractor50ps/Rotaly	108	108		
1 A.	Fertili application		Tractor50ps/kotaly 2.4m	189	189	189	3
1.1	Soving		Ferti-Drill seeder(13Line)				÷ .
	Tater manegment	16/Nov-30/Apr	Automated Sprinkler	0	0 11	67	6
	Teeding	1. State 1.	Cultivater(2.5m)	- 31	31	0	2
	Disease control	[6-31/Mar	Sverth Sprayer	85	85	85	- Li
	Harvesting	1-15/May	Combine	76	76	151	22
. •	Carrying	1-15/May	Tractor50ps/Trailer(5 ton)	27	27	54	1
		1 10°849	mactoroops, marier(5 rear	705	705	1, 032	1.7
	Syb-total space		T				
អាខ្លួងប្រា	Nanure spreading	1/Xay-15/Jun	Tractor50ps/Nanure spreader		378	756	្រាះ
	Ploying	1-31/Jun	Tractor50ps/Rotaly	216	216	216	43
	Fertili. application	n 1-317Jun 👘 👘	Tractor50ps/Kotaly 2.4m	- 191	191	382	51
	Soving	1-31/Jun	 Ferti-Drill sceder(13Line)) - J	- 0	0	
	Fater manegment	1/Jun-15/Oct	Automated Sprinkler	0	0	144	1 I
	feeding	•,,••••••••••••••••••••••••••••••••••••		0	Ó	0	
		1 157Aug	Swerth Sprayer	61	- Ď	122	1
1.1.1	Disease control				103	216	3
- 	Cutting		Roraly Nover(3 time)	801			
1.1	Carrying	25/Jun 15/0ct	Tractor50ps/Trailer(5 ton)	2, 160	2, 160	4, 320	6.4
на П.,	Sub-total			3, 114	3, 053	6, 156	9, 2
ต่ารถเกต	Nanwe spreading	1-30/Sep	Tractor50ps/Nanare spreade		189	378	5
	Plusing	1-15/0c4	Tractor50ps/Rotaly	108	108	108	2
1.1	Fertili application	n 15/0c1	Tractor50ps/Refaly 2.4m	95	·· · · 95	191	2
1.190	Soring	1 15/0c1	Forti-Drill seeder(13Line)		0	0	
	Water manegment		Autonated Sprinkter	0	0	72	
	Veeding		and the second process of the second proces	· · · · · · · · · · · · ·	- 10 0	- 0	
		16-31/0c1	Sverth Sprayer	85	85	85	1
	Disease control		• • ·				
1.1	Cutting		Roraly Nover(3 time)	756	756	1, 512	
	Carrying	10/Kov 28/Fet	o Tractor50ps/Trailer(\$ 100)	990	. 990	1. 980	2, 9
1.00	Sub-total			2,223	2, 223	4, 326	6.5
odder	Nanure spreading	- 16/Spt-15/Oct	I Tractor50ps/Xanure spreade	r 189	189	378	5
beet	Ploying	16-31/0ct	Tractor50ps/Rotaly	108	108	216	3
	Fertili. applicatio		Tractor50ps/kotaly 2.4m	126	125	252	
14 A	Soving	16-31/0ct	Ferti-Drill sceder(13Line	2 A A A A A A A A A A A A A A A A A A A	Õ	0 100	
			r Automated Sprinkler	í i chi	. E ŏ	63	
	Water manegment	· · · · · · · · · · · · · · · · · · ·		-			
	Yeeding	1-15/Feb	Sverth Sprayer	31	31	61	
1. 	Disease control	1-15/Xar	Sverth Sprayer	31	31	61	
	Harvesting	1-15/Apr	Beet harvestor	419	419	1, 258	1, 6
다. 같은 영화	Carrying	-1-15/Apr	Tractor50ps/Trailer(5 ton)		2, 880	5.910	
. <u>)</u> -	Sub-tota1	아이 말 아랍니다.		3, 784	3.781	8, 229	2.0
<u></u>	Total(hr)			12, 284	12, 223	23.510	

		Operation	Nase of		inted Are		Labo
Crops	Operation	time	Farm Machinery	Machinery (hr)	Operator (hr)	Assistant (hr)	tota
i	Manare spreading	1-15/Nov.	Tractor50ps/Manure spreader	189	189	378	<u>(hı)</u> 56
	Ploving	16-30/Nov.	Tractor50ps/Rotaly	108	108	108	21
11 s.e.	Ferti, application		Tractor50ps/Rotaly 2.4	189	189	189	37
	Saing	16-30/Nov.	Forti. Drill secder(13Line)		103	107	
1.1	Tater manegment	16Sov-10/May	Automated Sprinkler	0	0	108	10
11.0		16-25/Mar	Sworth Sprayer(600Lit)	31	31	61	9
	Teeding		Cullivator(2.5s)	85	85	85	- 16
	Harvesting	16-31/May	Combine(300cm)	76	76	151	: 22
,	Cariving	16-31/#ay	Tractor50ps/Traiter(3 ton)	27	27	51	- 8
	Set tutal	10 01 -×.j	ruccoroopa municico tan	701	701	1.131	1, 83
uze	Manue spreading	20.317Nav	Tractor50ps/Hanure spreader	189	189	378	56
	Plowing	1 15/Jun	Tractor50ps/Rotaly	105	108	108	21
	Ferth application		Tractor50ps/kotaly 2.4	100	100	100	21
	Southg	1 15/Jun	Fertilizer Drill seeder	90	00	197	97
	Later managineral	1/Jun 10/0c1	Automated sprinkler	1	. 90	180	27
	Texting	1770a 1070ct		0	. 0	72	7
101	Discase control	1 15/Aug	Cultivator South consume	85	85	85	16
· 11	Cutting		Sterth sprayer Truster 60m / Dombarrowter	31	31	61	9
1	••	1 15/001	Tractor50ps/Cornharvester	113	113	227	34
	Careving Sub-total	1-15/0:1	Tractor50ps/Trailer	162	162	324	48
		E NE N	*	778	778	1, 435	2, 21
aley	Research spreading	1 15/Nov.	Tractor50os/Manure spreader		189	378	- 56
1 - N	Plowing	1 15/Nov.	Tractor\$0ps/Botom plow	108	108	108	- 21
. •	Forti application		Tractic 50ps/Rotaly 2.4m	189	189	189	37
į.	Serieg	16-30/Nov.	Fertilizer-Brit) seeder			1	
$\sum_{i=1}^{n} (i \in \mathcal{A}_{i})$	Tater nanegacut	16Sov-5/Kay	Automated sprinkler	0	S ()	67	6
	Discase control	16-257Mar	Sterth sprayer	31	31	51	-
÷ 1	Teeding	÷	Cultivator	85	. 85	85	16 I E
2	Burvesting	1 ISrXay 👘	Cosbine	76	76	151	22
•	Carrying	1-15-Nay	Tractor 50ps / Trailler	. 27	27	54	- 8
	Sub_total 💡 👘	and the second second		704	70 1	1.093	1.79
ជន្លាំសា	Manure spreading	1 Idzkay	Tractor50ps/Manure spreader	189	189	378	56
	Ploying	16 31/May	Tractor50ps/Kotaly	108	108	.: 108	21
11.1	ferti. application	16-31/Nay	TractorSOps/	95	- 95	191	- 28
	Serving second second	16 31/Nay	Fertili.Drill seeder				1
	Water monegment	16Jun-25/Oct	Automated sprinkler	0	ai 0	72	7
-	Teeding	16-30/Jun		0	i i i	0	
	Disease control	1-15/Jun	Swerth sprayer	31	ંગં	61	9
÷.,	Cetting	25Jun 30/Sep	Tractor50ps/Newer(3 time)	51	51	108	16
1997 - 1997 1997 - 1997	Carrying	• •	Tractor 50ps/Trailer	1.080	1.080	2.160	3, 24
a i s	Sub total			1.557	1.557	3, 078	4.63
TSECH	Manure spreading	20 31/Sep	Tractor50ps/Nanure spreader		189	378	51
	Ploving	1 15/0-1	Tractor 50ps/ Kotaly	103	108	108	21
	Ferti application		Tractor Sops/	95	95	191	28
1 N.		1-15/0et	Brockaster	L.		151	
	Valer manegment	1/0.1 25/865	Autorated sprinkler	0	0	72	
		16-25/0c1	Sworth Sprayer	31	31		
	Teeding	10 00 00 1	ones en obstraes			61 95	
1.2	Cutting	11Nov - 99 /0-1	Rotaly mover	85	ः 85- २८०	85	: I(
4.11	Carrying				756	1, 125	1.88
			Tractor50ps/Trailer	990	990	1.980	2, 97
	Sub-total Janure spreading	20-21 (See	TrantuckOrn (Herein	2.251	2, 251	4,000	6. 25
		20-31/Sep	Tractor50ps/Manure spreader		189	378	50
(ng)	Plowing North poplication	1-15/0ct	Tractor 50ps/Rutaly	108	108	216	32
1.1	Ferti.application		Tractor 50ps	<u>95</u>	95	191	28
1.1	Soring	1-15/0ct	L prodeaster				
· .	Tater manegment	1/OCL 25/Jay	Automated Sprinkler	0	0	144	14
	Teeding	10 01 /0					
1	Disease control	16-25/Oct	Sycrth Sprayer	31	31	61	9
1.1	llarvesting		Reet harvester	419	419	1, 258	1.67
	Carrying	11Nov 28/Hay	Tractor50ps/Trailer	1, 191	1, 491	2, 988	4. 48
	<u>Sub-fotal</u>			2, 336	2. 336	5, 236	7,51
	Total			8, 332	8. 332		24. 30

Table B 16 Proposed Labour and Mechanization on large Scale Investor(Reef Cattle)

· · · · · · ·		Operation	Name of		ted Area		
Crops	Operation	line	Farm Machinery	Machinery		Assistant	Labour
			· · · · · · · · · · · · · · · · · · ·	<u>(hr)</u>	(hr)	(hr)	Total
Atrivial	Nanure spreding		Tractor50ps/Manure spreader	189	189	378	567
	Ferti application	16-31/Jan	Treacher/by hand	189	189	189	378
	Proning	1-15/Feb	by hand 👘	0	0	0	0
· ·	Water wanegment	1/Jan-31/Dec	Drip irrigtion	0	0	657	657
1 .	Disease control	1-10/Max	Swerth Sprayer	216	216	432	648
	feeding	· · ·	Cultivator	270	270	270	510
	Narvesting	1/May 30/Jun	by hand			17.820	17, 820
	Carrying	1/May 30/Jun	Tractor50ps/Trailer	972	972	576	1.548
· · · ·	Sub-total			1.836	1, 836	20.322	22.158
Grades	Manure spreding	16-31/Jan	Tractor50ps/Nanure spreader	189	189	378	567
1	Ferti.application	1-15/Feb	Trencher/by hand	189	189	189	378
	Pruning	16-28 Feb	Pruning Machin	540	510	540	1, 080
	Vater nanognent	/Jan-31/Dec	Drip irrigtion	0	0	657	651
1	Disease control	1-10/Jul	Swerth Sprayer	216	216	432	618
1	feeding		Cultivator	270	270	270	54
	Barvesting	16/Jul-30/Sep	by hand	0	0	18. 141	18, 14
<u> </u>	Carrying		Tractor50ps/Trailer	972	972	576	E. 54
· ·	Sub total			2, 376	2, 376	21. 186	23, 562
Drive	Manure spreding	1-10/Mar	Tractor50os/Kanure spreader		189	378	56
	Forti. application	• • • • • •	Trencher/by hand	189	- 189	189	37
	Pruning	1-20/Jan		0	. 0	0	
	Vater manegment	1/Jan 31/Dec	Drip incigtion	0	0	657	65
	Disease control	1-10 Aug	Sverth Sprayer	216	216	216	43
	Weeding		Cultivator	90	90	90	18
۰ I	Revesting	1/0ct-30/Nov	by hand	0	0	21.120	24, 12
	Carrying	L/Oct-30/Nov	Tractor50es/Trailer	846	816	504	1.35
	Sub-total	17021 307001		1.530	1.530	26.151	27.68
L	Namure spreding	16-25/Nar	Tractor50ps/Hanure spreader			378	56
prais.	Ferti, application		Treacher/by hand	189		189	37
1.12	Pruning	1-20/Jan	Pruning Nachin	540		1	1.08
1 .:	Tater nanegment	1/Jan - 31/Dec	Drip Irrigtion	0		565	66
	Disease control	1.20 Sec	Swerth Sprayer	216	-	• • • •	43
1	Viscase control	LOWAD	Cultivator	270			- 51
1	Harvesting	16/Nov 31/Dec		· . 0			22, 14
	-		Tractor50ps/Trailer	900	· · ·		1. 44
	Carrying Sub-total	10,007-01/100	Havin opportant	2, 301			27.24
1	Sub totat Total	an an an the second second	and the second secon	8,016			100, 64

Table B-17 Proposed Labor and Rechanization on Large-scale Investor(Fruit)

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Table B-13 Labour time of farming on Small Farmer

Cruos Operation Newt Manure sp Plowing		101212121212	1-10, -3	-1316-301-1	16-301			100	-1516-50	15.6	1	16-30	1-15:5	5 - 3C) - 15 24	-:516-30:-) 4	-1516-30	30 Tota)
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Cutting							•. •.					: '	• .			-	
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Disease	Disease control -				• .		~	` : .	~			•					53 6
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Table B-22 Labour Time of Farming on Small Scale Investors(FruitHege.

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Table B-23 Labour Time of Farming on Large Scale Investors(Land Use Crops)

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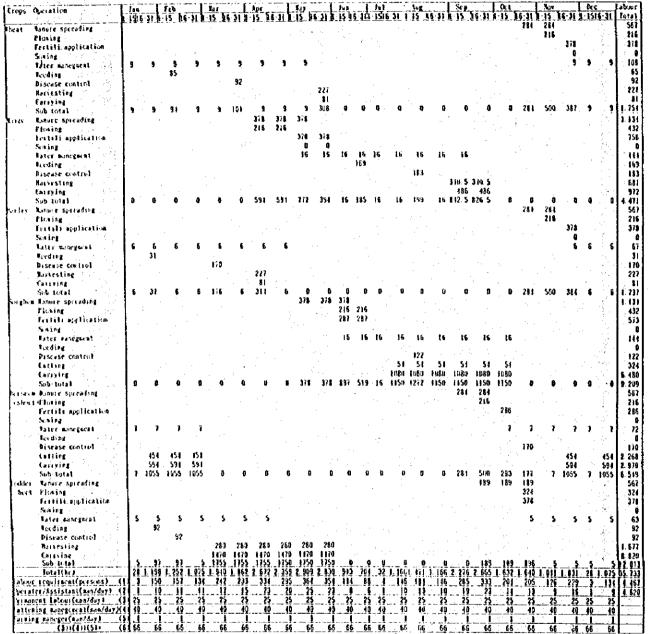


Table B-24 Labour Time of Farming on Large Scale Investors(Dairy)

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Table B-25 Labour Time of Farming on Large Scale Investors(Reef Cattile)

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