

Table D.2-20 Summary of Gross Income and Net Profit per Hectare in Present Condition

(unit : Lps/ha)

Crops	Gross income	Production cost	Net profit	Profit ratio	Profit per month
Maize	992	465	527	0.53	158.3
Rice	1,664	867	797	0.48	170.7
Kidney beans	840	556	284	0.34	106.4
Soy beans	0	0	0	-	-
Sorghum	576	309	267	0.46	80.2
Tomato	6,975	1,159	5,816	0.83	2,178.3
Cucumber	2,310	1,001	1,309	0.57	490.3
Cabbage	0	0	0	-	-
Onion	7,840	1,256	6,584	0.84	1,977.2
Chili	6,020	1,147	4,873	0.81	1,463.4
Water melon	3,100	908	2,192	0.71	658.3
Melon	0	0	0	-	-
Tobacco	7,040	1,141	5,899	0.84	1,263.2
Coffee	4,200	1,141	3,059	0.73	254.9
Papaya	7,920	3,173	4,747	0.60	395.6
Avocado	4,000	845	3,155	0.79	262.9
Mango	3,000	852	2,148	0.72	179.0
Orange	3,360	895	2,465	0.73	205.4
Pasture(irrigated)	0	0	0	-	-
Pasture(non-irri.)	1,021	123	898	0.88	74.8

Table D.2-21 Total Gross Income and Profit  
in Present Condition

Crops	Cropped Area ha	Gross Income 1000Lps	Net Profit 1000Lps
Maize	690	684.5	363.6
Rice	480	798.7	382.6
Kidney beans	70	58.8	19.9
Soy beans	0	0.0	0.0
Sorghum	20	11.5	5.3
Tomato	220	1,534.5	1,279.5
Cucumber	10	23.1	13.1
Cabbage	0	0.0	0.0
Onion	15	117.6	98.8
Chili	25	150.5	121.8
Water melon	15	46.5	32.9
Melon	0	0.0	0.0
Tobacco	40	281.6	236.0
Coffee	50	210.0	153.0
Papaya	30	237.6	142.4
Avocado	30	120.0	94.7
Mango	20	60.0	43.0
Orange	10	33.6	24.7
Pasture(irrigated)	0	0.0	0.0
Pasture(non-irri.)	970	990.4	871.1
<b>Total</b>	<b>2,695</b>	<b>5,358.9</b>	<b>3,882.1</b>

### D.3 Farmers Economy

Table D.3-1 Outlines of Farmers in the Study Area  
by Farm House-Hold Survey

Item	
Farm House-Holds Surveyed	
Small-scale farmers (under 5 ha)	: 27 house-holds
Middle-scale farmers (5 to 50 ha)	: 21 house-holds
Large-scaled farmers (over 50 ha)	: 2 house-holds
Total	: 50 house-holds
Small-Farmers Groups Surveyed	: 3 groups
1. Living period in the Study Area	: 18 years
2. Experience of Agriculture	: 25 years
3. Family size (total)	: 6.0 persons
(male)	: 3.0 persons
(female)	: 3.0 persons
4. Labor force on farm	: 2.2 persons
5. Situation of house	
- Electricity	: 84 %
- Toilet	: 80 %
- Pick-up car	: 18 %
- Sedan car	: 8 %
- Motor bicycle	: 4 %
- Bicycle	: 34 %
- Animal Cart	: 48 %
- Television	: 26 %
- Radio	: 94 %
- Fuel for cooking (wood)	: 88 %
(gas)	: 6 %
(electricity)	: 4 %
6. Farmers of shortage of irrigation water	: 47 %
7. Farmers with tractor	: 4 %
8. Farmers utilized credit	: 16 %
9. Farmers received training by CEDA:	4 %
Farmers wanted for CEDA training	: 74 %
10. Problems in farming	
- Shortage of irrigation water	: 36 %
- Insect or pest	: 34 %
- Shortage of credit	: 10 %
- Shortage of machineries	: 8 %
- Marketing	: 4 %
- Shortage of farm inputs	: 12 %
- Extension	: 8 %
- Productivity of livestock	: 8 %
11. Farmers wanted enlargement of farm lands	: 64 %
12. Farmers with cattle	: 46 %
Farmers with milk cattle	: 40 %
13. Member of cooperatives	: 18 %

Source : Farm house-hold survey by the Study Team in Feb. 1990

Table D.3-2 Agricultural Income of Typical Farmers in Present Condition

Crops	Small-Scale Farmer			Middle-Scale Farmer			Member of Small-Farmers Group		
	Cropping Area ha	Gross Income Lps	Net Profit Lps	Cropping Area ha	Gross Income Lps	Net Profit Lps	Cropping Area ha	Gross Income Lps	Net Profit Lps
Maize	0.74	734	390	2.54	2,520	1,339	0.99	982	522
Rice	0.67	1,115	534	0.99	1,647	789	1.22	2,030	972
Kidney beans	0.11	92	31	0.28	235	80	0.00	0	0
Soy beans	0.00	0	0	0.00	0	0	0.00	0	0
Sorghum	0.00	0	0	0.14	81	37	0.00	0	0
Tomato	0.30	2,093	1,745	0.42	2,930	2,443	0.61	4,255	3,548
Cucumber	0.00	0	0	0.07	162	92	0.00	0	0
Cabbage	0.00	0	0	0.00	0	0	0.00	0	0
Onion	0.04	314	263	0.00	0	0	0.04	314	263
Chili	0.06	361	292	0.00	0	0	0.08	482	390
Water melon	0.06	186	132	0.00	0	0	0.00	0	0
Melon	0.00	0	0	0.00	0	0	0.00	0	0
Tobacco	0.07	493	413	0.00	0	0	0.15	1,056	885
Coffee	0.00	0	0	0.35	1,470	1,071	0.00	0	0
Papaya	0.02	158	95	0.14	1,109	665	0.04	317	190
Avocado	0.02	80	63	0.14	560	442	0.04	160	126
Mango	0.00	0	0	0.14	420	301	0.00	0	0
Orange	0.00	0	0	0.07	235	173	0.00	0	0
Pasture(irrigated)	0.00	0	0	0.00	0	0	0.00	0	0
Pasture(non-irri.)	0.19	194	171	6.13	6,259	5,505	0.38	388	341
<b>Total</b>	<b>2.28</b>	<b>5,820</b>	<b>4,129</b>	<b>11.41</b>	<b>17,627</b>	<b>12,934</b>	<b>3.55</b>	<b>9,983</b>	<b>7,237</b>
Cultivated Area	1.67 ha/family			10.14 ha/family			2.59 ha/family		
No. of Total Families	270 house-holds			142 house-holds			131 house-hold		

Table D.3-3 Farmers Economy in Present Condition

(unit : Lps/year)

	Small farmer	Middle farmer	Member of small-farmers group
<b>A. Income</b>			
Agriculture /1	4,130	12,930	7,240
Wage /2	1,080	0	540
Total	5,210	12,930	7,780
<b>B. Living Expenditure /3</b>			
Food and Fuel	2,160	5,180	3,240
Cloth	660	1,330	890
Education	1,080	1,930	1,400
Health	600	1,310	950
Others	450	980	650
Total	4,950	10,730	7,130
<b>C. Remanent (A-B)</b>			
	260	2,200	650

/1 : Refer Table D.3-2

/2 : Wage by agricultural labor

/3 : Average of farm house-hold survey

## D.4 Marketing and Processing

### (1) Marketing of Agricultural Products

Typical agricultural products distribution channels are shown in Fig. D.4-1 and Fig. D.4-2.

In 1989, according to IHMA information ("Boletín Informativo 1989"), it handled domestic agricultural products like maize (50,000 ton) and others (6,000 ton). Aside from domestic products, IHMA handled imported products such as maize (39,000 ton) and wheat (100,000 ton).

IHMA's regional center in Comayagua collected small amounts of grains because the buying commercial price offered by other brokers is higher than the one offered by IHMA.

However, 995 ton of maize and 69 ton of kidney-beans are transferred from other regional centers and discharged there.

Tables D.4-1 and D.4-2 show wholesale prices of basic grains and other agricultural products in Comayagua in 1989.

Table D.4-1 Wholesale Price of Basic Grains in Comayagua (1989)  
(Unit:Lps./ton)

	<u>Maize</u>	<u>Kidney Beans</u>	<u>Rice</u>	<u>Sorghum</u>
Highest Price	882	1,764	1,543	661
Average Price	643	1,654	1,492	533
Lowest Price	441	1,323	1,433	441
Standard Price	463	1,411	639*	419

Source : SNR

(\*) : Indicates unhulled rice

Table D.4-2 Wholesale Price of Some Agricultural Products in Comayagua (1989)

(Unit:Lps./ton)

	<u>Tomato</u>	<u>Onion</u>	<u>W.Melon</u>	<u>Beef</u>
Highest Price	955	1,984	1,000	6,174
Average Price	460	1,085	650	4,289
Lowest Price	220	551	450	3,307

Source : SNR

Concerning cucumber exports, the following agricultural company has been exporting it to the United States.

a. Name of the company:

Chestnut Hill Farms Honduras

b. Main shareholder

Sea Board Corporation and Agro-industry (main office: Kansas City, USA)

c. Facilities

Agricultural machinery, refrigerator, packing machines and transport equipment, etc.

d. Farm land

170 ha.

e. Marketed volume in 1989

(unit:ton)

<u>USA market</u>		<u>Domestic market</u>	
Cucumber	7,100	Tomato	883
Squash	160	Onion	126
		Soybean	190

## (2) Processing of Agricultural Products

Major processing companies and a brief description of their functions are mentioned in Table D.4-3.

"DEMASA" collects materials directly from the producers through a filial enterprise.

"Beneficio de Arroz El Pollito" recollection system is as follows: 80% of the collected product is directly purchased from individual collectors by the company and the remaining 20% is brought to the factory by the company. This company faces a strong competition from a Tegucigalpa company which is purchasing heavily in the Valley area.

ALVASA and MEJORES ALIMENTOS have an idle season during the rainy season because tomato production in this period does not meet the amounts required for processing. They collect the products directly from the producers through affiliated recollection companies and through agricultural cooperatives.



Table D.4-3 Major Processing Companies in Comayagua Valley

Name of Processor	Functions and Capacity
Mejores Alimentos de Honduras	- The annual capacity to process tomatoes, fruits juices are 140,000 TM and 14,000 TM respectively. Actual handling is 15,000 TM (1989).
Alimentos del Valle S.A (ALVASA)	- Tomatoes and fruit juices processing with a capacity of 57,500 TM and 8,000 TM respectively. Actual handling is 14,000 TM.
Derivados del Maíz Alimentos de Honduras (DEMAHSA)	- Milling of maize with a handling capacity of 12,000 TM. Actual handling is of 10,000 TM.
Beneficio de Arroz El Pollito	- Rice milling. Handling capacity is of 2,000 TM. Actual capacity 1,300 TM.

Source : Field survey made by the Study Team

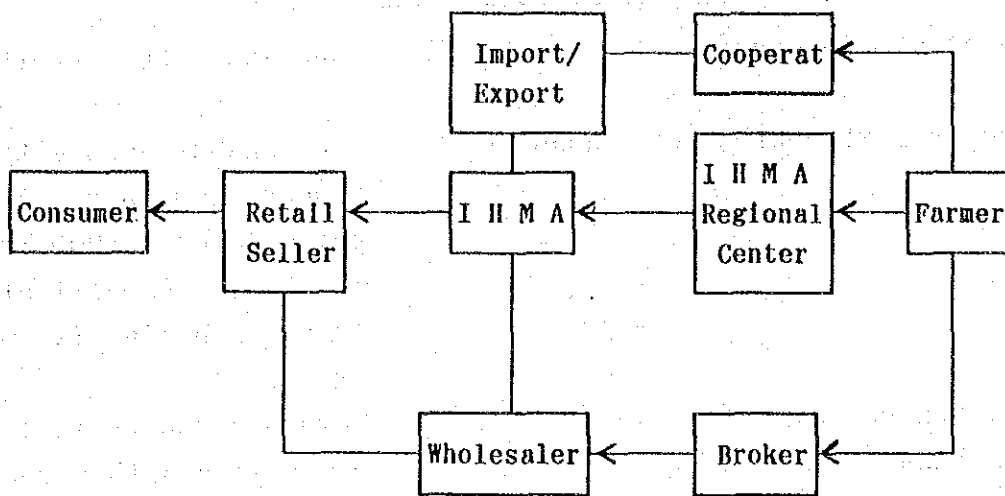


Fig. D.4-1 Distribution Channel of Basic Grains

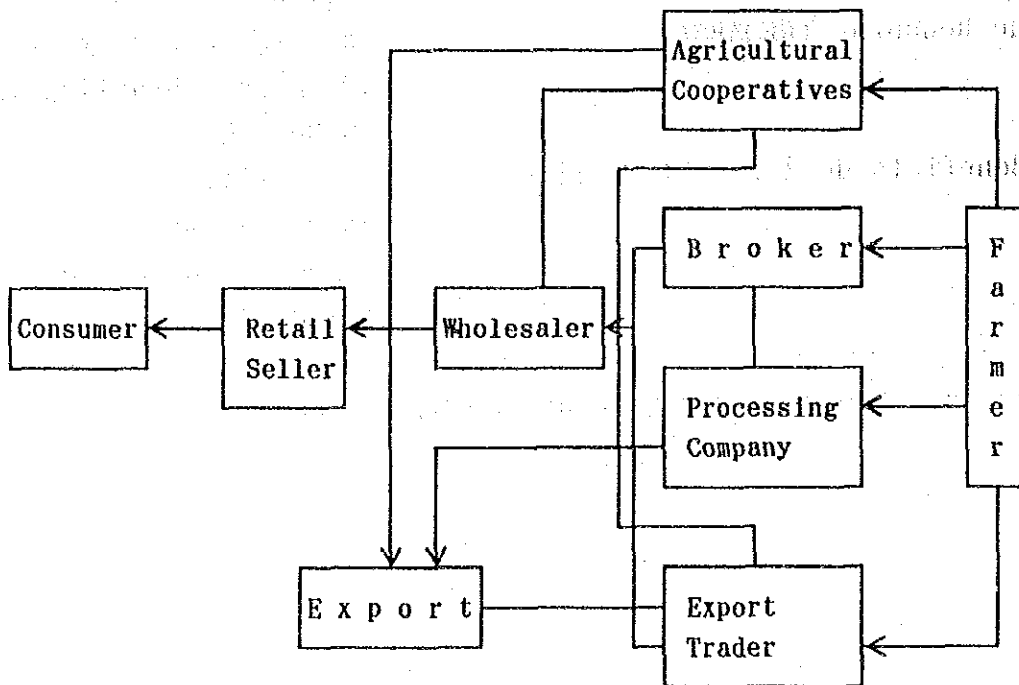


Fig. D.4-2 Distribution Channel of Other Agricultural Products

## D.5 Agricultural Supporting System

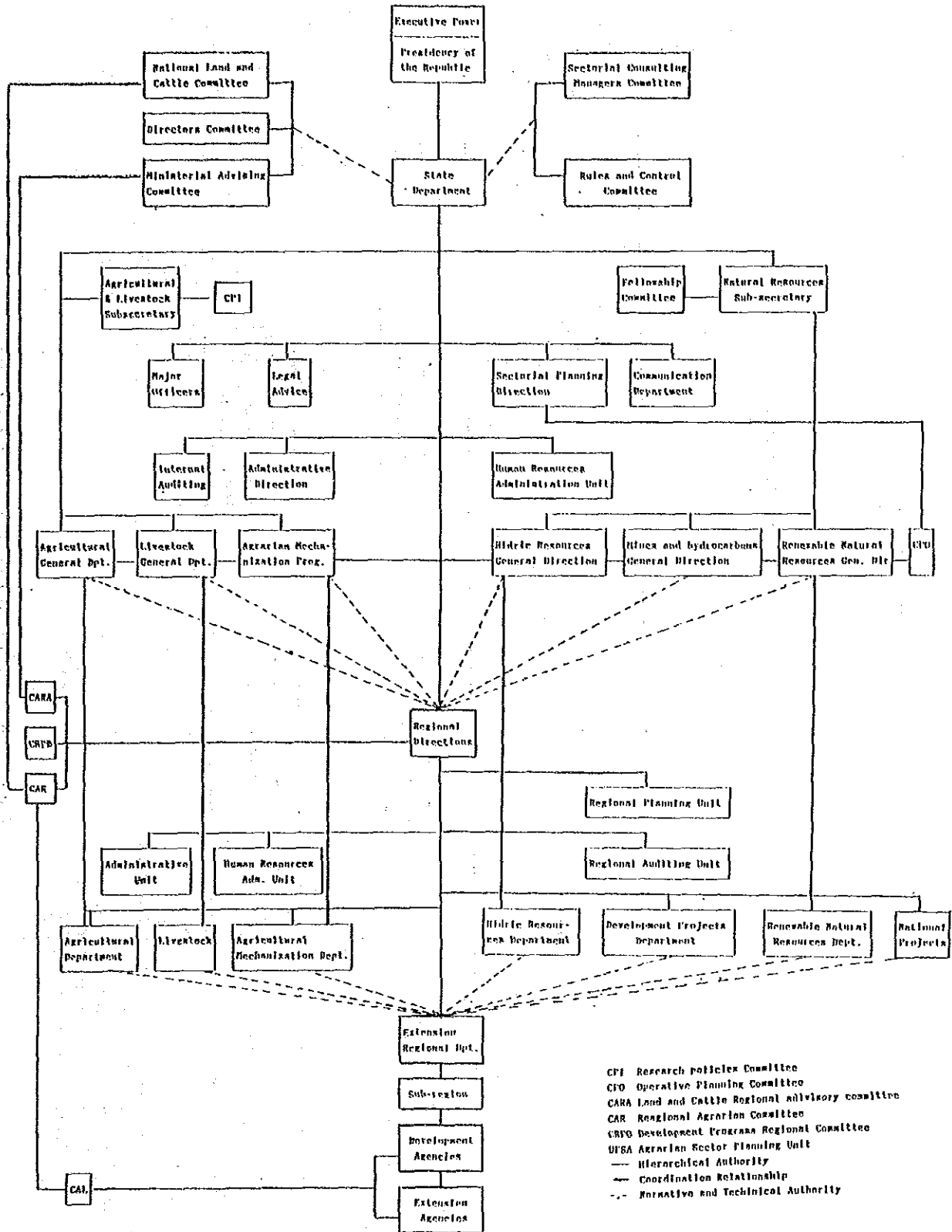
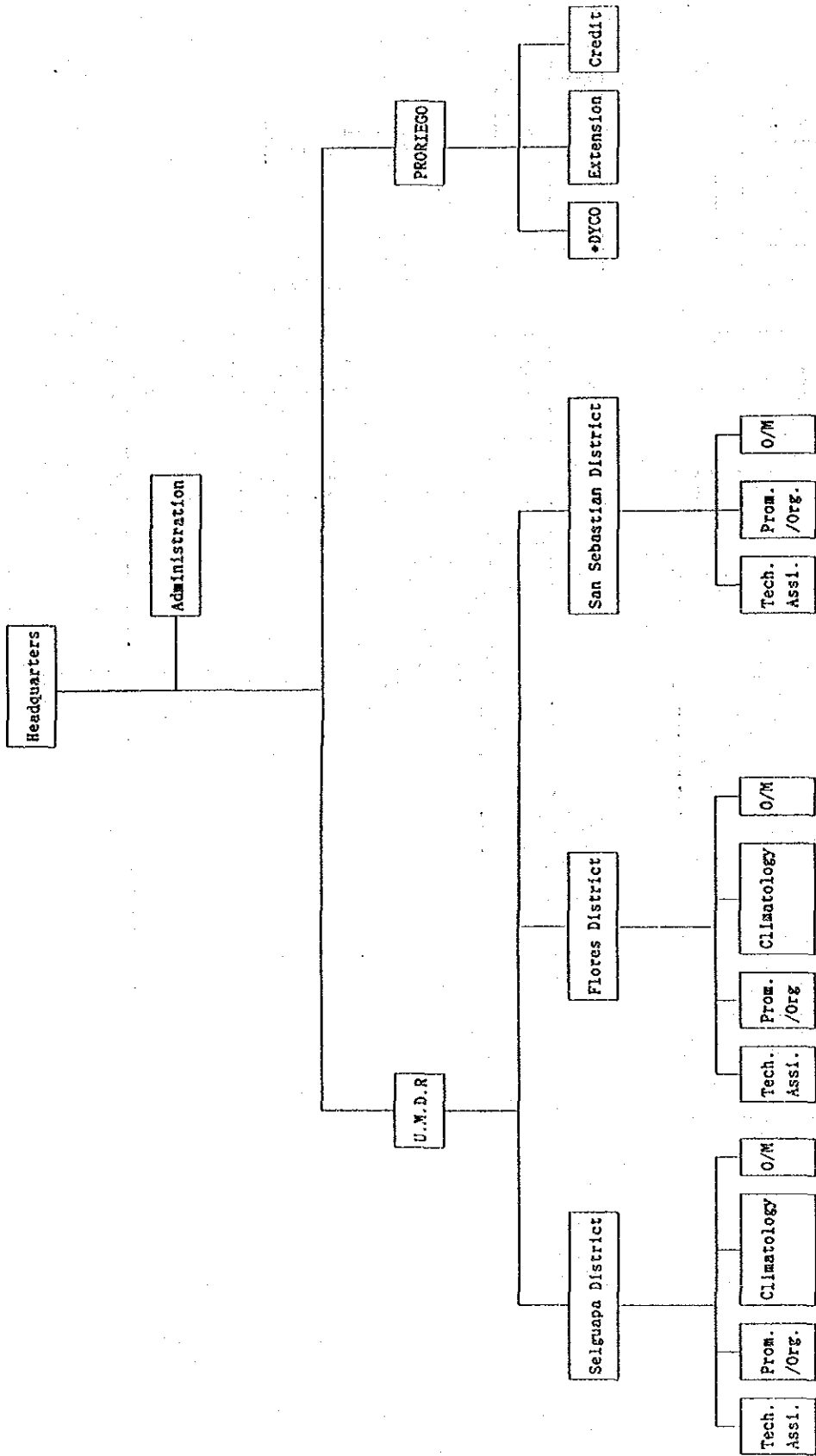


Fig. D.5-1 Organization of Agricultural Supporting System



Nomenclature  
 U.M.D.R. = Irrigation District Management Unit  
 •DYCO = Design and Construction  
 Tech. Assi. = Technical Assistance  
 Prom./Org. = Promotion and Organization  
 O/M = Operation and Maintenance

Fig. D.5-2 Irrigation Supporting System

## D.6 Farmers Organization

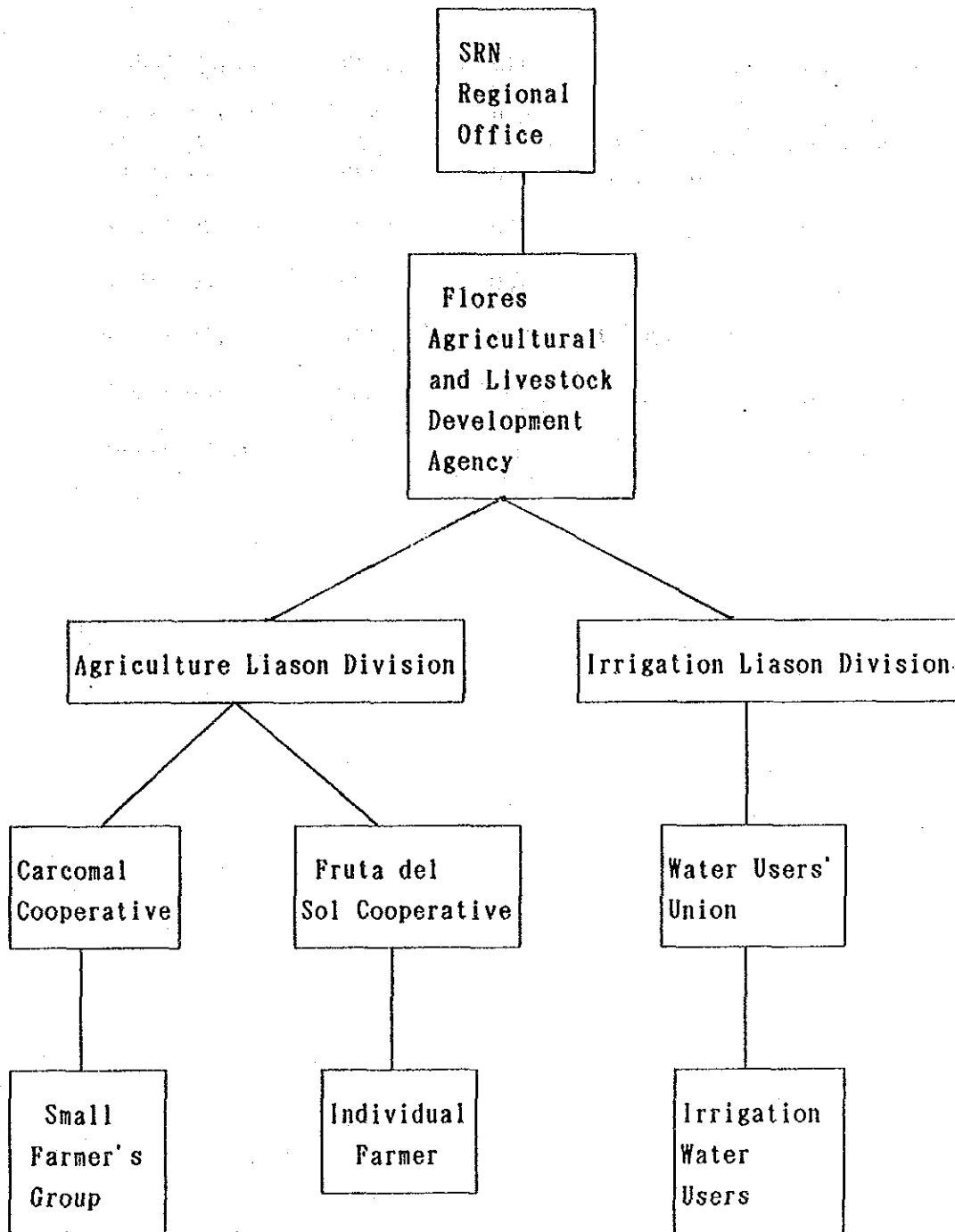


Fig. D.6-1 Proposed Farmers Organization

## D.7 Land Use Plan

Table D.7-1 Proposed Land Use

(unit : ha)

Land use	Sector I	Sector II	Total
Cultivated land	940	1,560	2,500 (69%)
Annual crops land	680	1,230	1,910 (53%)
Perennial crops land	90	50	140 (4%)
Improved pasture land	170	280	450 (12%)
Natural pasture land	70	120	190 (5%)
Forest land	160	400	560 (16%)
Urban and settlement area	60	110	170 (5%)
Roads, canals, rivers, etc.	70	110	180 (5%)
<b>Total</b>	<b>1,300</b>	<b>2,300</b>	<b>3,600(100%)</b>

## D.8 Agricultural Production Plan

### (1) Crop Selection

Table D.8-1 Screening Table for Crop Selection

Crops	Soil suitability	Self-supply requt.	Marketability		Techni. familiarity	Profi- tabi- lity	Asses- ment
			Local	Export			
Maize	A	A	A	C	A	C	S
Rice	A	A	A	B	A	B	S
Kidney beans	B	A	B	C	B	C	N
Soy beans	B	A	A	B	B	B	S
Sorghum	B	B	B	C	B	C	N
Cassava	C	B	B	C	B	C	N
Tomato	A	C	B	A	A	A	S
Cucumber	A	C	B	A	A	A	S
Chili	A	C	B	A	A	A	S
Onion	B	B	A	A	A	A	S
Water melon	A	C	B	A	A	A	S
Melon	A	C	B	A	B	A	S
Cabbage	A	C	A	A	B	A	S
Egg plant	A	B	B	A	C	A	P
Cauliflower	B	B	B	A	C	A	P
Broccoli	B	B	B	A	C	A	P
Okra	A	B	B	A	C	A	P
Squash	A	B	B	A	A	A	P
Lettuce	A	B	B	A	B	A	P
Bell pepper	A	B	B	A	B	A	P
Celery	B	B	B	A	C	A	P
Radish	C	B	B	A	C	A	N
Chinese cabbage	B	B	B	A	C	A	P
Sugar cane	B	C	C	B	B	C	N
Tobacco	A	C	B	A	A	B	S
Sesame	A	B	B	B	A	B	N
Coffee	B	C	B	A	A	B	S
Cotton	B	B	B	B	B	B	N
Papaya	A	C	B	A	A	B	S
Banana	B	C	A	A	A	C	N
Mango	A	C	A	A	A	C	S
Avocado	B	C	A	A	A	C	S
Orange	B	B	B	A	A	C	S
Pineapple	C	C	B	A	A	C	N
Grape fruits	B	C	B	A	A	C	P
Lemon, lime	B	C	B	A	A	C	P

A : High priority  
 B : Medium priority  
 C : Low priority

S : Selected crop  
 P : Possible crop in the future  
 N : Non-potential crops

(2) Improvement of Farming Practices

Table D.8-2 Recommended Farming Practices (1/18)

Maize

Anticipated Yield : 4.0 ton/ha

Recommended Variety : B-102, b-104, Guayape, H-27,  
Honduras Planta Baja,

Nursery Period : - days

Farm Growing Period : 100 days

Amount of Seed : 16 kg/ha

Fertilization (kg/ha)

	Basal dressing	Top dressing	Total
- N	: 60	50	110
- P <sub>2</sub> O <sub>5</sub>	: 40	-	40
- K <sub>2</sub> O	: 30	-	30

Agro-chemical Application

- Insecticides : 1 application
- Fungicide : 1 application
- Herbicide : 1 application

Mechanization

- Land Preparation : Sub-soiler -  
Disk plow 1 pass  
Disk harrow 1 pass  
Tooth harrow 1 pass  
Ridger 1 pass
- Seeding : Drill seeder 1 pass
- Cultivating : Cultivator 2 pass
- Chemical Application : Sprayer 3 pass
- Harvesting : Combine -

Irrigation : 8 times

Others :

(Total Labor Requirement) : (44 man-days)

Note :



Table D.8-2 Recommended Farming Practices (2/18)

Rice

Anticipated Yield : 5.0 ton/ha

Recommended Variety : CICA-8, ICA-LIBERTAD

Nursery Period : - days

Farm Growing Period : 140 days

Amount of Seed : 65 kg/ha

Fertilization (kg/ha)

	Basal dressing	Top dressing	Total
- N	50	50	100
- P <sub>2</sub> O <sub>5</sub>	60	-	60
- K <sub>2</sub> O	30	-	30

Agro-chemical Application

- Insecticides : 2 application
- Fungicide : 1 application
- Herbicide : 2 application

Mechanization

- Land Preparation : Sub-soiler -
- Disk plow 1 pass
- Disk harrow 1 pass
- Tooth harrow 2 pass
- Ridger -
- Seeding : Drill seeder 1 pass
- Cultivating : Cultivator -
- Chemical Application : Sprayer 5 pass
- Harvesting : Combine 1 pass

Irrigation : 14 times

Others :

(Total Labor Requirement) : (39 man-days)

Note : direct sowing

Table D.8-2 Recommended Farming Practices (3/18)

Soy beans

Anticipated Yield : 2.0 ton/ha

Recommended Variety : 5020G-3-4, 1804, Darco-1

Nursery Period : - days

Farm Growing Period : 80 days

Amount of Seed : 60 kg/ha

Fertilization (kg/ha)

	Basal dressing	Top dressing	Total
- N	20	-	20
- P <sub>2</sub> O <sub>5</sub>	60	-	60
- K <sub>2</sub> O	30	-	30

Agro-chemical Application

- Insecticides : 1 application
- Fungicide : 1 application
- Herbicide : 1 application
- Inoculation of leguminous bacteria: 1 time

Mechanization

- Land Preparation : Sub-soiler -
- Disk plow : 1 pass
- Disk harrow : 1 pass
- Tooth harrow : 1 pass
- Ridger : 1 pass
- Seeding : Planter : 1 pass
- Cultivating : Cultivator : 2 pass
- Chemical Application : Sprayer : 3 pass
- Harvesting : Combine -

Irrigation : 6 times

Others :

(Total Labor Requirement) : (42 man-days)

Note :

Table D.8-2 Recommended Farming Practices (4/18)

Tomato

Anticipated Yield : 28.0 ton/ha

Recommended Variety : Flora Date, Peto 98,

Nursery Period : 20 days

Farm Growing Period : 80 days

Amount of Seed : 0.3 kg/ha

Fertilization (kg/ha)

	Basal dressing	Top dressing	Total
- N	60	80 (2 appln.)	140
- P <sub>2</sub> O <sub>5</sub>	120	50	170
- K <sub>2</sub> O	40	-	40

Agro-chemical Application

- Insecticides : 5 application
- Fungicide : 4 application
- Herbicide : 1 application

Mechanization

- Land Preparation : Sub-soiler 1 pass
- Disk plow 1 pass
- Disk harrow 2 pass
- Tooth harrow 1 pass
- Ridger 1 pass
- Seeding : Drill seeder -
- Cultivating : Cultivator 2 pass
- Chemical Application : Sprayer 10 pass
- Harvesting : Combine -

Irrigation : 7 times

Others :

(Total Labor Requirement) : (223 man-days)

Note :

Table D.8-2 Recommended Farming Practices (5/18)

Cucumber

Anticipated Yield : 24.0 ton/ha

-----  
Recommended Variety : DASHER II, TROPIC CUKE, POINT SET

Nursery Period : - days

Farm Growing Period : 80 days

Amount of Seed : 2.0 kg/ha

Fertilization (kg/ha)

	Basal dressing	Top dressing	Total
- N	60	50	100
- P <sub>2</sub> O <sub>5</sub>	80	-	70
- K <sub>2</sub> O	40	-	40

Agro-chemical Application

- Insecticides : 4 application
- Fungicide : 4 application
- Herbicide : 1 application

Mechanization

- Land Preparation : Sub-soiler 1 pass  
Disk plow 1 pass  
Disk harrow 2 pass  
Tooth harrow 1 pass  
Ridger 1 pass
- Seeding : Drill seeder -
- Cultivating : Cultivator 2 pass
- Chemical Application : Sprayer 9 pass
- Harvesting : Combine -

Irrigation : 7 times

Others : Bearing with stakes

(Total Labor Requirement) : (209 man-days)

-----  
Note :

Table D.8-2 Recommended Farming Practices (6/18)

Cabbage

Anticipated Yield : 17.0 ton/ha

Recommended Variety : IZALCO, FORTUNA, GREEN BOY

Nursery Period : - days

Farm Growing Period : 100 days

Amount of Seed : 0.5 kg/ha

Fertilization (kg/ha)

	Basal dressing	Top dressing	Total
- N	60	60	120
- P <sub>2</sub> O <sub>5</sub>	90	-	90
- K <sub>2</sub> O	40	-	40

Agro-chemical Application

- Insecticides : 5 application
- Fungicide : 4 application
- Herbicide : 1 application

Mechanization

- Land Preparation : Sub-soiler 1 pass  
Disk plow 1 pass  
Disk harrow 2 pass  
Tooth harrow 1 pass  
Ridger 1 pass
- Seeding : Drill seeder -
- Cultivating : Cultivator 2 pass
- Chemical Application : Sprayer 10 pass
- Harvesting : Combine -

Irrigation : 8 times

Others :

(Total Labor Requirement) : (125 man-days)

Note :

Table D.8-2 Recommended Farming Practices (7/18)

Onion

Anticipated Yield : 14.0 ton/ha

Recommended Variety : BURGUNDY BONANZA, TEXAS YELLOW,  
YELLOW 502

Nursery Period : 40 days

Farm Growing Period : 100 days

Amount of Seed : 1.0 kg/ha

Fertilization (kg/ha)

	Basal dressing	Top dressing	Total
- N	60	100 (2 appicn.)	160
- P <sub>2</sub> O <sub>5</sub>	70	50	120
- K <sub>2</sub> O	80	-	80

Agro-chemical Application

- Insecticides : 5 application
- Fungicide : 4 application
- Herbicide : 1 application

Mechanization

- Land Preparation : Sub-soiler 1 pass  
Disk plow 1 pass  
Disk harrow 2 pass  
Tooth harrow 1 pass  
Ridger 1 pass
- Seeding : Drill seeder -
- Cultivating : Cultivator 2 pass
- Chemical Application : Sprayer 10 pass
- Harvesting : Combine -

Irrigation : 8 times

Others :

(Total Labor Requirement) : (192 man-days)

Note :

Table D.8-2 Recommended Farming Practices (8/18)

Chili

Anticipated Yield : 7.0 ton/ha

Recommended Variety : CALIFORNIA WONDER, JALAPENO,

Nursery Period : -

Farm Growing Period : 100 days

Amount of Seed : 2.0 kg/ha

Fertilization (kg/ha)

	Basal dressing	Top dressing	Total
- N	60	40	100
- P <sub>2</sub> O <sub>5</sub>	80	-	80
- K <sub>2</sub> O	40	-	40

Agro-chemical Application

- Insecticides : 5 application
- Fungicide : 4 application
- Herbicide : 1 application

Mechanization

- Land Preparation : Sub-soiler 1 pass
- Disk plow 1 pass
- Disk harrow 2 pass
- Tooth harrow 1 pass
- Ridger 1 pass
- Seeding : Drill seeder -
- Cultivating : Cultivator 2 pass
- Chemical Application : Sprayer 10 pass
- Harvesting : Combine -

Irrigation : 8 times

Others :

(Total Labor Requirement) : (147 man-days)

Note :

Table D.8-2 Recommended Farming Practices (9/18)

Water melon

Anticipated Yield : 18.0 ton/ha

Recommended Variety : CHERRYSTONE GRAY, MICLE LEC

Nursery Period : -

Farm Growing Period : 100 days

Amount of Seed : 2.0 kg/ha

Fertilization (kg/ha)

	Basal dressing	Top dressing	Total
- N	40	40	80
- P <sub>2</sub> O <sub>5</sub>	80	-	80
- K <sub>2</sub> O	40	-	40

Agro-chemical Application

- Insecticides : 4 application
- Fungicide : 3 application
- Herbicide : 1 application

Mechanization

- Land Preparation : Sub-soiler -
- Disk plow : 1 pass
- Disk harrow : 2 pass
- Tooth harrow : 1 pass
- Ridger : 1 pass
- Seeding : Drill seeder -
- Cultivating : Cultivator : 2 pass
- Chemical Application : Sprayer : 8 pass
- Harvesting : Combine -

Irrigation : 8 times

Others :

(Total Labor Requirement) : (128 man-days)

Note :



Table D.8-2 Recommended Farming Practices (10/18)

Melon

Anticipated Yield : 16.0 ton/ha

Recommended Variety : MAGNUM 45, SJ 45, MISSION

Nursery Period : -

Farm Growing Period : 100 days

Amount of Seed : 2.0 kg/ha

Fertilization (kg/ha)

	Basal dressing	Top dressing	Total
- N	40	40	120
- P <sub>2</sub> O <sub>5</sub>	80	-	80
- K <sub>2</sub> O	40	-	40

Agro-chemical Application

- Insecticides : 4 application
- Fungicide : 3 application
- Herbicide : 1 application

Mechanization

- Land Preparation : Sub-soiler -
- Disk plow 1 pass
- Disk harrow 2 pass
- Tooth harrow 1 pass
- Ridger 1 pass
- Seeding : Drill seeder -
- Cultivating : Cultivator 2 pass
- Chemical Application : Sprayer 8 pass
- Harvesting : Combine -

Irrigation : 8 times

Others :

(Total Labor Requirement) : (128 man-days)

Note :

Table D.8-2 Recommended Farming Practices (11/18)

Tobacco

Anticipated Yield : 2.3 ton/ha

Recommended Variety :

Nursery Period : 40 days

Farm Growing Period : 140 days

Amount of Seed : 0.5 kg/ha

Fertilization (kg/ha)

	Basal dressing	Top dressing	Total
- N	60	60 (2 applcn.)	120
- P <sub>2</sub> O <sub>5</sub>	60	40	100
- K <sub>2</sub> O	80	-	80

Agro-chemical Application

- Insecticides : 4 application
- Fungicide : 4 application
- Herbicide : 1 application

Mechanization

- Land Preparation : Sub-soiler 1 pass  
 Disk plow 1 pass  
 Disk harrow 2 pass  
 Tooth harrow 1 pass  
 Ridger 1 pass
- Seeding : Drill seeder -
- Cultivating : Cultivator 2 pass
- Chemical Application : Sprayer 9 pass
- Harvesting : Combine -

Irrigation : 10 times

Others :

(Total Labor Requirement) : (201 man-days)

Note :

Table D.8-2 Recommended Farming Practices (12/18)

Coffee

Anticipated Yield : 1.5 ton/ha (average)

Recommended Variety :

Farm Growing Period : Perennial crop

planting density : 3 x 3 m (1,100 plant/ha)

Saplings requirement : year 1 1,100 x 1.1 = 1,210  
 year 2+ 1,100 x 0.005 = 5.5  
 Annual average 30 plants

Fertilization (kg/ha/year)

	year 1	year 2-3	year 4+	average
- N	40	40	60	55
- P <sub>2</sub> O <sub>5</sub>	50	50	50	50
- K <sub>2</sub> O	30	40	80	75

Agro-chemical Application

	year 1	year 2-3	year 4+	average
- Insecticides	1	1	2	2
- Fungicide	1	2	3	2
- Herbicide	1	1	1	1

Mechanization

		year 1	year 2+	average
- Land Preparation	: Sub-soiler	1	-	0.002
	: Disk plow	1	-	0.002
	: Disk harrow	2	-	0.004
	: Tooth harrow	-	-	-
	: Ridger	-	-	-
- Seeding	: Drill seeder	-	-	-
- Cultivating	: Cultivator	-	-	-
- Chemical Application	: Sprayer	-	-	5
- Harvesting	: Combine	-	-	-

Irrigation : 28 times

Others :

(Total Labor Requirement) : (156 man-days)

Note :

Table D.8-2 Recommended Farming Practices (13/18)

Papaya

Anticipated Yield : 19.0 ton/ha (average)

Recommended Variety :

Farm Growing Period : Perennial crop

Planting density : 2.5 x 2.5 m (1,600 plant/ha)

Saplings requirement : year 1 : 1,600 x 2.0 = 3,200  
 year 2-4 : 0  
 Annual average : 800 plants

Fertilization (kg/ha/year)

	year 1	year 2	year 3-4	average
- N	130	180	150	150
- P <sub>2</sub> O <sub>5</sub>	150	200	300	240
- K <sub>2</sub> O	120	150	130	130

Agro-chemical Application

	year 1	year 2	year 3-4	average
- Insecticides	1	4	5	4
- Fungicide	7	13	13	12
- Herbicide	1	1	1	1

Mechanization

		year 1	year 2-4	average
- Land Preparation	: Sub-soiler	1	-	0.25
	: Disk plow	1	-	0.25
	: Disk harrow	1	-	0.25
	: Tooth harrow	2	-	0.50
	: Ridger	1	-	0.25
- Seeding	: Drill seeder	-	-	-
- Cultivating	: Cultivator	-	-	-
- Chemical Application	: Sprayer	-	-	17
- Harvesting	: Combine	-	-	-
- Threshing	: Thresher	-	-	-

Irrigation : 28 times

Others :

(Total Labor Requirement) : (147 man-days)

Note :

Table D.8-2 Recommended Farming Practices (14/18)

Avocado

Anticipated Yield : 6.0 ton/ha (average)

Recommended Variety :

Farm Growing Period : Perennial crop

planting density : 10 x 10 m (100 plant/ha)

Saplings requirement : year 1 100 x 1.1 = 110  
 year 2+ 100 x 0.005 = 0.5  
 annual average 3 plants

Fertilization (kg/ha/year)

	year 1	year 2-3	year 4+	average
- N	60	90	120	115
- P <sub>2</sub> O <sub>5</sub>	90	90	100	95
- K <sub>2</sub> O	40	70	90	85

Agro-chemical Application

	year 1	year 2-3	year 4+	average
- Insecticides	1	2	5	5
- Fungicide	1	2	4	4
- Herbicide	1	1	1	1

Mechanization

		year 1	year 2+	avrage
- Land Preparation	: Sub-soiler	1	-	0.02
	: Disk plow	1	-	0.02
	: Disk harrow	2	-	0.04
	: Tooth harrow	-	-	-
	: Ridger	-	-	-
- Seeding	: Drill seeder	-	-	-
- Cultivating	: Cultivator	-	-	-
- Chemical Application	: Sprayer	-	-	10
- Harvesting	: Combine	-	-	-

Irrigation : 28 times

Others :

(Total Labor Requirement) : (140 man-days)

Note :

Table D.8-2 Recommended Farming Practices (15/18)

Mango

Anticipated Yield : 12.0 ton/ha (average)

Recommended Variety :

Farm Growing Period : Perennial crop

Planting density : 10 x 10 m (100 plant/ha)

Saplings requirement : year 1 100 x 1.1 = 110  
 year 2+ 100 x 0.005 = 0.5  
 annual average 3 plants

Fertilization (kg/ha/year)

	year 1	year 2-3	year 4+	average
- N	60	90	120	115
- P <sub>2</sub> O <sub>5</sub>	60	90	100	95
- K <sub>2</sub> O	40	70	90	85

Agro-chemical Application

	year 1	year 2-3	year 4+	average
- Insecticides	1	2	4	4
- Fungicide	1	2	4	4
- Herbicide	1	1	1	1

Mechanization

		year 1	year 2+	avrage
- Land Preparation	: Sub-soiler	1	-	0.02
	: Disk plow	1	-	0.02
	: Disk harrow	2	-	0.04
	: Tooth harrow	-	-	-
	: Ridger	-	-	-
- Seeding	: Drill seeder	-	-	-
- Cultivating	: Cultivator	-	-	-
- Chemical				
Application	: Sprayer			9
- Harvesting	: Combine	-	-	-

Irrigation : 28 times

Others :

(Total Labor Requirement) : (140 man-days)

Note :

Table D.8-2 Recommended Farming Practices (16/18)

Orange

Anticipated Yield : 6.0 ton/ha (average)

Recommended Variety :

Farm Growing Period : Perennial crop

planting density : 8 x 8 m (160 plant/ha)

Saplings requirement : year 1 160 x 1.1 = 176  
 year 2+ 160 x 0.005 = 0.8  
 annual average 4 plants

Fertilization (kg/ha/year)

	year 1	year 2-3	year 4+	average
- N	60	90	120	115
- P <sub>2</sub> O <sub>5</sub>	60	90	100	95
- K <sub>2</sub> O	40	70	90	85

Agro-chemical Application

	year 1	year 2-3	year 4+	average
- Insecticides	1	2	4	4
- Fungicide	1	2	4	4
- Herbicide	1	1	1	1

Mechanization

		year 1	year 2+	average
- Land Preparation	: Sub-soiler	1	-	0.02
	: Disk plow	1	-	0.02
	: Disk harrow	2	-	0.04
	: Tooth harrow	-	-	-
	: Ridger	-	-	-
- Seeding	: Drill seeder	-	-	-
- Cultivating	: Cultivator	-	-	-
- Chemical Application	: Sprayer	-	-	9
- Harvesting	: Combine	-	-	-

Irrigation : 28 times

Others :

(Total Labor Requirement) : (140 man-days)

Note :

Table D.8-2 Recommended Farming Practices (17/18)

Improved pasture (Irrigated)

Anticipated Yield : 4.5 ton of Milk & 215 kg of Beef Cattle  
(Carrying Capacity : 5 cattle /ha)

---

Grass Species : Guinea grass, Jaragua, Pangola,  
Star grass, Pea, Vetch  
Farm Growing Period : Perennial crop  
Amount of Seed : 8 kg/ha (stripes plowing & reseeding  
each 10 years)

Fertilization (kg/ha/year)

- N : 40  
- P<sub>2</sub>O<sub>5</sub> : 30  
- K<sub>2</sub>O : 30

Animal Health and feed

- Vaccine : Pierna negra, Septicemia, Anaprasmosis  
1 application/year  
- Anthelmintics : Ripercol, Citarin  
2 application/year  
- Dipping : Asuntol, Nuwar, Triatop  
6 application/year  
- Mineral feed : Mineral rock  
2 kg/animal/year  
- Concentrate : 30 kg/animal/year

Mechanization

- Stripes plowing and reseeding will be practiced every 10 years.

Disk plow : 1 pass/10 years  
Disk harrow : 1 pass/10 years

Irrigation : 28 times  
Others :  
(Total Labor Requirement) : (160 man-days)

---

Note :



Table D.8-2 Recommended Farming Practices (18/18)

Improved pasture (Non-irrigated)

Anticipated Yield : 2.7 ton of milk & 129 kg of beef cattle  
(Carrying capacity : 3 cattle/ha)

Grass Species : Guinea grass, Jaragua, Pangola,  
Star grass, Pea, Vetch  
Farm Growing Period : Perennial crop  
Amount of Seed : 8 kg/ha (stripes plowing & reseeding  
each 10 years)

Fertilization (kg/ha/year)

- N : 30  
- P<sub>2</sub>O<sub>5</sub> : 25  
- K<sub>2</sub>O : 25

Animal Health and feed

- Vaccine : Pierna negra, Septicemia, Anaprasmosis  
1 application/year  
- Anthelmintics : Ripercol, Citarin  
2 application/year  
- Dopping : Asuntol, Nuwar, Triatop  
6 application/year  
- Mineral feed : Mineral rock  
2 kg/animal/year  
- Concentrate : 30 kg/animal/year

Mechanization

- Stripes plowing and reseeding will be practiced every 10 years.

Disk plow 1 pass/10 years  
Disk harrow 1 pass/10 years

Irrigation : non  
Others :  
(Total Labor Requirement) : (87 man-days)

Note :

(3) Farming Inputs Requirement

Table D.8-3 Farm Inputs Requirement per Hectare in With Project Condition

Area ha	Seed Sapling		Fertilizer --		Insect-icide time	Fungi-icide time	Herbi-icide time	Vac-cine head	Anthe-limintic head	Dipping head	Min-eral kg	Concen-trated kg
	kg	No.	N kg	P205 kg								
Maize	16.0	0	110	40	30	1	1	0	0	0	0	0
Rice	65.0	0	100	60	30	2	1	0	0	0	0	0
Soy beans	60.0	0	20	60	30	2	1	0	0	0	0	0
Tomato	0.3	0	140	170	40	5	4	0	0	0	0	0
Cucumber	2.0	0	100	70	40	4	4	0	0	0	0	0
Cabbage	0.5	0	120	90	40	5	4	0	0	0	0	0
Onion	1.0	0	160	120	80	5	4	0	0	0	0	0
Chili	2.0	0	100	80	40	5	4	0	0	0	0	0
Water melon	2.0	0	80	80	40	4	3	0	0	0	0	0
Melon	2.0	0	80	80	40	4	3	0	0	0	0	0
Tobacco	0.5	0	120	100	80	4	4	0	0	0	0	0
Coffee	0	30	55	50	75	2	3	0	0	0	0	0
Papaya	0	800	150	240	130	4	12	0	0	0	0	0
Avocado	0	3	115	95	85	4	4	0	0	0	0	0
Mango	0	3	115	95	85	4	4	0	0	0	0	0
Orange	0	4	115	95	85	4	4	0	0	0	0	0
Pasture(Irrg.)	0.8	0	40	30	30	0	0	5	5	5	10	150
Pasture(Nonir)	0.8	0	30	25	25	0	0	3	3	3	6	90
Total	5,010											

Note : Refer Table D.8-2

Table D.8-4 Total Requirement of Farm Inputs in With Project Condition

Area ha	Seed Sapling		Fertilizer		Insect-		Fungi-		Herbi-		Vacc-		Anthe-		Dipping Min-		Concen-	
	ton	No.	N ton	P2O5 ton	K2O ton	icide ha	icide ha	icide ha	icide ha	icide ha	icide ha	icide ha	icide ha	icide ha	icide ha	icide ha	icide ha	icide ton
Maize	860	13.8	0	94.6	34.4	25.8	860	860	860	860	0	0	0	0	0	0	0	0.0
Rice	1,100	71.5	0	110.0	66.0	33.0	2,200	1,100	2,200	0	0	0	0	0	0	0	0	0.0
Soy beans	300	18.0	0	6.0	18.0	9.0	600	300	300	0	0	0	0	0	0	0	0	0.0
Tomato	900	0.3	0	126.0	153.0	36.0	4,500	3,600	900	0	0	0	0	0	0	0	0	0.0
Cucumber	290	0.6	0	29.0	20.3	11.6	1,160	1,160	290	0	0	0	0	0	0	0	0	0.0
Cabbage	130	0.1	0	15.6	11.7	5.2	650	520	130	0	0	0	0	0	0	0	0	0.0
Onion	300	0.3	0	48.0	36.0	24.0	1,500	1,200	300	0	0	0	0	0	0	0	0	0.0
Chili	60	0.1	0	6.0	4.8	2.4	300	240	60	0	0	0	0	0	0	0	0	0.0
Water melon	200	0.4	0	16.0	16.0	8.0	800	600	200	0	0	0	0	0	0	0	0	0.0
Melon	200	0.4	0	16.0	16.0	8.0	800	600	200	0	0	0	0	0	0	0	0	0.0
Tobacco	80	0.0	0	9.6	8.0	6.4	320	320	80	0	0	0	0	0	0	0	0	0.0
Coffee	50	0.0	1,500	2.8	2.5	3.8	100	150	50	0	0	0	0	0	0	0	0	0.0
Papaya	30	0.0	24,000	4.5	7.2	3.9	120	360	30	0	0	0	0	0	0	0	0	0.0
Avocado	30	0.0	90	3.5	2.9	2.6	120	120	30	0	0	0	0	0	0	0	0	0.0
Mango	20	0.0	60	2.3	1.9	1.7	80	80	20	0	0	0	0	0	0	0	0	0.0
Orange	10	0.0	40	1.2	1.0	0.9	40	40	10	0	0	0	0	0	0	0	0	0.0
Pasture(Irrg.)	90	0.1	0	3.6	2.7	2.7	0	0	0	0	450	450	450	450	0	0	0	13.5
Pasture(Nonir)	360	2.9	0	10.8	9.0	9.0	0	0	0	1,080	1,080	1,080	1,080	1,080	2.2	2.2	0	32.4
<b>Total</b>	<b>5,010</b>	<b>108.5</b>	<b>25,690</b>	<b>505.4</b>	<b>411.3</b>	<b>193.9</b>	<b>14,150</b>	<b>11,250</b>	<b>5,660</b>	<b>1,530</b>	<b>1,530</b>	<b>1,530</b>	<b>1,530</b>	<b>1,530</b>	<b>3.1</b>	<b>3.1</b>	<b>45.9</b>	

Note : Refer Table D.8-3

(4) Anticipated Unit Yield and Production

Table D.8-5 Information and Data on Anticipated Unit Yields

(unit : ton/ha)

	Present in average <u>/1</u>	Highest in the Area <u>/2</u>	Inform- ation by Coopera- tive <u>/3</u>	Target by ext- ensionist <u>/4</u>	Choloteca Project <u>/5</u>	Others <u>/6</u>	Average in the Project <u>/8</u>
Maize	1.6	4.3	5.1	5.2	4.5		4.0
Rice	2.6	5.2	6.0	8.4	5.5	8-10	5.0
Soy beans	-	-	2.2	2.6	2.0		2.0
Tomato	15.5	25.0	15.5	36.3	30.0		28.0
Cucumber	10.5	39.0	-	31.6	20.0	18.0	24.0
Cabbage	-	-	-	-	-		17.0
Onion	8.0	16.3	24.0	32.3	-		14.0
Chili	4.3	7.0	-	-	-		7.0
Water melon	10.0	14.2	12.0	28.6	-		18.0
Melon	-	-	-	28.6	20.0		16.0
Tobacco	1.6	1.9	3.9	-	-		2.3
Coffee	1.0	-	1.3	2.4	-		1.5
Papaya	12.0	-	17.1	-	25.0		19.0
Avocado	4.0	-	-	-	-		6.0
Mango	5.0	-	-	-	15.0		12.0
Orange	3.5	-	-	-	-		6.0

Note /1 : Average of the Study Area

/2 : Highest yield at present by the farm house-hold survey

/3 : Farming program for credit by Cooperative CARCOMAL

/4 : Target yield in year 2000 by extensionists of Flores agricultural development office

/5 : Anticipated unit yield in the Choloteca River Agricultural Development Project (1986)

/6 : Experimental farm in CEDA

/7 : Present yield in company farm (Agro-international)

/8 : Anticipated yield in the Project

Table D.8-6 Livestock Products in With Project Condition

	Present	With Project	
	Non-irrigated pasture	Non-irrigated pasture	Irrigated pasture
Area of grazing land (ha)	970	360	90
Average carrying capacity (head/ha)	2.3	3.0	5.0
Total capacity (No. of cattle)	2,230 /1	1,080	450
		- Total 1,530 heads -	
Milk production (kg/lactation/head)	1,200	1,800	1,800
Rate of dairy cattle	0.7	0.7	0.7
Rate lactating cattle	0.5	0.5	0.5
Milk production (ton/ha)	1.38	2.70	4.5
(ton/year)	1,339	972	405
		- Total 1,377 ton -	
Rate of beef cattle	0.3	0.3	0.3
Average age at slaughter	4.0	3.5	3.5
Average weight at slaughter (kg/head)	400	500	500
Average increasing weight (kg/year)	100	143	143
Beef production in lived cattle (kg/ha)	69	129	215
(ton/year)	67	46	19
		-- Total 65 ton --	
Meat beef production (ton/year) /2	25	-- Total 24 ton --	

Note /1 : Present cattle population

/2 : Conversion ratio of lived cattle to meat is 0.37

## (5) Labor and Machinery Requirement

Table D.8-7 Labor Requirement per Hectare by Month in With Project Condition

(unit : man-day/ha)

Crop	Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
	(ha)													
Maize-1	430	-	-	-	-	5	8	8	8	8	7	-	-	44
Maize-2	220	7	9	7	-	-	-	-	-	-	5	9	7	44
Maize-3	210	8	9	8	3	-	-	-	-	-	1	8	7	44
Rice-1	880	-	-	2	6	7	7	5	5	4	3	-	-	39
Rice-2	220	5	5	4	3	-	-	-	-	2	6	8	6	39
Soy bean	300	-	-	-	-	5	8	8	8	7	6	-	-	42
Tomato-1	220	60	20	-	-	-	-	-	1	8	22	44	68	223
Tomato-2	230	58	5	-	-	-	-	-	2	9	27	56	66	223
Tomato-3	220	-	-	-	2	7	25	55	65	55	14	-	-	223
Tomato-4	230	15	35	65	50	37	20	-	-	-	-	-	1	223
Cucumber-1	70	55	35	10	-	-	-	-	-	-	10	36	63	209
Cucumber-2	70	30	5	-	-	-	-	-	-	12	36	72	54	209
Cucumber-3	80	-	-	-	-	10	33	64	62	30	10	-	-	209
Cucumber-4	70	3	31	60	60	40	15	-	-	-	-	-	-	209
Cabbage-1	20	25	12	-	-	-	-	-	-	5	20	30	33	125
Cabbage-2	20	17	26	18	33	28	3	-	-	-	-	-	-	125
Cabbage-3	20	27	13	2	-	-	-	-	-	3	18	32	30	125
Onion-1	20	36	18	-	-	-	-	-	5	28	30	40	35	192
Onion-2	100	25	32	35	42	38	15	-	-	-	-	-	5	192
Onion-3	100	30	20	3	-	-	-	-	4	24	36	40	35	192
Chili-1	100	25	17	7	-	-	-	-	-	6	19	33	40	147
Chili-2	40	8	25	33	42	25	12	2	-	-	-	-	-	147
Chili-3	40	25	20	7	-	-	-	-	-	5	20	32	38	147
Water melon-1	70	20	10	-	-	-	-	-	-	8	20	33	37	128
Water melon-2	70	8	25	45	28	16	6	-	-	-	-	-	-	128
Water melon-3	60	25	10	3	-	-	-	-	-	6	18	30	36	128
Melon-1	60	20	10	-	-	-	-	-	-	8	20	32	38	128
Melon-2	60	8	25	45	28	16	6	-	-	-	-	-	-	128
Melon-3	70	20	15	3	-	-	-	-	-	6	18	30	36	128
Tobacco	80	33	60	8	-	-	-	-	15	33	24	18	10	201
Coffee	50	12	12	17	19	17	12	11	11	11	11	12	11	156
Papaya	30	14	14	14	13	11	11	11	11	11	11	13	13	147
Avocado	30	13	13	13	11	11	11	11	11	10	10	13	13	140
Mango	20	10	12	13	16	17	10	9	9	9	13	12	10	140
Orange	10	13	13	13	11	11	11	11	11	10	10	13	13	140
Pasture(I)	90	14	14	15	15	12	12	12	12	12	14	14	14	160
Pasture(N)	360	7	7	7	7	7	8	8	7	8	7	7	7	87
Total	5,010													

Table D.8-8 Labor Balance by Month in With Project Condition

(unit : man-day)

Crop	Area (ha)	Jan	Feb	Mar	Apr.	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Maize-1	430	0	0	0	0	2,150	3,440	3,440	3,440	3,440	3,010	0	0	18,920
Maize-2	220	1,540	1,980	1,540	0	0	0	0	0	0	1,100	1,980	1,540	9,680
Maize-3	210	1,680	1,890	1,680	630	0	0	0	0	0	210	1,680	1,470	9,240
Rice-1	880	0	0	1,760	5,280	6,160	6,160	4,400	4,400	3,520	2,640	0	0	34,320
Rice-2	220	1,100	1,100	880	660	0	0	0	0	440	1,320	1,760	1,320	8,580
Soy bean	300	0	0	0	0	1,500	2,400	2,400	2,400	2,100	1,800	0	0	12,800
Tomate-1	220	13,200	4,400	0	0	0	0	0	220	1,760	4,840	9,680	14,960	49,060
Tomate-2	230	13,340	1,150	0	0	0	0	0	460	2,070	6,210	12,880	15,180	51,280
Tomate-3	220	0	0	0	440	0	0	0	0	12,100	3,080	0	0	49,060
Tomato-4	230	3,450	8,050	14,950	11,500	8,510	4,600	0	0	0	0	0	230	51,280
Cucumber-1	70	3,850	2,450	700	0	0	0	0	0	840	2,520	5,040	4,410	14,630
Cucumber-2	70	2,100	350	0	0	0	0	0	0	2,400	800	0	0	16,720
Cucumber-3	80	0	0	0	0	800	2,640	5,120	4,960	0	0	0	0	14,630
Cucumber-4	70	210	2,170	4,200	4,200	2,800	1,050	0	0	100	400	600	660	2,500
Cabbage-1	20	500	240	0	0	0	0	0	0	0	0	0	0	2,500
Cabbage-2	20	340	520	360	660	550	50	0	0	60	360	640	600	2,500
Cabbage-3	20	540	260	40	0	0	0	0	0	0	0	0	0	2,500
Onion-1	100	3,600	1,800	0	0	0	0	0	500	2,800	3,000	4,000	3,500	19,200
Onion-2	100	2,500	3,200	3,500	4,200	3,800	1,500	0	0	2,400	3,600	4,000	0	19,200
Onion-3	100	3,000	2,000	300	0	0	0	0	400	2,400	760	1,320	1,600	5,880
Chilli-1	40	1,000	680	280	0	0	0	0	0	0	0	0	0	5,880
Chilli-2	40	320	1,080	1,320	1,680	1,000	480	80	0	0	0	0	0	5,880
Chilli-3	50	1,250	1,000	350	0	0	0	0	0	250	1,900	1,600	1,900	7,350
Water melon-1	70	1,400	700	0	0	0	0	0	0	560	1,400	2,310	2,590	8,960
Water melon-2	70	560	1,750	3,150	1,960	1,120	420	0	0	360	1,080	1,800	2,160	7,680
Water melon-3	70	1,200	600	180	0	0	0	0	0	480	1,200	1,920	2,280	7,680
Melon-1	60	1,500	600	0	0	0	0	0	0	0	0	0	0	8,960
Melon-2	60	560	1,750	3,150	1,960	1,120	420	0	0	420	1,260	2,100	2,520	8,960
Melon-3	70	1,400	1,050	210	0	0	0	0	0	2,640	1,920	1,440	800	16,080
Tobacco	80	2,640	4,800	640	0	0	0	0	1,200	2,640	1,920	1,440	800	16,080
Coffee	50	600	600	850	950	850	600	550	550	550	550	600	550	7,800
Papaya	30	420	420	420	390	330	330	330	330	330	330	390	390	4,410
Avocado	30	390	390	390	330	330	330	330	330	330	330	390	390	4,410
Mango	20	200	240	260	320	340	200	180	180	180	260	240	200	2,800
Orange	10	130	130	130	110	110	110	110	110	100	100	130	130	1,400
Pasture(I)	90	1,260	1,260	1,350	1,350	1,080	1,080	1,080	1,080	1,080	1,260	1,260	1,260	14,400
Pasture(N)	360	2,520	2,520	2,520	2,520	2,520	2,880	2,880	2,520	2,880	2,520	2,520	2,520	31,320
Total (A)	5,010	68,300	51,050	45,110	39,140	36,620	34,200	33,000	37,380	44,400	49,530	62,800	70,940	572,470
Available labor (B)		66,920	66,920	66,920	66,920	66,920	66,920	66,920	66,920	66,920	66,920	66,920	66,920	803,000
Defference (B-A)		-1,380	15,870	21,810	27,780	30,300	32,720	33,920	29,540	22,520	17,390	4,120	-4,020	230,530
(A/B)		1.02	0.76	0.67	0.58	0.55	0.51	0.49	0.56	0.66	0.74	0.94	1.06	0.71

Note : Available labor Population in 2000 year (a) ; 13,100  
 Economical active population (b) ; (a) x 0.30 = 3,930  
 Agricultural labor force (c) ; (b) x 0.70 = 2,750  
 Agricultural labor force per month ; (c) x 365 day x 0.80 / 12 month = 66,920 man-day/month

Table D.8-9 Total Working Area of Agricultural Machineries by Month in With Project Condition

(unit : ha)

Cropped Machinery area	Total Working Area (ha)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1. Tractor	4,660.0	3,823.5	4,190.9	3,810.2	5,612.8	5,651.1	5,155.0	3,385.5	5,700.5	7,871.5	7,167.5	5,136.5	62,265.0
2. Subsoiler	150.0	241.5	180.0	30.0	121.5	120.0	61.5	83.0	405.5	480.0	236.5	58.0	2,167.5
3. Plow	150.0	240.0	471.9	427.9	758.7	371.5	138.0	84.5	577.5	806.5	342.5	103.5	4,472.5
4. Disk harrow	300.0	481.5	650.4	457.9	875.7	472.0	204.0	184.0	983.0	1,285.0	579.0	160.0	6,632.5
5. Tooth harrow	60.0	240.0	507.0	676.0	951.0	722.0	240.0	3.0	462.0	876.0	569.0	229.0	5,535.0
6. Ridger	60.0	241.5	240.0	60.0	336.5	455.0	241.5	0.0	353.5	543.0	570.5	226.0	3,327.5
7. Seeder	0.0	0.0	105.6	334.4	609.4	440.6	120.0	0.0	44.0	281.0	215.0	110.0	2,260.0
8. Cultivator	610.0	440.0	600.0	330.0	60.0	575.0	1,090.0	575.0	60.0	500.0	1,140.0	1,170.0	7,150.0
9. Sprayer	3,330.0	2,039.0	1,436.0	1,494.0	1,900.0	2,495.0	3,060.0	2,456.0	2,815.0	3,100.0	3,515.0	3,080.0	30,720.0
10. Combine	0.0	110.0	119.0	0.0	0.0	0.0	0.0	220.0	325.6	334.4	0.0	0.0	1,100.0



Table D.8-10 Total Working Hours of Agricultural Machineries in With Project Condition

Machinery	Working hour (hr/ha)	(unit : hour)												Total
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1. Tractor	4.947.1	4,954.8	6,034.6	5,197.4	8,381.3	7,323.0	5,717.7	3,483.1	7,798.1	11,199.0	8,863.3	5,598.9	79,508.3	
2. Subsoiler	2.78	417.0	671.4	500.4	83.4	337.8	333.6	171.0	230.7	1,127.3	1,334.4	657.5	161.2 6,025.7	
3. Plow	3.85	577.5	924.0	1,816.8	1,647.4	2,921.0	1,430.3	531.3	325.3	2,223.4	3,105.0	1,318.6	398.5 17,219.1	
4. Disk harrow	1.06	318.0	510.4	689.4	485.4	928.2	500.3	216.2	195.0	1,042.0	1,362.1	613.7	169.6 7,030.5	
5. Tooth harrow	0.84	50.4	201.6	425.9	567.8	798.8	606.5	201.6	2.5	388.1	735.8	478.0	192.4 4,649.4	
6. Ridger	1.76	105.6	425.0	422.4	105.6	592.2	800.8	425.0	0.0	622.2	955.7	1,004.1	397.8 5,856.4	
7. Seeder	2.00	0.0	0.0	211.2	668.8	1,218.8	881.2	240.0	0.0	88.0	562.0	430.0	220.0 4,520.0	
8. Cultivate	1.39	847.9	611.6	834.0	458.7	83.4	799.3	1,515.1	799.3	83.4	695.0	1,584.6	1,626.3 9,938.5	
9. Sprayer	0.79	2,630.7	1,610.8	1,134.4	1,180.3	1,501.0	1,971.1	2,417.4	1,940.2	2,223.9	2,449.0	2,776.9	2,433.2 24,268.8	
10. Combine	1.19	0.0	130.9	130.9	0.0	0.0	0.0	0.0	261.8	387.5	397.9	0.0	0.0 1,309.0	

Table D.8-11 Number of Agricultural Machineries Required in With Project Condition

Machinery	Working hour (hr/ha)	(Unit : No. of machineries)											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1. Tractor	25.77	25.81	31.43	27.07	43.65	38.14	29.78	18.19	40.62	58.33	46.16	29.16	58
2. Subsoiler	2.78	3.50	2.61	0.43	1.78	1.74	0.89	1.20	5.87	6.95	3.42	0.84	7
3. Plow	3.85	4.81	9.46	8.58	15.21	7.45	2.77	1.69	11.58	16.17	6.87	2.08	17
4. Disk harrow	1.06	2.66	3.59	2.53	4.83	2.61	1.13	1.02	5.43	7.09	3.20	0.88	8
5. Tooth harrow	0.84	1.05	2.22	2.96	4.16	3.16	1.05	0.01	2.02	3.83	2.49	1.00	5
6. Ridger	1.76	2.21	2.20	0.55	3.08	4.17	2.21	0.00	3.24	4.98	5.23	2.07	6
7. Seeder	2.00	0.00	1.10	3.48	6.35	4.59	1.25	0.00	0.46	2.93	2.24	1.15	7
8. Cultivator	1.39	3.19	4.34	2.39	0.43	4.16	7.89	4.16	0.43	3.62	8.25	8.47	9
9. Sprayer	0.79	8.39	5.91	6.15	7.82	10.27	12.59	10.11	11.58	12.76	14.46	12.67	15
10. Combine	1.19	0.68	0.68	0.00	0.00	0.00	0.00	1.36	2.02	2.07	0.00	0.00	3

Table D.8-12 Working Capacity of Agricultural Machineries

Machinery	(Type)	Working Working		Theoretical		Field		Field Working		Operation	
		width	Speed	Working Capacity	Working Capacity	Working Efficiency	Working Capacity	Capacity	Cost		
		m	km/hr	ha/hr	hr/ha	%	ha/hr	hr/ha	Lps/hr	Lps/ha	Lps/ha
1	Sub-soiler (one tooth)	3.00	2.0	0.60	1.67	60	0.36	2.78	30	83	
2	Disk plow (one way 2.0 m)	2.00	2.0	0.40	2.50	65	0.26	3.85	35	135	
3	Disk harrow (20" x 28)	2.70	5.0	1.35	0.74	70	0.95	1.06	35	37	
4	Tooth harrow (30" x 3)	3.40	5.0	1.70	0.59	70	1.19	0.84	35	29	
5	Ridger (3 row)	1.80	4.5	0.81	1.23	70	0.57	1.76	30	53	
6	Drill seeder (20 line)	2.50	5.0	1.25	0.80	40	0.50	2.00	40	80	
7	Cultivator (4 row)	3.00	4.0	1.20	0.83	60	0.72	1.39	35	49	
8	Sprayer (boom 450 lit.)	7.20	3.5	2.52	0.40	50	1.26	0.79	30	24	
9	Combine (self-propelled)	4.80	3.5	1.68	0.60	50	0.84	1.19	110	131	

Note : Machineries 1 to 8 are attachment of 50 - 70 HP Tractor.

## (6) Prices of Agricultural Products and Inputs

Table D.8-13 Financial and Economic Prices of Products and Agricultural Materials

(unit : Lps/ha)

Products	Financial	Economic	Rate
- Products -			
Rice *	985	898	0.912
Maize	620	355	0.573
Sorghum	480	349	0.727
Kidney-bean	1,400	1,250	0.893
Soy-bean	1,100	821	0.746
Tomato	450	375	0.833
Cucumber	220	284	1.291
Cabbage	800	508	0.847
Onion	980	1,036	1.057
Chill	1,400	1,184	0.846
Watermelon	310	262	0.845
Melon	240	269	1.121
Tobacco	4,400	5,054	1.149
Coffee	4,200	3,900	0.929
Papaya	660	558	1.300
Avocado	1,000	874	0.874
Mango	600	501	0.835
Orange	960	1,003	1.045
Beef	2,616	2,668	1.020
Milk	690	584	0.846
- Agricultural Materials -			
Fertilizer N	1,525	1,676	1.090
Fertilizer P205	1,700	1,868	1.090
Fertilizer K20	1,069	1,175	1.090
Chemicals	50,000	54,945	1.090
Seeds	2,210	2,072	0.938
Irrigation (per ha)	344	285	0.858
Labor (per day)	6	2.57	0.429

Note : \* un-hulled

Table D.8-14 Calculation Basis for the Conversion Rate of Basic Grains

(unit: Lps/ton, rate: 2 Lps = 1 US\$)

Product	Rice (bag)	Maize (grain)	Sorghum (grain)	Kidney bean (grain)	Soy bean (grain)
Forecasted Price (World Bank, Feb.8 '90)	700	214	208	1,028	660
Freight & Insurance	60	15	15	60	15
CIF Price to Puerto Cortez	760	229	223	1,088	675
Bag or Packing	0	10	10	10	10
Port Services	23	23	23	23	23
Port Duties	2	2	2	2	2
Custom Duties	2	2	2	2	2
Bank Commissions	25	7	7	35	22
Transportation to Comayagua	77	77	77	77	77
Domestic Handling Cost	3	3	3	3	3
Losses (1 % of CIF Value)	6	2	2	10	7
Total (t)	898	355	349	1,250	821
IHMA's Supported Price (Feb. '90) (g)	970	518	390	1,750	1,080
Ratio (t)/(g)	0.93	0.69	0.89	0.71	0.76

Source : IHMA, USDA, Data of Departamento de Estudios Economicos, World Bank (Official Memorandum, Feb.8, 1990)

Table D.8-15 Calculation Basis of Vegetables Economic Prices

(unit : Lps/ton)

Crop/Product	Tomato	Cu- cumber	Cab- bage	Onion	Chili	Water melon	Melon	Tobacco
Export price	474	382	-	1,227	-	-	525	5,785
Transport cost to Puerto Cortez	64	64	-	64	-	-	64	64
Handling expenditure	3	3	-	3	-	-	3	3
Tax/Tariff	33	27	-	104	-	-	37	606
Losses (1 % of price)	4	4	-	16	-	-	5	58
Balance (b)	370	284	-	1,040	-	-	416	5,054
Producer price	458	220	600	980	1,400	310	240	4,400
Adjusted producer price (c)*	381	186	508	889	1,184	262	203	3,722

(unit : Lps./ton)

Crop/Product	Coffee	Papaya	Avocado	Mango	Orange	Meat	Milk
Export price	4,480	-	1,060	553	1,231	3,550	-
Transport cost to Puerto Cortez	64	-	64	64	64	77	-
Handling expenditure	3	-	3	3	3	3	-
Tax/Tariff	648	-	81	40	95	337	-
Losses (1 % of price)	45	-	11	6	12	36	-
Balance (b)	3,900	-	901	440	1,057	2,807	-
Producer price	4,200	660	1,000	600	960	2,500	690
Adjusted producer price (c)*	3,553	558	846	508	812	2,115	584

Note : \* First, tax rate applied to the product is deducted and next the consumption goods conversion (0.91) has been applied.

Table D.8-16 Composite Economic Prices

(unit : Lps/ton)

Crop/Product	Tomato	Cu- cumber	Cab- bage	Onion	Chili	Water melon	Melon	Tobacco
Price (FOB)	370	284	-	1,040	-	-	416	5,054
Export Rate	0.58	1.00	0.00	0.97	0.00	0.00	0.31	1.00
Domestic Price	381	186	508	889	1,184	262	203	3,722
Domestic Consumption Rate	0.42	0.00	1.00	0.03	1.00	1.00	0.69	0.00
Composite Economic Price	375	284	508	1,036	1,184	262	269	5,054

(unit : Lps/ton)

Crop/Product	Coffee	Papaya	Avocado	Mango	Orange	Meat	Milk
Price (FOB)	3,900	-	901	440	1,057	2,807	-
Export Rate	1.00	0.00	0.50	0.11	0.78	0.80	-
Domestic Price	3,553	558	846	508	812	2,115	584
Domestic Consumption Rate	0.00	1.00	0.50	0.89	0.22	0.20	1.00
Composite Economic Price	3,900	558	874	501	1,003	2,668	584

Table D.8-17 Agricultural Products Prices  
in February, 1990

(Unit : Lps/ton)

Product	IHMA's Support Price	Wholesale Average Price	Producers Price	International Market Price *
Maize	463	460	620	214
Rice **	983	1,244	985	700
Sorghum	419	585	333	208
Kidney-bean	1,359	2,303	1,156	1,028
Sorghum	1,080	1,080	1,100	660
Tomato	-	460	450	370
Watermelon	-	489	310	-
Cucumber	-	195	150	284-660
Dry chili	-	1,800	1,400	-
Onion	-	1,602	980	1,040
Cabbage	-	209	600	-
Melon	-	191	240	416-827
Tobacco	-	4,313	4,400	5,054
Avocado	-	263	-	901
Coffee	-	3,140	4,200	3,900-4,875
Beef	-	4,710	500	3,550
Milk	-	322	690	-

Source : IHMA,  
Farm House-holds Survey by Regional Office,  
BCH Departamento de Estudios Economicos,  
Informe sobre Deseño de Desarrollo Rural,  
Comayagua Department,  
USDA data

Note : \* Used exchange rate : 1 US\$ = 2 Lps. (February 1990)

\*\* Un-hulled rice

\*\*\* CIF basis, United States



Table D.8-18 Calculation Basis for the Conversion Rate of Unskilled Labor Wage (By Bruce Method)

(unit : 1000 person/day)

Distribution	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Required Labor	18	18	47	53	49	20	18	22	51	53	52	28	429
Family Labor	18	18	25	25	25	20	18	22	25	25	25	25	271
Employed Labor	0	0	22	28	24	0	0	0	26	28	27	3	158

	Total	Un- employed	Journal Labor	Farmers- group Member	Less than 4 mz. Land Owner	Others
Number of families in San Antonio Village	668	12	52	197	308	99
Unemployed Number	1,070	40	160	410	460	0

- Available labor from unemployed pool :  $1,070 * 26 \text{ days/month} = 27.8$   
 - Agricultural labor amount :  $942 * 26 \text{ days/month} = 24.5$   
 - Cropping and cattle raising labor :  $720 * 59.6 \text{ days/ha} = 429$   
 - Unemployed labor conversion rate :  $158 / (12 \text{ months} * 7.8) = 0.474$   
 $0.474 * 0.906 \text{ (CFC)} = 0.429 \text{ to } 0.43$

Note : CFC (Consumption Goods Conversion Factor) Refer Table D.8-19

Table D.2-19 CFC Calculation (Consumption Goods Conversion Factor)

Year	1985	1986	1987	1988	1989	Average
Import Value (a)	(1) 1,668	1,606	1,658	1,725	1,823	1,716
Export Value (b)	(2) 1,389	1,349	1,266	1,333	1,312	1,330
Net Revenue (after Tariff a)	(3) 298	278	322	320	347	313
Net Revenue (after Tariff b)	(4) 84	81	74	50	49	68
Estimated Subsidy (a) (b)	(5) 63	59	60	66	72	64
CFC = (1)+(2)/(1)+(2)+(3)-(4)+(5)	0.92	0.92	0.90	0.90	0.89	0.91

Table D.8-20 Calculation Basis  
for Shadow Exchange Rate

(unit : million Lps.)

Product	Average Value	Export Relative Weight(%)	Tariff on CIF Value
Banana	642.4	45.7	12-5
Coffee	436.1	31.0	12-5
Shrimp	126.1	9.0	9
Wood	60.8	4.3	12-5
Zinc	71.1	5.0	12-5
Beef	40.1	2.8	12-5
Sugar	30.8	2.2	12-5
Total	1407.4	100.0	7.2
<b>Total</b>			
Value (%)	(44 %)	44 x 7.2 % = 3.17 %	
Machineries	455.8	25.5	45
Chemical Products	394.2	22.0	35
Construction Materials	396.6	20.7	35
Fuel	254.6	14.2	25
Foodstuff	172.2	9.6	30
Manufactured Goods	118.5	6.6	35
Livestock	25.3	1.4	25
Total	1790.2	100.0	35.5
<b>Total</b>			
Value (%)	(56 %)	56 x 35.5 % = 19.88 %	

Source : BCH data, Calculation :  $19.88 - 3.17 = 16.63\%$   
 $116.33 \times 2 \text{ Lps/US\$} = 2.33 \text{ Lps/US\$}$

Note : \* 1985-1989 average  
 \*\* Group I (Traditional products)  
 \*\*\* 10 % off tariff (5 % is estimated as export subsidies)

- Actually, those export products tariffs will be greatly reduced in 1998.
- Conversion rate will be given as 0.858 by the proportion 2/2.88

Table D.8-21 Financial Production Cost and Profit per Hectare in Without Project Condition (1/16)

Crop : Maize

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	1.8	620	1,116.0
2) By-Product				
Total				1,116.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	45	0	0.0
-Hired Labor	man-day	15	6	90.0
2) Farm Inputs				
-Seed	kg	16	1.76	28.2
-N	kg	30	1.525	45.8
-P205	kg	10	1.700	17.0
-K20	kg	0	1.069	0.0
-Insecticide	time	1	57.5	57.5
-Fungicide	time	0	110.0	0.0
-Herbicide	time	0	109.0	0.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	1	37	37.0
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	0	24	0.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	6	2	12.0
5) Miscellaneous	(10%)			42.2
Total				464.7
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.58
-Profit per growth period		3.33 month		195.6

Table D.8-21 Financial Production Cost and Profit per Hectare in Without Project Condition (2/16)

Crop : Rice

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	2.9	640	1,856.0
2) By-Product				
Total				1,856.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	43	0	0.0
-Hired Labor	man-day	14	6	84.0
2) Farm Inputs				
-Seed	kg	75	2.21	165.8
-N	kg	60	1.525	91.5
-P205	kg	30	1.700	51.0
-K20	kg	0	1.069	0.0
-Insecticide	time	1	57.5	57.5
-Fungicide	time	0	110.0	0.0
-Herbicide	time	1	109.0	109.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	2	37	74.0
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	0	24	0.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	10	2	20.0
5) Miscellaneous (10%)				78.8
Total				866.5
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.53
-Profit per growth period		4.67 month		211.9

Table D.8-21 Financial Production Cost and Profit per Hectare in Without Project Condition (3/16)

Crop : Kidney Beans

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	0.7	1,400	980.0
2) By-Product				
Total				980.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	37	0	0.0
-Hired Labor	man-day	12	6	72.0
2) Farm Inputs				
-Seed	kg	60	2.43	145.8
-N	kg	15	1.525	22.9
-P205	kg	15	1.700	25.5
-K20	kg	0	1.069	0.0
-Insecticide	time	1	57.5	57.5
-Fungicide	time	0	110.0	0.0
-Herbicide	time	0	109.0	0.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	1	37	37.0
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	0	24	0.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	5	2	10.0
5) Miscellaneous (10%)				50.6
Total				556.2
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.43
-Profit per growth period		2.67 month		158.7

Table D.8-21 Financial Production Cost and Profit per Hectare in Without Project Condition (4/16)

Crop : Sorghum

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	1.3	480	624.0
2) By-Product				
Total				624.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	27	0	0.0
-Hired Labor	man-day	9	6	54.0
2) Farm Inputs				
-Seed	kg	10	2.21	22.1
-N	kg	5	1.525	7.6
-P205	kg	15	1.700	25.5
-K20	kg	0	1.069	0.0
-Insecticide	time	0	57.5	0.0
-Fungicide	time	0	110.0	0.0
-Herbicide	time	0	109.0	0.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	1	37	37.0
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	0	24	0.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	0	2	0.0
5) Miscellaneous (10%)				28.1
Total				309.3
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.50
-Profit per growth period		3.33 month		94.5

Table D.8-21 Financial Production Cost and Profit per Hectare in Without Project Condition (5/16)

Crop : Tomato

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	17.4	450	7,830.0
2) By-Product				
Total				7,830.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	176	0	0.0
-Hired Labor	man-day	59	6	354.0
2) Farm Inputs				
-Seed	kg	0.3	72.8	21.8
-N	kg	75	1.525	114.4
-P205	kg	20	1.700	34.0
-K20	kg	10	1.069	10.7
-Insecticide	time	2	57.5	115.0
-Fungicide	time	2	110.0	220.0
-Herbicide	time	0	109.0	0.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	1	37	37.0
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	0	24	0.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	6	2	12.0
5) Miscellaneous (10%)				105.4
Total				1,159.3
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.85
-Profit per growth period		2.67 month		2,498.4



Table D.8-21 Financial Production Cost and Profit per Hectare in Without Project Condition (6/16)

Crop : Cucumber

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	11.8	220	2,596.0
2) By-Product				
Total				2,596.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	161	0	0.0
-Hired Labor	man-day	54	6	324.0
2) Farm Inputs				
-Seed	kg	2.0	63.9	127.8
-N	kg	60	1.525	91.5
-P205	kg	10	1.700	17.0
-K20	kg	0	1.069	0.0
-Insecticide	time	1	57.5	57.5
-Fungicide	time	1	110.0	110.0
-Herbicide	time	0	109.0	0.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	1	37	37.0
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	0	24	0.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	5	2	10.0
5) Miscellaneous (10%)				91.0
Total				1,000.8
<b>C. Primary Profit (A-B)</b>				
				1,595.2
-Profit ratio				0.61
-Profit per growth period		2.67 month		597.5

Table D.8-21 Financial Production Cost and Profit per Hectare in Without Project Condition (7/16)

Crop : Onion

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	9.0	980	8,820.0
2) By-Product				
Total				8,820.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	156	0	0.0
-Hired Labor	man-day	52	6	312.0
2) Farm Inputs				
-Seed	kg	1.0	154.4	154.4
-N	kg	90	1.525	137.3
-P205	kg	45	1.700	76.5
-K20	kg	0	1.069	0.0
-Insecticide	time	1	57.5	57.5
-Fungicide	time	2	110.0	220.0
-Herbicide	time	0	109.0	0.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	1	37	37.0
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	0	24	0.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	6	2	12.0
5) Miscellaneous (10%)				114.2
Total				1,255.8
<b>C. Primary Profit (A-B)</b>				
				7,564.2
-Profit ratio				0.86
-Profit per growth period		3.33 month		2,271.5

Table D.8-21 Financial Production Cost and Profit per Hectare in Without Project Condition (8/16)

Crop : Chili

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	4.8	1,400	6,720.0
2) By-Product				
Total				6,720.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	119	0	0.0
-Hired Labor	man-day	40	6	240.0
2) Farm Inputs				
-Seed	kg	2.0	154.4	308.8
-N	kg	60	1.525	91.5
-P205	kg	30	1.700	51.0
-K20	kg	0	1.069	0.0
-Insecticide	time	1	57.5	57.5
-Fungicide	time	1	110.0	110.0
-Herbicide	time	0	109.0	0.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	1	37	37.0
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	0	24	0.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	6	2	12.0
5) Miscellaneous (10%)				104.3
Total				1,147.1
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.83
-Profit per growth period		3.33 month		1,673.5

Table D.8-21 Financial Production Cost and Profit per Hectare in Without Project Condition (9/16)

Crop : Water Melon

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	11.2	310	3,472.0
2) By-Product				
<b>Total</b>				<b>3,472.0</b>
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	104	0	0.0
-Hired Labor	man-day	34	6	204.0
2) Farm Inputs				
-Seed	kg	2.0	63.9	127.8
-N	kg	60	1.525	91.5
-P205	kg	30	1.700	51.0
-K20	kg	0	1.069	0.0
-Insecticide	time	1	57.5	57.5
-Fungicide	time	1	110.0	110.0
-Herbicide	time	0	109.0	0.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	1	37	37.0
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	0	24	0.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	6	2	12.0
5) Miscellaneous (10%)				82.6
<b>Total</b>				<b>908.4</b>
<b>C. Primary Profit (A-B)</b>				
				<b>2,563.6</b>
-Profit ratio				0.74
-Profit per growth period		3.33 month		769.9

Table D.8-21 Financial Production Cost and Profit per Hectare in Without Project Condition (10/16)

Crop : Tobacco

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	1.8	4,400	7,920.0
2) By-Product				
Total				7,920.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	168	0	0.0
-Hired Labor	man-day	56	6	336.0
2) Farm Inputs				
-Seed	kg	0.5	264.6	132.3
-N	kg	90	1.525	137.3
-P205	kg	45	1.700	76.5
-K20	kg	0	1.069	0.0
-Insecticide	time	1	57.5	57.5
-Fungicide	time	1	110.0	110.0
-Herbicide	time	0	109.0	0.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	1	37	37.0
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	0	24	0.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	8	2	16.0
5) Miscellaneous (10%)				103.8
Total				1,141.3
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.86
-Profit per growth period		4.67 month		1,451.5

Table D.8-21 Financial Production Cost and Profit per Hectare in Without Project Condition (11/16)

Crop : Coffee

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	1.1	4,200	4,620.0
2) By-Product				
Total				4,620.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	120	0	0.0
-Hired Labor	man-day	40	6	240.0
2) Farm Inputs				
-Saplings	plant	30	10.0	300.0
-N	kg	30	1.525	45.8
-P205	kg	30	1.700	51.0
-K20	kg	30	1.069	32.1
-Insecticide	time	2	57.5	115.0
-Fungicide	time	2	110.0	220.0
-Herbicide	time	0	109.0	0.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	0.02	135	2.7
-Harrowing(Disk)	time	0.02	37	0.7
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	0	24	0.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	15	2	30.0
5) Miscellaneous (10%)				103.7
Total				1,141.0
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.75
-Profit per growth period		12 month		289.9

Table D.8-21 Financial Production Cost and Profit per Hectare in Without Project Condition (12/16)

Crop : Papaya

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	13.4	660	8,844.0
2) By-Product				
Total				8,844.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	114	0	0.0
-Hired Labor	man-day	28	6	168.0
2) Farm Inputs				
-Saplings	plant	800	2.5	2,000.0
-N	kg	90	1.525	137.3
-P205	kg	30	1.700	51.0
-K20	kg	10	1.069	10.7
-Insecticide	time	2	57.5	115.0
-Fungicide	time	3	110.0	330.0
-Herbicide	time	0	109.0	0.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	0.25	135	33.8
-Harrowing(Disk)	time	0.25	37	9.3
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	0	24	0.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	15	2	30.0
5) Miscellaneous (10%)				288.5
Total				3,173.4
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.64
-Profit per growth period		12 month		472.5

Table D.8-21 Financial Production Cost and Profit per Hectare in Without Project Condition (13/16)

Crop : Avocado

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	4.5	1,000	4,500.0
2) By-Product				
Total				4,500.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	118	0	0.0
-Hired Labor	man-day	40	6	240.0
2) Farm Inputs				
-Saplings	plant	3	13.0	39.0
-N	kg	60	1.525	91.5
-P205	kg	45	1.700	76.5
-K20	kg	10	1.069	10.7
-Insecticide	time	1	57.5	57.5
-Fungicide	time	2	110.0	220.0
-Herbicide	time	0	109.0	0.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	0.02	135	2.7
-Harrowing(Disk)	time	0.02	37	0.7
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	0	24	0.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	15	2	30.0
5) Miscellaneous (10%)				76.9
Total				845.5
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.81
-Profit per growth period		12 month		304.5



Table D.8-21 Financial Production Cost and Profit per Hectare in Without Project Condition (14/16)

Crop : Mango

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	5.6	600	3,360.0
2) By-Product				
Total				3,360.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	118	0	0.0
-Hired Labor	man-day	40	6	240.0
2) Farm Inputs				
-Saplings	plant	3	15	45.0
-N	kg	60	1.525	91.5
-P205	kg	45	1.700	76.5
-K20	kg	10	1.069	10.7
-Insecticide	time	1	57.5	57.5
-Fungicide	time	2	110.0	220.0
-Herbicide	time	0	109.0	0.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	0.02	135	2.7
-Harrowing(Disk)	time	0.02	37	0.7
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	0	24	0.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	15	2	30.0
5) Miscellaneous (10%)				77.5
Total				852.1
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.75
-Profit per growth period		12 month		209.0

Table D.8-21 Financial Production Cost and Profit per Hectare in Without Project Condition (15/16)

Crop : Orange

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	3.9	960	3,744.0
2) By-Product				
Total				3,744.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	118	0	0.0
-Hired Labor	man-day	40	6	240.0
2) Farm Inputs				
-Saplins	plant	4	21	84.0
-N	kg	60	1.525	91.5
-P205	kg	45	1.700	76.5
-K20	kg	10	1.069	10.7
-Insecticide	time	1	57.5	57.5
-Fungicide	time	2	110.0	220.0
-Herbicide	time	0	109.0	0.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	0.02	135	2.7
-Harrowing(Disk)	time	0.02	37	0.7
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	0	24	0.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	15	2	30.0
5) Miscellaneous (10%)				81.4
Total				895.0
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.76
-Profit per growth period		12 month		237.4

Table D.8-21 Financial Production Cost and Profit per Hectare in Without Project Condition (16/16)

Crop : Improved Pasture

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Milk	ton	1.54	690	1,062.6
2) Beef	ton	0.077	1,000	77.0
Total				1,139.6
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	45	0	0.0
-Hired Labor	man-day	15	6	90.0
2) Farm Inputs				
-Seed	kg	0.0	150	0.0
-N	kg	0	1.525	0.0
-P205	kg	0	1.700	0.0
-K20	kg	0	1.069	0.0
3) Animal Health & Feed				
-Vaccination	head	2.3	2.10	4.8
-Anthelmintics	head	2.3	0.23	0.5
-Dipping	head	2.3	0.40	0.9
-Mineral	kg	2.3	4.50	10.4
-Concentrate	kg	0	0.20	0.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	0.025	135	3.4
-Harrowing(Disk)	time	0.05	37	1.9
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
4) Irrigation	time	0	2	0.0
5) Miscellaneous	(10%)			11.2
Total				123.0
<b>C. Primary Profit (A-B)</b>				1,016.6
-Profit ratio				0.89
-Profit per growth period		12 month		84.7

## (7) Production Cost, Profit and Project Benefit

Table D.8-22 Economic Production Cost and Profit per Hectare in Without Project Condition (1/16)

Crop : Maize

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	1.8	355	639.0
2) By-Product				
Total				639.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	45	2.57	115.7
-Hired Labor	man-day	15	2.57	38.6
2) Farm Inputs				
-Seed	kg	16	1.65	26.4
-N	kg	30	1.662	49.9
-P205	kg	10	1.853	18.5
-K20	kg	0	1.165	0.0
-Insecticide	time	1	62.7	62.7
-Fungicide	time	0	119.9	0.0
-Herbicide	time	0	118.8	0.0
3) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	1	25.9	25.9
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	0	16.8	0.0
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	6	1.72	10.3
5) Miscellaneous	(10%)			44.2
Total				486.7
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.24
-Profit per growth period		3.33 month		45.8

Table D.8-22 Economic Production Cost and Profit per Hectare in Without Project Condition (2/16)

Crop : Rice

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	2.9	584	1,693.6
2) By-Product				
Total				1,693.6
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	43	2.57	110.5
-Hired Labor	man-day	14	2.57	36.0
2) Farm Inputs				
-Seed	kg	75	2.07	155.3
-N	kg	60	1.662	99.7
-P2O5	kg	30	1.853	55.6
-K2O	kg	0	1.165	0.0
-Insecticide	time	1	62.7	62.7
-Fungicide	time	0	119.9	0.0
-Herbicide	time	1	118.8	118.8
3) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	2	25.9	51.8
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	0	16.8	0.0
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	10	1.72	17.2
5) Miscellaneous (10%)				80.2
Total				882.3
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.48
-Profit per growth period		4.67 month		173.7

Table D.8-22 Economic Production Cost and Profit per Hectare in Without Project Condition (3/16)

Crop : Kidney

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	0.7	1,250	875.0
2) By-Product				
<b>Total</b>				<b>875.0</b>
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	37	2.57	95.1
-Hired Labor	man-day	12	2.57	30.8
2) Farm Inputs				
-Seed	kg	60	2.28	136.8
-N	kg	15	1.662	24.9
-P205	kg	15	1.853	27.8
-K20	kg	0	1.165	0.0
-Insecticide	time	1	62.7	62.7
-Fungicide	time	0	119.9	0.0
-Herbicide	time	0	118.8	0.0
3) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	1	25.9	25.9
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	0	16.8	0.0
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	5	1.72	8.6
5) Miscellaneous	(10%)			50.7
<b>Total</b>				<b>557.9</b>
<b>C. Primary Profit (A-B)</b>				
				<b>317.1</b>
-Profit ratio				0.36
-Profit per growth period		2.67 month		118.8

Table D.8-22 Economic Production Cost and Profit per Hectare in Without Project Condition (4/16)

Crop : Sorghum

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	1.3	349	453.7
2) By-Product				
Total				453.7
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	27	2.57	69.4
-Hired Labor	man-day	9	2.57	23.1
2) Farm Inputs				
-Seed	kg	10	2.07	20.7
-N	kg	5	1.525	7.6
-P205	kg	15	1.700	25.5
-K20	kg	0	1.069	0.0
-Insecticide	time	0	57.5	0.0
-Fungicide	time	0	110.0	0.0
-Herbicide	time	0	109.0	0.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	1	37	37.0
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	0	24	0.0
-Harvesting	time	0	131	0.0
4) Irrigation				
	time	0	2	0.0
5) Miscellaneous (10%)				
				31.8
Total				350.2
<b>C. Primary Profit (A-B)</b>				
				103.5
-Profit ratio				0.23
-Profit per growth period		3.33 month		31.1

Table D.8-22 Economic Production Cost and Profit per Hectare in Without Project Condition (5/16)

Crop : Tomato

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	17.4	375	6,525.0
2) By-Product				
Total				6,525.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	176	2.57	452.3
-Hired Labor	man-day	59	2.57	151.6
2) Farm Inputs				
-Seed	kg	0.3	68.3	20.5
-N	kg	75	1.662	124.7
-P205	kg	20	1.853	37.1
-K20	kg	10	1.165	11.7
-Insecticide	time	2	62.7	125.4
-Fungicide	time	2	119.9	239.8
-Herbicide	time	0	118.8	0.0
3) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	1	25.9	25.9
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	0	16.8	0.0
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	6	1.72	10.3
5) Miscellaneous (10%)				129.4
Total				1,423.1
<b>C. Primary Profit (A-B)</b>				
				5,101.9
-Profit ratio				0.78
-Profit per growth period		2.67 month		1,910.8



Table D.8-22 Economic Production Cost and Profit per Hectare in Without Project Condition (6/16)

Crop : Cucumber

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	11.8	284	3,351.2
2) By-Product				
Total				3,351.2
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	161	2.57	413.8
-Hired Labor	man-day	54	2.57	138.8
2) Farm Inputs				
-Seed	kg	2.0	59.9	119.8
-N	kg	60	1.662	99.7
-P205	kg	10	1.853	18.5
-K20	kg	0	1.165	0.0
-Insecticide	time	1	62.7	62.7
-Fungicide	time	1	119.9	119.9
-Herbicide	time	0	118.8	0.0
3) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	1	25.9	25.9
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	0	16.8	0.0
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	5	1.72	8.6
5) Miscellaneous (10%)				110.2
Total				1,212.4
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.64
-Profit per growth period		2.67 month		801.0

Table D.8-22 Economic Production Cost and Profit per Hectare in Without Project Condition (7/16)

Crop : Onion

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	9.0	1,036	9,324.0
2) By-Product				
Total				9,324.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	156	2.57	400.9
-Hired Labor	man-day	52	2.57	133.6
2) Farm Inputs				
-Seed	kg	1.0	144.8	144.8
-N	kg	90	1.662	149.6
-P205	kg	45	1.853	83.4
-K20	kg	0	1.165	0.0
-Insecticide	time	1	62.7	62.7
-Fungicide	time	2	119.9	239.8
-Herbicide	time	0	118.8	0.0
3) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	1	25.9	25.9
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	0	16.8	0.0
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	6	1.72	10.3
5) Miscellaneous	(10%)			134.6
Total				1,480.1
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.84
-Profit per growth period		3.33 month		2,355.5

Table D.8-22 Economic Production Cost and Profit per Hectare in Without Project Condition (8/16)

Crop : Chili

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	4.8	1,184	5,683.2
2) By-Product				
Total				5,683.2
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	119	2.57	305.8
-Hired Labor	man-day	40	2.57	102.8
2) Farm Inputs				
-Seed	kg	2.0	144.8	289.6
-N	kg	60	1.662	99.7
-P205	kg	30	1.853	55.6
-K20	kg	0	1.165	0.0
-Insecticide	time	1	62.7	62.7
-Fungicide	time	1	119.9	119.9
-Herbicide	time	0	118.8	0.0
3) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	1	25.9	25.9
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	0	16.8	0.0
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	6	1.72	10.3
5) Miscellaneous (10%)				116.7
Total				1,283.5
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.77
-Profit per growth period		3.33 month		1,321.2

Table D.8-22 Economic Production Cost and Profit per Hectare in Without Project Condition (9/16)

Crop : Water Melon

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	11.2	262	2,934.4
2) By-Product				
Total				2,934.4
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	104	2.57	267.3
-Hired Labor	man-day	34	2.57	87.4
2) Farm Inputs				
-Seed	kg	2.0	59.9	119.8
-N	kg	60	1.662	99.7
-P205	kg	30	1.853	55.6
-K20	kg	0	1.165	0.0
-Insecticide	time	1	62.7	62.7
-Fungicide	time	1	119.9	119.9
-Herbicide	time	0	118.8	0.0
3) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	1	25.9	25.9
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	0	16.8	0.0
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	6	1.72	10.3
5) Miscellaneous (10%)				94.3
Total				1,037.4
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.65
-Profit per growth period		3.33 month		569.7

Table D.8-22 Economic Production Cost and Profit per Hectare in Without Project Condition (10/16)

Crop : Tobacco

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	1.8	5,056	9,100.8
2) By-Product				
Total				9,100.8
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	168	2.57	431.8
-Hired Labor	man-day	56	2.57	143.9
2) Farm Inputs				
-Seed	kg	0.5	248.2	124.1
-N	kg	90	1.662	149.6
-P205	kg	45	1.853	83.4
-K20	kg	0	1.165	0.0
-Insecticide	time	1	62.7	62.7
-Fungicide	time	1	119.9	119.9
-Herbicide	time	0	118.8	0.0
3) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	1	25.9	25.9
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	0	16.8	0.0
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	8	1.72	13.8
5) Miscellaneous (10%)				125.0
Total				1,374.5
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.85
-Profit per growth period		4.67 month		1,654.5

Table D.8-22 Economic Production Cost and Profit per Hectare in Without Project Condition (11/16)

Crop : Coffee

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	1.1	3,902	4,292.2
2) By-Product				
Total				4,292.2
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	120	2.57	308.4
-Hired Labor	man-day	40	2.57	102.8
2) Farm Inputs				
-Saplings	plant	30	9.4	282.0
-N	kg	30	1.662	49.9
-P205	kg	30	1.853	55.6
-K20	kg	30	1.165	35.0
-Insecticide	time	2	62.7	125.4
-Fungicide	time	2	119.9	239.8
-Herbicide	time	0	118.8	0.0
3) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	0.02	94.5	1.9
-Harrowing(Disk)	time	0.02	25.9	0.5
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	0	16.8	0.0
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	15	1.72	25.8
5) Miscellaneous (10%)				122.7
Total				1,349.7
<b>C. Primary Profit (A-B)</b>				
				2,942.5
-Profit ratio				0.69
-Profit per growth period		12 month		245.2

Table D.8-22 Economic Production Cost and Profit per Hectare in Without Project Condition (12/16)

Crop : Papaya

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	13.4	858	11,497.2
2) By-Product				
Total				11,497.2
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	114	2.57	293.0
-Hired Labor	man-day	28	2.57	72.0
2) Farm Inputs				
-Saplings	plant	800	2.35	1,880.0
-N	kg	90	1.662	149.6
-P205	kg	30	1.853	55.6
-K20	kg	10	1.165	11.7
-Insecticide	time	2	62.7	125.4
-Fungicide	time	3	119.9	359.7
-Herbicide	time	0	118.8	0.0
3) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	0.25	94.5	23.6
-Harrowing(Disk)	time	0.25	25.9	6.5
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	0	16.8	0.0
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	15	1.72	25.8
5) Miscellaneous	(10%)			300.3
Total				3,303.0
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.71
-Profit per growth period		12 month		682.8

Table D.8-22 Economic Production Cost and Profit per Hectare in Without Project Condition (13/16)

Crop : Avocado

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	4.5	874	3,933.0
2) By-Product				
Total				3,933.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	118	2.57	303.3
-Hired Labor	man-day	40	2.57	102.8
2) Farm Inputs				
-Saplings	plant	3	12.2	36.6
-N	kg	60	1.662	99.7
-P205	kg	45	1.853	83.4
-K20	kg	10	1.165	11.7
-Insecticide	time	1	62.7	62.7
-Fungicide	time	2	119.9	239.8
-Herbicide	time	0	118.8	0.0
3) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	0.02	94.5	1.9
-Harrowing(Disk)	time	0.02	25.9	0.5
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	0	16.8	0.0
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	15	1.72	25.8
5) Miscellaneous (10%)				96.8
Total				1,064.9
<b>C. Primary Profit (A-B)</b>				
				2,868.1
-Profit ratio				0.73
-Profit per growth period		12 month		239.0



Table D.8-22 Economic Production Cost and Profit per Hectare in Without Project Condition (14/16)

Crop : Mango

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	5.6	501	2,805.6
2) By-Product				
Total				2,805.6
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	118	2.57	303.3
-Hired Labor	man-day	40	2.57	102.8
2) Farm Inputs				
-Saplings	plant	3	14.1	42.3
-N	kg	60	1.662	99.7
-P205	kg	45	1.853	83.4
-K20	kg	10	1.165	11.7
-Insecticide	time	1	62.7	62.7
-Fungicide	time	2	119.9	239.8
-Herbicide	time	0	118.8	0.0
3) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	0.02	94.5	1.9
-Harrowing(Disk)	time	0.02	25.9	0.5
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	0	16.8	0.0
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	15	1.72	25.8
5) Miscellaneous (10%)				97.4
Total				1,071.2
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.62
-Profit per growth period		12 month		144.5

Table D.8-22 Economic Production Cost and Profit per Hectare in Without Project Condition (15/16)

Crop : Orange

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	3.9	1,003	3,911.7
2) By-Product				
<b>Total</b>				<b>3,911.7</b>
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	118	2.57	303.3
-Hired Labor	man-day	40	2.57	102.8
2) Farm Inputs				
-Saplings	plant	4	19.7	78.8
-N	kg	60	1.662	99.7
-P2O5	kg	45	1.853	83.4
-K2O	kg	10	1.165	11.7
-Insecticide	time	1	62.7	62.7
-Fungicide	time	2	119.9	239.8
-Herbicide	time	0	118.8	0.0
3) Machinery (8)				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	0.02	94.5	1.9
-Harrowing(Disk)	time	0.02	25.9	0.5
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	0	16.8	0.0
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	15	1.72	25.8
5) Miscellaneous (10%)				101.0
<b>Total</b>				<b>1,111.4</b>
<b>C. Primary Profit (A-B)</b>				
				<b>2,800.3</b>
-Profit ratio				0.72
-Profit per growth period		12 month		233.4

Table D.8-22 Economic Production Cost and Profit per Hectare in Without Project Condition (16/16)

Crop : Improved Pasture

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Milk	ton	1.54	584	899.4
2) Beef	ton	0.077	1,020	78.5
Total				977.9
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	45	2.57	115.7
-Hired Labor	man-day	15	2.57	38.6
2) Farm Inputs				
-Seed	kg	0.0	141	0.0
-N	kg	0	1.662	0.0
-P205	kg	0	1.853	0.0
-K20	kg	0	1.165	0.0
3) Animal Health & Feed				
-Vaccination	head	2.3	2.29	5.3
-Anthelmintics	head	2.3	0.49	1.1
-Dipping	head	2.3	0.87	2.0
-Mineral	kg	2.3	4.91	11.3
-Concentrate	kg	0	0.21	0.0
4) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	0.025	94.5	2.4
-Harrowing(Disk)	time	0.05	25.9	1.3
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
5) Irrigation	time	0	1.72	0.0
6) Miscellaneous	(10%)			17.8
Total				195.3
<b>C. Primary Profit (A-B)</b>				
				782.6
-Profit ratio				0.80
-Profit per growth period		12 month		65.2

Table D.8-23 Financial Production Cost and Profit per Hectare in With Project Condition (1/18)

Crop : Maize

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	4.0	620	2,480.0
2) By-Product				
Total				2,480.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	29	0	0.0
-Hired Labor	man-day	15	6	90.0
2) Farm Inputs				
-Seed	kg	16	2.65	42.4
-N	kg	110	1.525	167.8
-P205	kg	40	1.700	68.0
-K20	kg	30	1.069	32.1
-Insecticide	time	1	57.5	57.5
-Fungicide	time	1	110.0	110.0
-Herbicide	time	1	109.0	109.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	1	37	37.0
-Harrowing(Tooth)	time	1	29	29.0
-Ridging	time	1	53	53.0
-Seeding	time	1	80	80.0
-Cultivating/Weeding	time	2	49	98.0
-Spraying	time	3	24	72.0
-Harvesting	time	1	131	131.0
4) Irrigation	time	8	2	16.0
5) Miscellaneous (10%)				132.8
Total				1,460.5
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.41
-Profit per growth period		3.33 month		306.2

Table D.8-23 Financial Production Cost and Profit per Hectare in With Project Condition (2/18)

Crop : Rice

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	5.0	640	3,200.0
2) By-Product				
Total				3,200.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	26	0	0.0
-Hired Labor	man-day	13	6	78.0
2) Farm Inputs				
-Seed	kg	65	2.21	143.7
-N	kg	100	1.525	152.5
-P205	kg	60	1.700	102.0
-K20	kg	30	1.069	32.1
-Insecticide	time	2	57.5	115.0
-Fungicide	time	1	110.0	110.0
-Herbicide	time	2	109.0	218.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	1	37	37.0
-Harrowing(Tooth)	time	2	29	58.0
-Ridging	time	0	53	0.0
-Seeding	time	1	80	80.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	5	24	120.0
-Harvesting	time	1	131	131.0
4) Irrigation	time	14	2	28.0
5) Miscellaneous (10%)				154.0
Total				1,694.2
<b>C. Primary Profit (A-B)</b>				
				1,505.8
-Profit ratio				0.47
-Profit per growth period		4.67 month		322.4

Table D.8-23 Financial Production Cost and Profit per Hectare in With Project Condition (3/18)

Crop : Soy Beans

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	2.0	1,100	2,200.0
2) By-Product				
Total				2,200.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	28	0	0.0
-Hired Labor	man-day	14	6	84.0
2) Farm Inputs				
-Seed	kg	60	2.43	145.8
-N	kg	20	1.525	30.5
-P205	kg	60	1.700	102.0
-K20	kg	30	1.069	32.1
-Insecticide *	time	2	57.5	115.0
-Fungicide	time	1	110.0	110.0
-Herbicide	time	1	109.0	109.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	1	37	37.0
-Harrowing(Tooth)	time	1	29	29.0
-Ridging	time	1	53	53.0
-Seeding	time	1	80	80.0
-Cultivating/Weeding	time	2	49	98.0
-Spraying	time	3	24	72.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	6	2	12.0
5) Miscellaneous (10%)				124.4
Total				1,368.8
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.38
-Profit per growth period		2.67 month		311.3

\* Including of inoculation of leguminous bacteria

Table D.8-23 Financial Production Cost and Profit per Hectare in With Project Condition (4/18)

Crop : Tomato

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	28.0	450	12,600.0
2) By-Product				
Total				12,600.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	147	0	0.0
-Hired Labor	man-day	76	6	456.0
2) Farm Inputs				
-Seed	kg	0.3	187.4	56.2
-N	kg	140	1.525	213.5
-P205	kg	170	1.700	289.0
-K20	kg	40	1.069	42.8
-Insecticide	time	5	57.5	287.5
-Fungicide	time	4	110.0	440.0
-Herbicide	time	1	109.0	109.0
3) Machinery				
-Subsoiling	time	1	83	83.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	2	37	74.0
-Harrowing(Tooth)	time	1	29	29.0
-Ridging	time	1	53	53.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	2	49	98.0
-Spraying	time	10	24	240.0
-Harvesting	time	0	131	0.0
4) Irrigation				
	time	7	2	14.0
5) Miscellaneous (10%)				
				262.0
Total				2,882.0
<b>C. Primary Profit (A-B)</b>				
				9,718.0
-Profit ratio				0.77
-Profit per growth period		2.67 month		3,639.7

Table D.8-23 Financial Production Cost and Profit per Hectare in With Project Condition (5/18)

Crop : Cucumber

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	24.0	220	5,280.0
2) By-Product				
Total				5,280.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	138	0	0.0
-Hired Labor	man-day	71	6	426.0
2) Farm Inputs				
-Seed	kg	2.0	100	200.0
-N	kg	100	1.525	152.5
-P205	kg	70	1.700	119.0
-K20	kg	40	1.069	42.8
-Insecticide	time	4	57.5	230.0
-Fungicide	time	4	110.0	440.0
-Herbicide	time	1	109.0	109.0
3) Machinery				
-Subsoiling	time	1	83	83.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	2	37	74.0
-Harrowing(Tooth)	time	1	29	29.0
-Ridging	time	1	53	53.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	2	49	98.0
-Spraying	time	9	24	216.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	7	2	14.0
5) Miscellaneous (10%)				242.1
Total				2,663.4
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.50
-Profit per growth period		2.67 month		980.0



Table D.8-23 Financial Production Cost and Profit per Hectare in With Project Condition (6/18)

Crop : Cabbage

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	17.0	600	10,200.0
2) By-Product				
Total				10,200.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	82	0	0.0
-Hired Labor	man-day	43	6	258.0
2) Farm Inputs				
-Seed	kg	0.5	61.7	30.9
-N	kg	120	1.525	183.0
-P205	kg	90	1.700	153.0
-K20	kg	40	1.069	42.8
-Insecticide	time	5	57.5	287.5
-Fungicide	time	4	110.0	440.0
-Herbicide	time	1	109.0	109.0
3) Machinery				
-Subsoiling	time	1	83	83.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	2	37	74.0
-Harrowing(Tooth)	time	1	29	29.0
-Ridging	time	1	53	53.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	2	49	98.0
-Spraying	time	10	24	240.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	8	2	16.0
5) Miscellaneous (10%)				223.2
Total				2,455.3
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.76
-Profit per growth period		3.33 month		2,325.7

Table D.8-23 Financial Production Cost and Profit per Hectare in With Project Condition (7/18)

Crop : Onion

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	14.0	980	13,720.0
2) By-Product				
Total				13,720.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	127	0	0.0
-Hired Labor	man-day	65	6	390.0
2) Farm Inputs				
-Seed	kg	1.0	154.4	154.4
-N	kg	160	1.525	244.0
-P205	kg	120	1.700	204.0
-K20	kg	80	1.069	85.5
-Insecticide	time	5	57.5	287.5
-Fungicide	time	4	110.0	440.0
-Herbicide	time	1	109.0	109.0
3) Machinery				
-Subsoiling	time	1	83	83.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	2	37	74.0
-Harrowing(Tooth)	time	1	29	29.0
-Ridging	time	1	53	53.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	2	49	98.0
-Spraying	time	10	24	240.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	8	2	16.0
5) Miscellaneous (10%)				264.2
Total				2,906.7
<b>C. Primary Profit (A-B)</b>				
				10,813.3
-Profit ratio				0.79
-Profit per growth period		3.33 month		3,247.2

Table D.8-23 Financial Production Cost and Profit per Hectare in With Project Condition (8/18)

Crop : Chili

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	7.0	1,400	9,800.0
2) By-Product				
Total				9,800.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	97	0	0.0
-Hired Labor	man-day	50	6	300.0
2) Farm Inputs				
-Seed	kg	2.0	250	500.0
-N	kg	100	1.525	152.5
-P205	kg	80	1.700	136.0
-K20	kg	40	1.069	42.8
-Insecticide	time	5	57.5	287.5
-Fungicide	time	4	110.0	440.0
-Herbicide	time	1	109.0	109.0
3) Machinery				
-Subsoiling	time	1	83	83.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	2	37	74.0
-Harrowing(Tooth)	time	1	29	29.0
-Ridging	time	1	53	53.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	2	49	98.0
-Spraying	time	10	24	240.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	8	2	16.0
5) Miscellaneous (10%)				269.6
Total				2,965.3
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.70
-Profit per growth period		3.33 month		2,052.5

Table D.8-23 Financial Production Cost and Profit per Hectare in With Project Condition (9/18)

Crop : Water Melon

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	18.0	310	5,580.0
2) By-Product				
Total				5,580.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	84	0	0.0
-Hired Labor	man-day	44	6	264.0
2) Farm Inputs				
-Seed	kg	2.0	264.6	529.2
-N	kg	80	1.525	122.0
-P205	kg	80	1.700	136.0
-K20	kg	40	1.069	42.8
-Insecticide	time	4	57.5	230.0
-Fungicide	time	3	110.0	330.0
-Herbicide	time	1	109.0	109.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	2	37	74.0
-Harrowing(Tooth)	time	1	29	29.0
-Ridging	time	1	53	53.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	2	49	98.0
-Spraying	time	8	24	192.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	8	2	16.0
5) Miscellaneous (10%)				236.0
Total				2,596.0
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.53
-Profit per growth period		3.33 month		896.1

Table D.8-23 Financial Production Cost and Profit per Hectare in With Project Condition (10/18)

Crop : Melon

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	16.0	240	3,840.0
2) By-Product				
Total				3,840.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	84	0	0.0
-Hired Labor	man-day	44	6	264.0
2) Farm Inputs				
-Seed	kg	2.0	264.6	529.2
-N	kg	80	1.525	122.0
-P205	kg	80	1.700	136.0
-K20	kg	40	1.069	42.8
-Insecticide	time	4	57.5	230.0
-Fungicide	time	3	110.0	330.0
-Herbicide	time	1	109.0	109.0
3) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	2	37	74.0
-Harrowing(Tooth)	time	1	29	29.0
-Ridging	time	1	53	53.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	2	49	98.0
-Spraying	time	8	24	192.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	8	2	16.0
5) Miscellaneous (10%)				236.0
Total				2,596.0
<b>C. Primary Profit (A-B)</b>				1,244.0
-Profit ratio				0.32
-Profit per growth period		3.33 month		373.6

Table D.8-23 Financial Production Cost and Profit per Hectare in With Project Condition (11/18)

Crop : Tobacco

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	2.3	4,400	10,120.0
2) By-Product				
<b>Total</b>				<b>10,120.0</b>
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	133	0	0.0
-Hired Labor	man-day	68	6	408.0
2) Farm Inputs				
-Seed	kg	0.5	264.6	132.3
-N	kg	120	1.525	183.0
-P205	kg	100	1.700	170.0
-K20	kg	80	1.069	85.5
-Insecticide	time	4	57.5	230.0
-Fungicide	time	4	110.0	440.0
-Herbicide	time	1	109.0	109.0
3) Machinery				
-Subsoiling	time	1	83	83.0
-Plowing	time	1	135	135.0
-Harrowing(Disk)	time	2	37	74.0
-Harrowing(Tooth)	time	1	29	29.0
-Ridging	time	1	53	53.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	3	49	147.0
-Spraying	time	9	24	216.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	10	2	20.0
5) Miscellaneous (10%)				251.5
<b>Total</b>				<b>2,766.3</b>
<b>C. Primary Profit (A-B)</b>				
				<b>7,353.7</b>
-Profit ratio				0.73
-Profit per growth period		4.67 month		1,574.7

Table D.8-23 Financial Production Cost and Profit per Hectare in With Project Condition (12/18)

Crop : Coffee

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	1.5	4,200	6,300.0
2) By-Product				
Total				6,300.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	103	0	0.0
-Hired Labor	man-day	53	6	318.0
2) Farm Inputs				
-Saplings	plant	30	10.0	300.0
-N	kg	55	1.525	83.9
-P205	kg	50	1.700	85.0
-K20	kg	75	1.069	80.2
-Insecticide	time	2	57.5	115.0
-Fungicide	time	3	110.0	330.0
-Herbicide	time	1	109.0	109.0
3) Machinery				
-Subsoiling	time	0.02	83	1.7
-Plowing	time	0.02	135	2.7
-Harrowing(Disk)	time	0.04	37	1.5
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	6	24	144.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	28	2	56.0
5) Miscellaneous (10%)				162.7
Total				1,789.6
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.72
-Profit per growth period		12 month		375.9

Table D.8-23 Financial Production Cost and Profit per Hectare in With Project Condition (13/18)

Crop : Papaya

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	19.0	660	12,540.0
2) By-Product				
Total				12,540.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	97	0	0.0
-Hired Labor	man-day	50	6	300.0
2) Farm Inputs				
-Saplings	plant	800	2.5	2,000.0
-N	kg	150	1.525	228.8
-P205	kg	240	1.700	408.0
-K20.	kg	130	1.069	139.0
-Insecticide	time	4	57.5	230.0
-Fungicide	time	12	110.0	1,320.0
-Herbicide	time	1	109.0	109.0
3) Machinery				
-Subsoiling	time	0.25	83	20.8
-Plowing	time	0.25	135	33.8
-Harrowing(Disk)	time	0.50	37	18.5
-Harrowing(Tooth)	time	0.25	29	7.3
-Ridging	time	0.25	53	13.3
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	17	24	408.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	28	2	56.0
5) Miscellaneous	(10%)			529.2
Total				5,821.4
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.54
-Profit per growth period		12 month		559.9



Table D.8-23 Financial Production Cost and Profit per Hectare in With Project Condition (14/18)

Crop : Avocado

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	6.0	1,000	6,000.0
2) By-Product				
Total				6,000.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	92	0	0.0
-Hired Labor	man-day	48	6	288.0
2) Farm Inputs				
-Saplings	plant	3	13.0	39.0
-N	kg	115	1.525	175.4
-P205	kg	95	1.700	161.5
-K20	kg	85	1.069	90.9
-Insecticide	time	5	57.5	287.5
-Fungicide	time	4	110.0	440.0
-Herbicide	time	1	109.0	109.0
3) Machinery				
-Subsoiling	time	0.02	83	1.7
-Plowing	time	0.02	135	2.7
-Harrowing(Disk)	time	0.04	37	1.5
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	9	24	216.0
-Harvesting	time	0	131	0.0
4) Irrigation				
	time	28	2	56.0
5) Miscellaneous (10%)				
				186.9
Total				2,056.0
<b>C. Primary Profit (A-B)</b>				
				3,944.0
-Profit ratio				0.66
-Profit per growth period		12 month		328.7

Table D.8-23 Financial Production Cost and Profit per Hectare in With Project Condition (15/18)

Crop : Mango

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	12.0	600	7,200.0
2) By-Product				
Total				7,200.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	92	0	0.0
-Hired Labor	man-day	48	6	288.0
2) Farm Inputs				
-Saplins	plant	3	15	45.0
-N	kg	115	1.525	175.4
-P205	kg	95	1.700	161.5
-K20	kg	85	1.069	90.9
-Insecticide	time	4	57.5	230.0
-Fungicide	time	4	110.0	440.0
-Herbicide	time	1	109.0	109.0
3) Machinery				
-Subsoiling	time	0.02	83	1.7
-Plowing	time	0.02	135	2.7
-Harrowing(Disk)	time	0.04	37	1.5
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	9	24	216.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	28	2	56.0
5) Miscellaneous (10%)				181.8
Total				1,999.3
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.72
-Profit per growth period		12 month		433.4

Table D.8-23 Financial Production Cost and Profit per Hectare in With Project Condition (16/18)

Crop : Orange

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	6.0	960	5,760.0
2) By-Product				
Total				5,760.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	92	0	0.0
-Hired Labor	man-day	48	6	288.0
2) Farm Inputs				
-Saplings	plant	4	21	84.0
-N	kg	115	1.525	175.4
-P205	kg	95	1.700	161.5
-K20	kg	85	1.069	90.9
-Insecticide	time	4	57.5	230.0
-Fungicide	time	4	110.0	440.0
-Herbicide	time	1	109.0	109.0
3) Machinery				
-Subsoiling	time	0.02	83	1.7
-Plowing	time	0.02	135	2.7
-Harrowing(Disk)	time	0.04	37	1.5
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
-Cultivating/Weeding	time	0	49	0.0
-Spraying	time	9	24	216.0
-Harvesting	time	0	131	0.0
4) Irrigation	time	28	2	56.0
5) Miscellaneous	(10%)			185.7
Total				2,042.2
<b>C. Primary Profit (A-B)</b>				<b>3,717.8</b>
-Profit ratio				0.65
-Profit per growth period		12 month		309.8

Table D.8-23 Financial Production Cost and Profit per Hectare in With Project Condition (17/18)

Crop : Improved Pasture (Irrigated)

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Milk	ton	4.5	690	3,105.0
2) Beef	ton	0.215	1,000	215.0
Total				3,320.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	106	0	0.0
-Hired Labor	man-day	54	6	324.0
2) Farm Inputs				
-Seed	kg	0.8	150	120.0
-N	kg	40	1.525	61.0
-P205	kg	30	1.700	51.0
-K20	kg	30	1.069	32.1
3) Animal Health & Feed				
-Vaccination	head	5	2.10	10.5
-Anthelmintics	head	5	0.45	2.3
-Dipping	head	5	0.80	4.0
-Mineral	kg	10	4.50	45.0
-Concentrate	kg	150	0.20	30.0
4) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	0.025	135	3.4
-Harrowing(Disk)	time	0.05	37	1.9
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
5) Irrigation	time	28	2	56.0
6) Miscellaneous	(10%)			74.1
Total				815.1
<b>C. Primary Profit (A-B)</b>				
				2,504.9
-Profit ratio				0.75
-Profit per growth period		12 month		208.7

Table D.8-23 Financial Production Cost and Profit per Hectare in With Project Condition (18/18)

Crop : Improved Pasture (Non-Irrigated)

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Milk	ton	2.7	690	1,863.0
2) Beef	ton	0.129	1,000	129.0
Total				1,992.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	57	0	0.0
-Hired Labor	man-day	30	6	180.0
2) Farm Inputs				
-Seed	kg	0.8	150	120.0
-N	kg	30	1.525	45.8
-P205	kg	25	1.700	42.5
-K20	kg	25	1.069	26.7
3) Animal Health & Feed				
-Vaccination	head	3	2.10	6.3
-Anthelmintics	head	3	0.45	1.4
-Dipping	head	3	0.80	2.4
-Mineral	kg	6	4.50	27.0
-Concentrate	kg	90	0.20	18.0
4) Machinery				
-Subsoiling	time	0	83	0.0
-Plowing	time	0.025	135	3.4
-Harrowing(Disk)	time	0.05	37	1.9
-Harrowing(Tooth)	time	0	29	0.0
-Ridging	time	0	53	0.0
-Seeding	time	0	80	0.0
5) Irrigation	time	0	2	0.0
6) Miscellaneous	(10%)			47.5
Total				522.8
<b>C. Primary Profit (A-B)</b>				1,469.2
-Profit ratio				0.74
-Profit per growth period		12 month		122.4

Table D.8-24 Economic Production Cost and Profit per Hectare in With Project Cdition (1/18)

Crop : Maize

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	4.0	355	1,420.0
2) By-Product				
Total				1,420.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	29	2.57	74.5
-Hired Labor	man-day	15	2.57	38.6
2) Farm Inputs				
-Seed	kg	16	2.49	39.8
-N	kg	110	1.662	182.8
-P205	kg	40	1.853	74.1
-K20	kg	30	1.165	35.0
-Insecticide	time	1	62.7	62.7
-Fungicide	time	1	119.9	119.9
-Herbicide	time	1	118.8	118.8
3) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	1	25.9	25.9
-Harrowing(Tooth)	time	1	20.3	20.3
-Ridging	time	1	37.1	37.1
-Seeding	time	1	56.0	56.0
-Cultivating/Weeding	time	2	34.3	68.6
-Spraying	time	3	16.8	50.4
-Harvesting	time	1	91.7	91.7
4) Irrigation	time	8	1.72	13.8
5) Micellaneous (10%)				120.4
Total				1,324.9
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.07
-Profit per growth period		3.33 month		28.6

Table D.8-24 Economic Production Cost and Profit per Hectare in With Project Cdition (2/18)

Crop : Rice

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	5.0	584	2,920.0
2) By-Product				
Total				2,920.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	26	2.57	66.8
-Hired Labor	man-day	13	2.57	33.4
2) Farm Inputs				
-Seed	kg	65	2.07	134.6
-N	kg	100	1.662	166.2
-P205	kg	60	1.853	111.2
-K20	kg	30	1.165	35.0
-Insecticide	time	2	62.7	125.4
-Fungicide	time	1	119.9	119.9
-Herbicide	time	2	118.8	237.6
3) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	1	25.9	25.9
-Harrowing(Tooth)	time	2	20.3	40.6
-Ridging	time	0	37.1	0.0
-Seeding	time	1	56.0	56.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	5	16.8	84.0
-Harvesting	time	1	91.7	91.7
4) Irrigation	time	14	1.72	24.1
5) Micellaneous (10%)				144.7
Total				1,591.5
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.45
-Profit per growth period		4.67 month		284.5

Table D.8-24. Economic Production Cost and Profit per Hectare in With Project Cdition (3/18)

Crop : Soy Beams

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	2.0	821	1,642.0
2) By-Product				
Total				1,642.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	28	2.57	72.0
-Hired Labor	man-day	14	2.57	36.0
2) Farm Inputs				
-Seed	kg	60	2.28	136.8
-N	kg	20	1.662	33.2
-P205	kg	60	1.853	111.2
-K20	kg	30	1.165	35.0
-Insecticide *	time	2	62.7	125.4
-Fungicide	time	1	119.9	119.9
-Herbicide	time	1	118.8	118.8
3) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	1	25.9	25.9
-Harrowing(Tooth)	time	1	20.3	20.3
-Ridging	time	1	37.1	37.1
-Seeding	time	1	56.0	56.0
-Cultivating/Weeding	time	2	34.3	68.6
-Spraying	time	3	16.8	50.4
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	6	1.72	10.3
5) Micellaneous	(10%)			115.1
Total				1,266.5
<b>C. Primary Profit (A-B)</b>				
				375.5
-Profit ratio				0.23
-Profit per growth period		2.67 month		140.7

\* Including of inoculation of leguminous bacteria



Table D.8-24 Economic Production Cost and Profit per Hectare in With Project Cdition (4/18)

Crop : Tomato

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	28.0	375	10,500.0
2) By-Product				
Total				10,500.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	147	2.57	377.8
-Hired Labor	man-day	76	2.57	195.3
2) Farm Inputs				
-Seed	kg	0.3	175.8	52.7
-N	kg	140	1.662	232.7
-P205	kg	170	1.853	315.0
-K20	kg	40	1.165	46.6
-Insecticide	time	5	62.7	313.5
-Fungicide	time	4	119.9	479.6
-Herbicide	time	1	118.8	118.8
3) Machinery				
-Subsoiling	time	1	58.1	58.1
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	2	25.9	51.8
-Harrowing(Tooth)	time	1	20.3	20.3
-Ridging	time	1	37.1	37.1
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	2	34.3	68.6
-Spraying	time	10	16.8	168.0
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	7	1.72	12.0
5) Micellaneous	(10%)			264.2
Total				2,906.7
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.72
-Profit per growth period		2.67 month		2,843.9

Table D.8-24 Economic Production Cost and Profit per Hectare in With Project Cdition (5/18)

Crop : Cucumber

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	24.0	284	6,816.0
2) By-Product				
Total				6,816.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	138	2.57	354.7
-Hired Labor	man-day	71	2.57	182.5
2) Farm Inputs				
-Seed	kg	2.0	93.8	187.6
-N	kg	100	1.662	166.2
-P205	kg	70	1.853	129.7
-K20	kg	40	1.165	46.6
-Insecticide	time	4	62.7	250.8
-Fungicide	time	4	119.9	479.6
-Herbicide	time	1	118.8	118.8
3) Machinery				
-Subsoiling	time	1	58.1	58.1
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	2	25.9	51.8
-Harrowing(Tooth)	time	1	20.3	20.3
-Ridging	time	1	37.1	37.1
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	2	34.3	68.6
-Spraying	time	9	16.8	151.2
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	7	1.72	12.0
5) Micellaneous	(10%)			241.0
Total				2,651.1
<b>C. Primary Profit (A-B)</b>				
				4,164.9
-Profit ratio				0.61
-Profit per growth period		2.67 month		1,559.9

Table D.8-24 Economic Production Cost and Profit per Hectare in With Project Cdition (6/18)

Crop : Cabbage

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	17.0	508	8,636.0
2) By-Product				
Total				8,636.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	82	2.57	210.7
-Hired Labor	man-day	43	2.57	110.5
2) Farm Inputs				
-Seed	kg	0.5	57.9	29.0
-N	kg	120	1.662	199.4
-P205	kg	90	1.853	166.8
-K20	kg	40	1.165	46.6
-Insecticide	time	5	62.7	313.5
-Fungicide	time	4	119.9	479.6
-Herbicide	time	1	118.8	118.8
3) Machinery				
-Subsoiling	time	1	58.1	58.1
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	2	25.9	51.8
-Harrowing(Tooth)	time	1	20.3	20.3
-Ridging	time	1	37.1	37.1
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	2	34.3	68.6
-Spraying	time	10	16.8	168.0
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	8	1.72	13.8
5) Micellaneous	(10%)			218.7
Total				2,405.8
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.72
-Profit per growth period		3.33 month		1,870.9

Table D.8-24 Economic Production Cost and Profit per Hectare in With Project Cdition (7/18)

Crop : Onion

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	14.0	1,036	14,504.0
2) By-Product				
Total				14,504.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	127	2.57	326.4
-Hired Labor	man-day	65	2.57	167.1
2) Farm Inputs				
-Seed	kg	1.0	144.8	144.8
-N	kg	160	1.662	265.9
-P205	kg	120	1.853	222.4
-K20	kg	80	1.165	93.2
-Insecticide	time	5	62.7	313.5
-Fungicide	time	4	119.9	479.6
-Herbicide	time	1	118.8	118.8
3) Machinery				
-Subsoiling	time	1	58.1	58.1
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	2	25.9	51.8
-Harrowing(Tooth)	time	1	20.3	20.3
-Ridging	time	1	37.1	37.1
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	2	34.3	68.6
-Spraying	time	10	16.8	168.0
-Harvesting	time	0	91.7	0.0
4) Irrigation				
	time	8	1.72	13.8
5) Micellaneous (10%)				
				264.4
Total				2,908.2
<b>C. Primary Profit (A-B)</b>				
				11,595.8
-Profit ratio				0.80
-Profit per growth period		3.33 month		3,482.2

Table D.8-24 Economic Production Cost and Profit per Hectare in With Project Cdition (8/18)

Crop : Chili

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	7.0	1,184	8,288.0
2) By-Product				
Total				8,288.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	97	2.57	249.3
-Hired Labor	man-day	50	2.57	128.5
2) Farm Inputs				
-Seed	kg	2.0	234.5	469.0
-N	kg	100	1.662	166.2
-P205	kg	80	1.853	148.2
-K20	kg	40	1.165	46.6
-Insecticide	time	5	62.7	313.5
-Fungicide	time	4	119.9	479.6
-Herbicide	time	1	118.8	118.8
3) Machinery				
-Subsoiling	time	1	58.1	58.1
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	2	25.9	51.8
-Harrowing(Tooth)	time	1	20.3	20.3
-Ridging	time	1	37.1	37.1
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	2	34.3	68.6
-Spraying	time	10	16.8	168.0
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	8	1.72	13.8
5) Micellaneous (10%)				263.2
Total				2,895.1
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.65
-Profit per growth period		3.33 month		1,619.5

Table D.8-24 Economic Production Cost and Profit per Hectare in With Project Cdition (9/18)

Crop : Water Melon

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	18.0	262	4,716.0
2) By-Product				
Total				4,716.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	84	2.57	215.9
-Hired Labor	man-day	44	2.57	113.1
2) Farm Inputs				
-Seed	kg	2.0	248.2	496.4
-N	kg	80	1.662	133.0
-P205	kg	80	1.853	148.2
-K20	kg	40	1.165	46.6
-Insecticide	time	4	62.7	250.8
-Fungicide	time	3	119.9	359.7
-Herbicide	time	1	118.8	118.8
3) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	2	25.9	51.8
-Harrowing(Tooth)	time	1	20.3	20.3
-Ridging	time	1	37.1	37.1
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	2	34.3	68.6
-Spraying	time	8	16.8	134.4
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	8	1.72	13.8
5) Micellaneous	(10%)			230.3
Total				2,533.2
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.46
-Profit per growth period		3.33 month		655.5

Table D.8-24 Economic Production Cost and Profit per Hectare in With Project Cdition (10/18)

Crop : Melon

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	16.0	269	4,304.0
2) By-Product				
Total				4,304.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	84	2.57	215.9
-Hired Labor	man-day	44	2.57	113.1
2) Farm Inputs				
-Seed	kg	2.0	248.2	496.4
-N	kg	80	1.662	133.0
-P205	kg	80	1.853	148.2
-K20	kg	40	1.165	46.6
-Insecticide	time	4	62.7	250.8
-Fungicide	time	3	119.9	359.7
-Herbicide	time	1	118.8	118.8
3) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	2	25.9	51.8
-Harrowing(Tooth)	time	1	20.3	20.3
-Ridging	time	1	37.1	37.1
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	2	34.3	68.6
-Spraying	time	8	16.8	134.4
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	8	1.72	13.8
5) Micellaneous	(10%)			230.3
Total				2,533.2
<b>C. Primary Profit (A-B)</b>				1,770.8
-Profit ratio				0.41
-Profit per growth period		3.33 month		531.8

Table D.8-24 Economic Production Cost and Profit per Hectare in With Project Cdition (11/18)

Crop : Tobacco

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	2.3	5,056	11,628.8
2) By-Product				
Total				11,628.8
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	133	2.57	341.8
-Hired Labor	man-day	68	2.57	174.8
2) Farm Inputs				
-Seed	kg	0.5	248.2	124.1
-N	kg	120	1.662	199.4
-P205	kg	100	1.853	185.3
-K20	kg	80	1.165	93.2
-Insecticide	time	4	62.7	250.8
-Fungicide	time	4	119.9	479.6
-Herbicide	time	1	118.8	118.8
3) Machinery				
-Subsoiling	time	1	58.1	58.1
-Plowing	time	1	94.5	94.5
-Harrowing(Disk)	time	2	25.9	51.8
-Harrowing(Tooth)	time	1	20.3	20.3
-Ridging	time	1	37.1	37.1
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	3	34.3	102.9
-Spraying	time	9	16.8	151.2
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	10	1.72	17.2
5) Micellaneous (10%)				250.1
Total				2,751.0
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.76
-Profit per growth period		4.67 month		1,901.0



Table D.8-24 Economic Production Cost and Profit per Hectare in With Project Cdition (12/18)

Crop : Coffee

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	1.5	3,902	5,853.0
2) By-Product				
Total				5,853.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	103	2.57	264.7
-Hired Labor	man-day	53	2.57	136.2
2) Farm Inputs				
-Saplins	plant	30	9.4	282.0
-N	kg	55	1.662	91.4
-P205	kg	50	1.853	92.7
-K20	kg	75	1.165	87.4
-Insecticide	time	2	62.7	125.4
-Fungicide	time	3	119.9	359.7
-Herbicide	time	1	118.8	118.8
3) Machinery				
-Subsoiling	time	0.02	58.1	1.2
-Plowing	time	0.02	94.5	1.9
-Harrowing(Disk)	time	0.04	25.9	1.0
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	6	16.8	100.8
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	28	1.72	48.2
5) Micellaneous	(10%)			171.1
Total				1,882.4
<b>C. Primary Profit (A-B)</b>				<b>3,970.6</b>
-Profit ratio				0.68
-Profit per growth period		12 month		330.9

Table D.8-24 Economic Production Cost and Profit per Hectare in With Project Cdition (13/18)

Crop : Papaya

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	19.0	858	16,302.0
2) By-Product				
Total				16,302.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	97	2.57	249.3
-Hired Labor	man-day	50	2.57	128.5
2) Farm Inputs				
-Saplins	plant	800	2.35	1,880.0
-N	kg	150	1.662	249.3
-P205	kg	240	1.853	444.7
-K20	kg	130	1.165	151.5
-Insecticide	time	4	62.7	250.8
-Fungicide	time	12	119.9	1,438.8
-Herbicide	time	1	118.8	118.8
3) Machinery				
-Subsoiling	time	0.25	58.1	14.5
-Plowing	time	0.25	94.5	23.6
-Harrowing(Disk)	time	0.50	25.9	13.0
-Harrowing(Tooth)	time	0.25	20.3	5.1
-Ridging	time	0.25	37.1	9.3
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	17	16.8	285.6
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	28	1.72	48.2
5) Micellaneous	(10%)			531.1
Total				5,842.0
<b>C. Primary Profit (A-B)</b>				
				10,460.0
-Profit ratio				0.64
-Profit per growth period		12 month		871.7

Table D.8-24 Economic Production Cost and Profit per Hectare in With Project Cdition (14/18)

Crop : Avocado

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	6.0	874	5,244.0
2) By-Product				
Total				5,244.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	92	2.57	236.4
-Hired Labor	man-day	48	2.57	123.4
2) Farm Inputs				
-Saplings	plant	3	12.2	36.6
-N	kg	115	1.662	191.1
-P205	kg	95	1.853	176.0
-K20	kg	85	1.165	99.0
-Insecticide	time	5	62.7	313.5
-Fungicide	time	4	119.9	479.6
-Herbicide	time	1	118.8	118.8
3) Machinery				
-Subsoiling	time	0.02	58.1	1.2
-Plowing	time	0.02	94.5	1.9
-Harrowing(Disk)	time	0.04	25.9	1.0
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	9	16.8	151.2
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	28	1.72	48.2
5) Micellaneous	(10%)			197.8
Total				2,175.7
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.59
-Profit per growth period		12 month		255.7

Table D.8-24 Economic Production Cost and Profit per Hectare in With Project Cdition (15/18)

Crop : Mango

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	12.0	501	6,012.0
2) By-Product				
Total				6,012.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	92	2.57	236.4
-Hired Labor	man-day	48	2.57	123.4
2) Farm Inputs				
-Saplings	plant	3	14.1	42.3
-N	kg	115	1.662	191.1
-P2O5	kg	95	1.853	176.0
-K2O	kg	85	1.165	99.0
-Insecticide	time	4	62.7	250.8
-Fungicide	time	4	119.9	479.6
-Herbicide	time	1	118.8	118.8
3) Machinery				
-Subsoiling	time	0.02	58.1	1.2
-Plowing	time	0.02	94.5	1.9
-Harrowing(Disk)	time	0.04	25.9	1.0
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	9	16.8	151.2
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	28	1.72	48.2
5) Micellaneous (10%)				192.1
Total				2,113.0
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.65
-Profit per growth period		12 month		324.9

Table D.8-24 Economic Production Cost and Profit per Hectare in With Project Cdition (16/18)

Crop : Orange

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Product	ton	6.0	1,003	6,018.0
2) By-Product				
Total				6,018.0
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	92	2.57	236.4
-Hired Labor	man-day	48	2.57	123.4
2) Farm Inputs				
-Saplings	plant	4	19.7	78.8
-N	kg	115	1.662	191.1
-P205	kg	95	1.853	176.0
-K20	kg	85	1.165	99.0
-Insecticide	time	4	62.7	250.8
-Fungicide	time	4	119.9	479.6
-Herbicide	time	1	118.8	118.8
3) Machinery				
-Subsoiling	time	0.02	58.1	1.2
-Plowing	time	0.02	94.5	1.9
-Harrowing(Disk)	time	0.04	25.9	1.0
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
-Cultivating/Weeding	time	0	34.3	0.0
-Spraying	time	9	16.8	151.2
-Harvesting	time	0	91.7	0.0
4) Irrigation	time	28	1.72	48.2
5) Micellaneous	(10%)			195.7
Total				2,153.2
<b>C. Primary Profit (A-B)</b>				
-Profit ratio				0.64
-Profit per growth period		12 month		322.1

Table D.8-24 Economic Production Cost and Profit per Hectare in With Project Cdition (17/18)

Crop : Improved Pasture (Irrigated)

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Milk	ton	4.5	584	2,628.0
2) Beef	ton	0.215	1,020	219.3
Total				2,847.3
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	106	2.57	272.4
-Hired Labor	man-day	54	2.57	138.8
2) Farm Inputs				
-Seed	kg	0.8	141	112.8
-N	kg	40	1.662	66.5
-P205	kg	30	1.853	55.6
-K20	kg	30	1.165	35.0
3) Animal Health & Feed				
-Vaccination	head	5	2.29	11.5
-Anthelmintics	head	5	0.49	2.5
-Dipping	head	5	0.87	4.4
-Mineral	kg	10	4.91	49.1
-Concentrate	kg	150	0.21	31.5
4) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	0.025	94.5	2.4
-Harrowing(Disk)	time	0.05	25.9	1.3
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
5) Irrigation	time	28	1.72	48.2
6) Micellaneous (10%)				83.2
Total				914.9
<b>C. Primary Profit (A-B)</b>				<b>1,932.4</b>
-Profit ratio				0.68
-Profit per growth period		12 month		161.0

Table D.8-24 Economic Production Cost and Profit per Hectare in With Project Cdition (18/18)

Crop : Improved Pasture (Non-Irrigated)

Item	Unit	Quantity	Unit price Lps	Amount Lps
<b>A. Gross Income</b>				
1) Milk	ton	2.7	584	1,576.8
2) Beef	ton	0.129	1,020	131.6
Total				1,708.4
<b>B. Production Cost</b>				
1) Labor Cost				
-Family Labor	man-day	57	2.57	146.5
-Hired Labor	man-day	30	2.57	77.1
2) Farm Inputs				
-Seed	plant	0.8	141	112.8
-N	kg	30	1.662	49.9
-P205	kg	25	1.853	46.3
-K20	kg	25	1.165	29.1
3) Animal Health & Feed				
-Vaccination	head	3	2.29	6.9
-Anthelmintics	head	3	0.49	1.5
-Dipping	head	3	0.87	2.6
-Mineral	kg	6	4.91	29.5
-Concentrate	kg	90	0.21	18.9
4) Machinery				
-Subsoiling	time	0	58.1	0.0
-Plowing	time	0.025	94.5	2.4
-Harrowing(Disk)	time	0.05	25.9	1.3
-Harrowing(Tooth)	time	0	20.3	0.0
-Ridging	time	0	37.1	0.0
-Seeding	time	0	56.0	0.0
5) Irrigation	time	0	1.72	0.0
6) Micellaneous	(10%)			52.5
Total				577.1
<b>C. Primary Profit (A-B)</b>				1,131.2
-Profit ratio				0.66
-Profit per growth period		12 month		94.3

Table D.8-25 Summary of Financial Gross Income and Net Profit per Hectare in Without Project Condition

(unit : Lps/ha)

Crop	Gross income	Production cost	Net profit	Profit ratio	Profit per month
Maize	1,116	465	651	0.58	195.5
Rice	1,856	867	989	0.53	211.8
Kidney beans	980	556	424	0.43	158.8
Soy beans	0	0	0	-	-
Sorghum	624	309	315	0.50	94.6
Tomato	7,830	1,159	6,671	0.85	2,498.5
Cucumber	2,596	1,001	1,595	0.61	597.4
Cabbage	0	0	0	-	-
Onion	8,820	1,256	7,564	0.86	2,271.5
Chili	6,720	1,147	5,573	0.83	1,673.6
Water melon	3,472	908	2,564	0.74	770.0
Melon	0	0	0	-	-
Tobacco	7,920	1,141	6,779	0.86	1,451.6
Coffee	4,620	1,141	3,479	0.75	289.9
Papaya	8,844	3,173	5,671	0.64	472.6
Avocado	4,500	845	3,655	0.81	304.6
Mango	3,360	852	2,508	0.75	209.0
Orange	3,744	895	2,849	0.76	237.4
Pasture(irrigated)	0	0	0	-	-
Pasture(non-irri.)	1,140	123	1,017	0.89	84.8

Table D.8-26 Summary of Financial Gross Income and Net Profit per Hectare in With Project Condition

(unit : Lps/ha)

Crops	Gross income	Production cost	Net profit	Profit ratio	Profit per month
Maize	2,480	1,460	1,020	0.41	306.3
Rice	3,200	1,694	1,506	0.47	322.5
Kidney beans	0	0	0	-	-
Soy beans	2,200	1,369	831	0.38	311.2
Sorghum	0	0	0	-	-
Tomato	12,600	2,882	9,718	0.77	3,639.7
Cucumber	5,280	2,663	2,617	0.50	980.1
Cabbage	10,200	2,455	7,745	0.76	2,325.8
Onion	13,720	2,907	10,813	0.79	3,247.1
Chili	9,800	2,965	6,835	0.70	2,052.6
Water melon	5,580	2,596	2,984	0.53	896.1
Melon	3,840	2,596	1,244	0.32	373.6
Tobacco	10,120	2,766	7,354	0.73	1,574.7
Coffee	6,300	1,790	4,510	0.72	375.8
Papaya	12,540	5,821	6,719	0.54	559.9
Avocado	6,000	2,056	3,944	0.66	328.7
Mango	7,200	1,999	5,201	0.72	433.4
Orange	5,760	2,042	3,718	0.65	309.8
Pasture(irrigated)	3,320	815	2,505	0.75	208.8
Pasture(non-irri.)	1,992	523	1,469	0.74	122.4



Table D.8-27 Summary of Economic Gross Income and Net Profit per Hectare in Without Project Condition

(unit : Lps/ha)

Crops	Gross income	Production cost	Net profit	Profit ratio	Profit per month
Maize	639	487	152	0.24	45.6
Rice	1,694	882	812	0.48	173.9
Kidney beans	875	558	317	0.36	118.7
Soy beans	0	0	0	-	-
Sorghum	454	350	104	0.23	31.2
Tomato	6,525	1,423	5,102	0.78	1,910.9
Cucumber	3,351	1,212	2,139	0.64	801.1
Cabbage	0	0	0	-	-
Onion	9,324	1,480	7,844	0.84	2,355.6
Chili	5,683	1,284	4,399	0.77	1,321.0
Water melon	2,934	1,037	1,897	0.65	569.7
Melon	0	0	0	-	-
Tobacco	9,101	1,374	7,727	0.85	1,654.6
Coffee	4,292	1,350	2,942	0.69	245.2
Papaya	11,497	3,303	8,194	0.71	682.8
Avocado	3,933	1,065	2,868	0.73	239.0
Mango	2,806	1,071	1,735	0.62	144.6
Orange	3,912	1,111	2,801	0.72	233.4
Pasture(irrigated)	0	0	0	-	-
Pasture(non-irri.)	978	195	783	0.80	65.3

Table D.8-28 Summary of Economic Gross Income and Net Profit per Hectare in With Project Condition

(unit : Lps/ha)

Crops	Gross income	Production cost	Net profit	Profit ratio	Profit per month
Maize	1,420	1,325	95	0.07	28.5
Rice	2,920	1,591	1,329	0.46	284.6
Kidney beans	0	0	0	-	-
Soy beans	1,642	1,266	376	0.23	140.8
Sorghum	0	0	0	-	-
Tomato	10,500	2,907	7,593	0.72	2,843.8
Cucumber	6,816	2,651	4,165	0.61	1,559.9
Cabbage	8,636	2,406	6,230	0.72	1,870.9
Onion	14,504	2,908	11,596	0.80	3,482.3
Chili	8,288	2,895	5,393	0.65	1,619.5
Water melon	4,716	2,533	2,183	0.46	655.6
Melon	4,304	2,533	1,771	0.41	531.8
Tobacco	11,629	2,751	8,878	0.76	1,901.1
Coffee	5,853	1,882	3,971	0.68	330.9
Papaya	16,302	5,842	10,460	0.64	871.7
Avocado	5,244	2,176	3,068	0.59	255.7
Mango	6,012	2,113	3,899	0.65	324.9
Orange	6,018	2,153	3,865	0.64	322.1
Pasture(irrigated)	2,847	915	1,932	0.68	161.0
Pasture(non-irri.)	1,708	577	1,131	0.66	94.3

Table D.8-29 Financial Total Gross Income and Profit in Without Project Condition

Crops	Cropped Area ha	Gross Income 1000Lps	Net Profit 1000Lps
Maize	690	770.0	449.2
Rice	480	890.9	474.7
Kidney beans	70	68.6	29.7
Soy beans	0	0.0	0.0
Sorghum	20	12.5	6.3
Tomato	220	1,722.6	1,467.6
Cucumber	10	26.0	16.0
Cabbage	0	0.0	0.0
Onion	15	132.3	113.5
Chili	25	168.0	139.3
Water melon	15	52.1	38.5
Melon	0	0.0	0.0
Tobacco	40	316.8	271.2
Coffee	50	231.0	174.0
Papaya	30	265.3	170.1
Avocado	30	135.0	109.7
Mango	20	67.2	50.2
Orange	10	37.4	28.5
Pasture(irrigated)	0	0.0	0.0
Pasture(non-irri.)	970	1,105.8	986.5
<b>Total</b>	<b>2,695</b>	<b>6,001.5</b>	<b>4,524.7</b>

Table D.8-30 Financial Total Gross Income and Profit in With Project Condition

Crops	Cropped Area ha	Gross Income 1000Lps	Net Profit 1000Lps
Maize	860	2,132.8	877.2
Rice	1100	3,520.0	1,656.6
Kidney beans	0	0.0	0.0
Soy beans	300	660.0	249.3
Sorghum	0	0.0	0.0
Tomato	900	11,340.0	8,746.2
Cucumber	290	1,531.2	758.9
Cabbage	130	1,326.0	1,006.9
Onion	300	4,116.0	3,243.9
Chili	60	588.0	410.1
Water melon	200	1,116.0	596.8
Melon	200	768.0	248.8
Tobacco	80	809.6	588.3
Coffee	50	315.0	225.5
Papaya	30	376.2	201.6
Avocado	30	180.0	118.3
Mango	20	144.0	104.0
Orange	10	57.6	37.2
Pasture(irrigated)	90	298.8	225.5
Pasture(non-irri.)	360	717.1	528.8
<b>Total</b>	<b>5,010</b>	<b>29,996.3</b>	<b>19,823.9</b>

Financial Benefit (1,000 Lp) in Case B 15,299.1

Table D.8-31 Economic Total Gross Income and Profit in Without Project Condition

Crops	Cropped Area ha	Gross Income 1000Lps	Net Profit 1000Lps
Maize	690	440.9	104.9
Rice	480	813.1	389.8
Kidney beans	70	61.3	22.2
Soy beans	0	0.0	0.0
Sorghum	20	9.1	2.1
Tomato	220	1,435.5	1,122.4
Cucumber	10	33.5	21.4
Cabbage	0	0.0	0.0
Onion	15	139.9	117.7
Chili	25	142.1	110.0
Water melon	15	44.0	28.5
Melon	0	0.0	0.0
Tobacco	40	364.0	309.1
Coffee	50	214.6	147.1
Papaya	30	344.9	245.8
Avocado	30	118.0	86.0
Mango	20	56.1	34.7
Orange	10	39.1	28.0
Pasture(irrigated)	0	0.0	0.0
Pasture(non-irri.)	970	948.7	759.5
<b>Total</b>	<b>2,695</b>	<b>5,204.8</b>	<b>3,529.1</b>

Table D.8-32 Economic Total Gross Income and Profit in With Project Condition

Crops	Cropped Area ha	Gross Income 1000Lps	Net Profit 1000Lps
Maize	860	1,221.2	81.7
Rice	1,100	3,212.0	1,461.9
Kidney beans	0	0.0	0.0
Soy beans	300	492.6	112.8
Sorghum		0.0	0.0
Tomato	900	9,450.0	6,833.7
Cucumber	290	1,976.6	1,207.9
Cabbage	130	1,122.7	809.9
Onion	300	4,351.2	3,478.8
Chili	60	497.3	323.6
Water melon	200	943.2	436.6
Melon	200	860.8	354.2
Tobacco	80	930.3	710.2
Coffee	50	292.7	198.6
Papaya	30	489.1	313.8
Avocado	30	157.3	92.0
Mango	20	120.2	78.0
Orange	10	60.2	38.7
Pasture(irrigated)	90	256.2	173.9
Pasture(non-irri.)	360	614.9	407.2
<b>Total</b>	<b>5,010</b>	<b>27,048.5</b>	<b>17,113.3</b>

Economic Benefit (1,000 Lps) in Case B 13,584.2

D.9 Farmers Economy

Table D.9-1 Agricultural Income of Typical Farmers in Without Project Condition

Crops	Small-Scale Farmer			Middle-Scale Farmer			Member of Small-Farmers Group		
	Cropping Area ha	Gross Income Lps	Net Profit Lps	Cropping Area ha	Gross Income Lps	Net Profit Lps	Cropping Area ha	Gross Income Lps	Net Profit Lps
Maize	0.74	826	482	2.54	2,835	1,654	0.99	1,105	644
Rice	0.67	1,244	663	0.99	1,837	979	1.22	2,264	1,207
Kidney beans	0.11	108	47	0.28	274	119	0.00	0	0
Soy beans	0.00	0	0	0.00	0	0	0.00	0	0
Sorghum	0.00	0	0	0.14	87	44	0.00	0	0
Tomato	0.30	2,349	2,001	0.42	3,289	2,802	0.61	4,776	4,069
Cucumber	0.00	0	0	0.07	182	112	0.00	0	0
Cabbage	0.00	0	0	0.00	0	0	0.00	0	0
Onion	0.04	353	303	0.00	0	0	0.04	353	303
Chili	0.06	403	334	0.00	0	0	0.08	538	446
Water melon	0.06	208	154	0.00	0	0	0.00	0	0
Melon	0.00	0	0	0.00	0	0	0.00	0	0
Tobacco	0.07	554	475	0.00	0	0	0.15	1,188	1,017
Coffee	0.00	0	0	0.35	1,617	1,218	0.00	0	0
Papaya	0.02	177	113	0.14	1,238	794	0.04	354	227
Avocado	0.02	90	73	0.14	630	512	0.04	180	146
Mango	0.00	0	0	0.14	470	351	0.00	0	0
Orange	0.00	0	0	0.07	262	199	0.00	0	0
Pasture(irrigated)	0.00	0	0	0.00	0	0	0.00	0	0
Pasture(non-irri.)	0.19	217	193	6.13	6,988	6,234	0.38	433	386
	2.28	6,528	4,837	11.41	19,710	15,017	3.55	11,191	8,445
Cultivated Area		1.67 ha/family			10.14 ha/family			2.59 ha/family	
No. of Families		270 house-holds			142 house-holds			131 house-hold	

Table D.9-2 Agricultural Income of Typical Farmers in With Project Condition

Crops	Small-Scale Farmer			Middle-Scale Farmer			Member of Small-Farmers Group		
	Cropping Area ha	Gross Income Lps	Net Profit Lps	Cropping Area ha	Gross Income Lps	Net Profit Lps	Cropping Area ha	Gross Income Lps	Net Profit Lps
Maize	0.25	620	255	5.43	13,466	5,539	0.23	570	235
Rice	0.25	800	377	6.14	19,648	9,247	1.30	4,160	1,958
Kidney beans	0.00	0	0	0.00	0	0	0.00	0	0
Soy beans	0.36	792	299	0.71	1,562	590	0.77	1,694	640
Sorghum	0.00	0	0	0.00	0	0	0.00	0	0
Tomato	1.25	15,750	12,148	2.50	31,500	24,295	1.54	19,404	14,966
Cucumber	0.21	1,109	550	1.36	7,181	3,559	0.31	1,637	811
Cabbage	0.25	2,550	1,936	0.14	1,428	1,084	0.31	3,162	2,401
Onion	0.57	7,820	6,163	0.36	4,939	3,893	0.69	9,467	7,461
Chili	0.11	1,078	752	0.07	686	478	0.15	1,470	1,025
Water melon	0.29	1,618	865	0.50	2,790	1,492	0.38	2,120	1,134
Melon	0.29	1,114	361	0.50	1,920	622	0.38	1,459	473
Tobacco	0.14	1,417	1,030	0.00	0	0	0.31	3,137	2,280
Coffee	0.00	0	0	0.36	2,268	1,624	0.00	0	0
Papaya	0.02	251	134	0.14	1,756	941	0.04	502	269
Avocado	0.02	120	79	0.14	840	552	0.04	240	158
Mango	0.00	0	0	0.14	1,008	728	0.00	0	0
Orange	0.00	0	0	0.07	403	260	0.00	0	0
Pasture(irrigated)	0.02	66	50	0.57	1,892	1,428	0.04	133	100
Pasture(non-irri.)	0.07	139	103	2.29	4,562	3,364	0.15	299	220
	4.10	35,244	25,101	21.42	97,849	59,696	6.64	49,454	34,130
Cultivated Area	1.78 ha/family			11.69 ha/family			2.74 ha/family		
No. of Families	270 house-holds			142 house-holds			131 house-hold		

## D.10 Forecast Demand and Marketing

### (1) Forecast Demand

#### Basic Grains

In order to forecast global demand for the main basic grains, except for kidney beans and soy bean, a model proposed in a document prepared under the Covenant SECPLAN-SRN-IICA has been used. The forecasting method is based on the historical trend of the time series of above basic grains produced and consumed amounts. This method simulates the historical behaviour of the demand for and supply of those products and projects them to the future. This method has been used in order to identify the demand trend.

For soy bean and kidney beans, data contained in the "Programa de Emergencia de Granos Básicos 1990", proposal document prepared by the Comisión Especial de Trabajo de SECPLAN, was used. In this document, projections are also based on the historical trend.

#### - Maize

According to the model results, demand for maize will keep on increasing and domestic production will be unable to satisfy it provided that the historical trend is maintained (Table D.10-1). Supply deficit growth rate is 11.26% annually. For the medium and long term this situation tends to become even more acute.

On the other hand, as imports fill these supply deficits, it is expected that these will increase steeply if corrective measures are not taken (Fig.D.10-1).

#### - Rice

For a long period, there has been a deficit in the supply of rice according to the data given by the model. This may suggest a possible supply shortage not clearly apparent (Table D.10-1). Rice production faces a problem which is that cultivation of rice is done only once in a year due to lack of irrigation water during the dry season. A second problem is that the cost of the inputs for this grain is quite high.

The Project will help towards a solution of above problems by improving the irrigation system which will allow farmers to cultivate rice even during the dry season. It could be expected a level of production of 6,600 ton by this improvement.

Consumption of rice may also increase to higher levels as its relative price may become cheaper due to an increased supply. Its high nutritional value is another reason why consumption of this product would rise and its demand become stable.

- Sorghum

From the model's data for sorghum it is evident its negative trend. With a up and down tendency at the beginning of the '70s, at the end of the '80s its trend is clearly negative. Due to its declining consumption, cultivation of this product in the Project Area is not encouraged (Table D.10-1).

- Soy Bean

The demand for soy bean during the period 1985-90 has been increasing in a very remarkable way, from 380,800 to 800,000 quintales. This growth has been stimulated through a "boom" in the industry of concentrated food for animal feed.

According to data from the "Documento del Programa de Emergencia de Granos Básicos", in the period 1984-88, 16,757.5 thousand tons and 26,673 thousand tons were imported.

The domestic supply of soy bean has been kept quite below the requirements of the country. For the crop-year 1985/86 and 1989/90, production was 17,100 and 46,300 quintales. Therefore, accordingly to the data, for the year 1990 it can be expected a deficit of 767,675 quintales.

- Kidney Beans

The supply of kidney beans (Fig. D.10-2) during the period 1985-90 has shown an ever-increasing trend, except for the periods 1987-88 and 1988-89, in which there were deficits of 96,000 and 74,000 quintales respectively. With the exception of these two periods, the supply of kidney beans has been more than enough to satisfy the demand.

Vegetables, Coffee, Tobacco, Fruits, Beef and Milk

- Tomato, onion, cabbage, chili:

"Consumo Humano Directo de Tubérculos y Hortalizas según Encuestas de Ingresos y Gastos de 1978-79" prepared by the Sección de Cuentas Nacionales del Dpto. de Estudios Económicos del B.C.H. (Tegucigalpa, March 1990). (Hereinafter referred as "B.C.H. Consumption Data").

- Cucumber, papaya, melon:

"Desarrollo Agrícola del Río Choluteca, Sector Report No8: Marketing Report", prepared by Nippon Koel for the Government of Honduras (August, 1986). (Hereinafter referred as "Choluteca Project")

- Coffee, tobacco, watermelon:

"Estadística de Producción Agrícola" elaborated by the Dirección de Planificación Agrícola (Tegucigalpa, 1990).

- Beef, milk:

"Agricultural Development Policies in Honduras: A Consumption Perspective" prepared for USAID by Magdalena García, et.al (Washington, February 1988).

(2) Demand forecasting method

From available data, average annual growth rate was calculated for each product and applied to initial data for projections.

- Tomato

Forecasted demand for tomato is shown in Table D.10-2. Expected demand annual growth rate is 3.42%. Demand for human consumption of this product is calculated to reach 18,606 ton in the year 2003, for industrial use 24,349 ton and 1,513 ton for other uses.

According to the opinion of the general managers of the two biggest tomato processing companies in Comayagua (ALVASA,



MEJORES ALIMENTOS), if the present irregularities in supply of the fresh tomato are solved, then it will be possible to make an aggressive move into the international market. The export potentiality is strong as witnessed by the acceptance of Honduran processed tomato by the FDA of the United States.

- Cucumber

Projected demand for cucumber for the year 2003 is around 9,513 ton with an average annual growth rate of 5.71% ( Table D.10-2).

So far, a large proportion of cucumber has been used for domestic consumption and a small proportion has been allocated for exports. However, it is expected that with a better cropping practices, the quality of the cucumber will improve making it attractive as an export product.

Moreover, at present, in spite of technological problems (refrigeration and transports of the product), AGROINTERNACIONAL, a agricultural company in Comayagua has been exporting cucumber to the United States and the product has been well received. This company intends to increase its export-oriented production of it.

- Other vegetables (onion, cabbage, chili)

The projected average annual growth rate above vegetables is around 3.4%. The projected demand for them by the year 2003 are as follows (Table D.10-2).

	(unit : ton)
Onion	: 8,256
Cabbage	: 29,431
Chili	: 1,931

Cabbage and onion are either for human consumption or for exports.

- Tobacco

Tobacco has the lowest projected growth demand (0.41%), and its projected production by the year 2003 is to be about 9,050 ton (Table D.10-2).

In spite of this low production, demand for this product is almost guaranteed because industrial use of it is stable. Exports of it as tobacco leaves are 1,260 ton and 220 ton as cigarettes and cigars for 1988.

- Coffee

For coffee, the projected annual growth rate is considered to be 5.4%. Then, if this tendency is maintained, the projected demand for the year 2003 is 242,673 ton (Table D.10-2). Coffee is one of the most important export product for Honduras (85,200 ton for 1989).

- Fruits (Watermelon, melon, papaya, mango, orange)

Table D.10-2 shows projected annual demands of above fruits. Projected annual growth rate, as an average, is of 5.76%. Projected demand for the products for the year 2003 is as follows:

	(unit : ton)
Watermelon :	96,225
Melon :	8,664
Papaya :	12,051

The survey of fruits processing companies made by the Study Team found that there is a huge under-utilization of the physical facilities for fruits processing (juice, preserves, jams, etc.); this under-utilization in some cases is above the 70% , i.e., MEJORES ALIMENTOS which is working below the 30% of its capacity even though they have an advanced technology for fruits processing Therefore, the problem does not seem to be a lack of technology, but a stable supply for some fruits.

- Beef and milk

For the year 2003, demand for beef and milk are forecasted to be 75,482 ton and 648,048 liters. Projected annual growth rates are 3.7% and 3.5% respectively (Table D.10-2). Export of meat was 8,698 ton for 1989. Growth rate is 0.2%.

Beef production is declining and exports grow at an insignificant rate. However, projected domestic consumption growth rate

is 3.7%. Therefore, it is clear that domestic demand will play an important role in supporting this product. On the other hand, milk and related production shows a healthy growth rate.

### (3) Marketing

#### Basic grains

Production is mainly distributed into three categories (human and animal consumption in Comayagua, industry and other regions, and other uses). The percentage rates for this distribution is taken from the document: "Macro Análisis de la Producción de Granos Básicos en Honduras 1976-1987", prepared by Juan Aguirre and Gladys Tablada (IICA, Tegucigalpa, 1989). See Table below.

	Consumption (Comayagua)	Industry/ Other regions	Other uses
Maize	35%	55%	10%
Rice	18%	77%	5%
Soy Bean	--	100%	--

#### Tomato, papaya, melon, mango

Distribution percentages for human consumption (within Comayagua and rest of the country) and industry/export category have been taken from the "Choluteca Project" report.

	Consumption	Industry/export use
Tomato	42%	58%
Papaya	68%	32%
Melon	72%	28%
Mango	89%	11%

#### Chili, onion, orange

Distribution percentages were taken from "Proyecto de Planificación Departamento de Comayagua República de Honduras", Centro de Estudios Regionales Urbano-Rurales, Rehovot, Israel, Junio 1989.

	Consumption	Industry/export use
Chili	25%	75%
Onion	4%	96%
Orange	20%	80%

(4) Comments on Marketing Possibilities

Basic grains

Within basic grains, maize projected production (3,870 ton) will contribute to narrow the gap between demand and supply of it. It is important to see that besides using part of the production for human and animal consumption in Comayagua, 55% (2,129 ton) is commercialized in and outside Comayagua for industrial purposes.

For soy bean, IHMA is purchasing under a guaranteed price scheme. It means that IHMA can offer a price which is more attractive compared to other buyers. Also, as mentioned before, soy bean is in a under-supply condition within the country. Therefore, considering the above two facts, the relatively small projected crop proposed by the Project (660 ton) will be absorbed by the industry without any problem.

Vegetables

For the case of tomato (17,286 ton), onion (6,952 ton), and chili (975 ton), industrial absorption is guaranteed as two companies in the Comayagua area (MEJORES ALIMENTOS and ALVASA) have the processing capacity to use the products for tomato paste, sauce and preserved vegetables. Besides, consumption of these products would not be only limited to the domestic market but also for exports. Potential markets are Central America and North American markets.

Cucumber (6,960 ton) and melon (928 ton) can be targeted for exports provided that technical improvements are introduced so the quality (aspect, taste, size, etc.) improves in such a way as to make them competitive in international markets.

Due to their small projected production, the following fruits may seem to be adequate mainly for industrial purposes (elaboration

of juice, jam, preserves, marmalade, etc.) and will be mainly targeted for the domestic market: papaya (234 ton), orange (47 ton). As in the case of the vegetables above mentioned, there are enough industrial capacity to process them.

(5) Remarks about Possible Markets for Exports from Honduras

Due to its proximity, the United States seems to be the best possible market. It is big enough to absorb increased exports from Honduras. This potentiality is indicated by the following data of imports made by the United States (1987):

(unit : ton)

---

Tomato (paste and sauce)	:	129,322
Tomato (fresh)	:	441,321
Onion	:	160,544
Cucumber	:	190,983
Fruits (fresh and frozen)	:	1,129,000
Melon	:	335,062
Squash	:	69,783

---

Source: FATUS (Foreign Agricultural Trade of USA), 1988.

Data of domestic shipment of vegetables of the U.S.A given by the "Agricultural Statistics 1989" (Table D.10-3) issued by the United States Department of Agriculture shows that for cucumber, onion, melon there is a slowdown or no production at all during the winter months. Therefore, for those months, Honduras exports of these products may have a good chance.

Table D.10-1 Forecasted Demand for maize, Rice and Sorghum

Crop	Year	Production+ Inventory	Consumption	Surplus or Deficit
				(unit : ton)
Maize	1985	458,352	429,191	29,161
	1986	420,159	439,342	-19,183
	1987	370,450	449,787	-79,337
	1988	405,981	460,533	-54,573
	1989	420,854	471,591	-50,737
	1990	435,291	482,967	-47,676
	1991	415,143	494,677	-79,534
	1992	436,319	506,725	-70,406
	1993	448,174	519,122	-72,948
	1994	429,950	531,879	-101,929
	1995	454,142	545,005	-90,863
				(unit:1000 ton)
Rice	1985	56.6	59.5	-2.9
	1986	57.4	61.2	-3.8
	1987	52.2	63.0	-10.8
	1988	52.0	64.8	-12.8
	1989	58.0	66.7	-8.7
	1990	58.9	68.7	-9.8
	1991	63.2	70.6	-7.4
	1992	64.7	72.7	-8.0
	1993	69.7	74.8	-5.1
	1994	68.7	77.0	-8.3
	1995	68.2	79.2	-11.0
				(unit: ton)
Sorghum	1985	35,513	37,595	-2,052
	1986	29,367	29,258	109
	1987	33,230	33,320	-99
	1988	37,716	37,399	317
	1989	35,007	34,368	639
	1990	31,958	31,741	217
	1991	31,482	31,241	241
	1992	32,938	31,677	1,261
	1994	30,417	30,174	243
	1995	26,835	28,574	261

Source: Posible Evolucion de las Necesidades de Granos en el Corto y Mediano Plazo  
Hector R. Barreyo. Convenio SECLAN- SRN- IICA. Tegucigalpa, Honduras.  
Febrero de 1990

Table D.10-2 Forecasted Demand by Crops

(unit : ton)

Year	Tomato *1	Cucumber *2	Melon *3	Onion *4	Cabbage *4	Chili *4
1985		3,500	3,200			
1986		3,700	3,382			
1987		3,911	3,574			
1988		4,135	3,778			
1989		4,371	3,993			
1990	28,750	4,621	4,220	5,346	19,056	1,250
1991	29,733	4,885	4,460	5,528	19,704	1,293
1992	30,750	5,164	4,714	5,716	20,374	1,336
1993	31,802	5,459	4,982	5,910	21,067	1,382
1994	32,889	5,770	5,265	6,111	21,783	1,429
1995	34,014	6,100	5,565	6,319	22,523	1,477
1996	35,178	6,448	5,882	6,534	23,289	1,528
1997	36,381	6,817	6,216	6,756	24,081	1,580
1998	37,625	7,206	6,570	6,985	24,900	1,633
1999	38,912	7,618	6,944	7,223	25,746	1,689
2000	40,242	8,053	7,339	7,469	26,622	1,746
2001	41,619	8,513	7,756	7,722	27,527	1,806
2002	43,042	8,999	8,198	7,985	28,463	1,867
2003	44,514	9,513	8,664	8,256	29,431	1,931

Note: \*1 Tomato: Data calculated based on information about human consumption given by the "Seccion de Cuentas Nacionales del Dpto. de Estudios Economicos del B.C.H." Allocation percentages taken from Choluteca Project Marketing Report

\*2 Cucumber: Data elaborated based on information provided by Choluteca Project Marketing Report

\*3 Melon: Same data as (\*2)

\*4 Onion, cabbage, chili: Same data as (\*1)

Table D.10-2 Forecasted Demand by Crops

Year	Papaya *1	Coffee *2	Tobacco *2	Beef *3	Milk *3	Watermelon *2
					(liters)	
1985	4,400		8,400	39,249	348,884	
1986	4,653		8,435	40,701	361,095	
1987	4,921		8,470	42,207	373,733	
1988	5,205		8,505	43,769	386,814	
1989	5,504	115,000	8,540	45,388	400,352	48,600
1990	5,821	121,301	8,576	47,068	414,365	51,030
1991	6,156	127,947	8,611	48,809	428,868	53,582
1992	6,511	134,957	8,647	50,615	443,878	56,261
1993	6,885	142,351	8,683	52,488	459,414	59,074
1994	7,282	150,151	8,719	54,430	475,493	62,027
1995	7,701	158,378	8,755	56,444	492,135	65,129
1996	8,144	167,055	8,792	58,532	509,360	68,385
1997	8,613	176,208	8,828	60,698	527,188	71,804
1998	9,109	185,863	8,865	62,944	545,639	75,395
1999	9,634	196,046	8,901	65,273	564,737	79,164
2000	10,188	206,787	8,938	67,688	584,502	83,122
2001	10,775	218,117	8,975	70,192	604,960	87,279
2002	11,395	230,068	9,013	72,789	626,134	91,643
2003	12,051	242,673	9,050	75,482	648,048	96,225

Note \*1 Papaya: Data elaborated based on information provided by the Choluteca Projec  
 \*2 Coffee, tobacco, watermelon: Data from "Estadística de Producción Agrícola"  
 \*3 Beef, milk: Data from "Agricultural Development Policies in Honduras"



Table D.10-3 USA Monthly Domestic Shipment of Vegetables  
(1988)

Unit : 1000 ton.

	Cucumber	Onion Dry	Tomato	Cantaloup Melon	Honeydew Melon	Watermelon
JAN.	124	2,614	1,500	0	0	0
FEB.	0	1,994	1,272	0	15	0
MAR.	121	1,893	1,687	2	70	0
APR.	632	2,077	2,193	0	27	17
MAY.	1,096	2,952	3,323	1,541	369	3,307
JUN.	592	2,679	2,970	3,694	1,141	8,779
JUL.	275	2,534	2,463	2,523	765	5,759
AUG.	560	2,705	1,855	3,272	1,038	2,397
SEP.	549	2,987	1,734	1,897	952	531
OCT.	640	2,789	2,539	1,161	417	108
NOV.	657	2,653	2,218	494	157	94
DEC.	257	2,730	2,318	2	10	27
<b>TOTAL</b>	<b>5,503</b>	<b>30,607</b>	<b>26,072</b>	<b>14,586</b>	<b>4,961</b>	<b>21,019</b>

Source Agricultural Statistics 1989  
United State Department of Agriculture

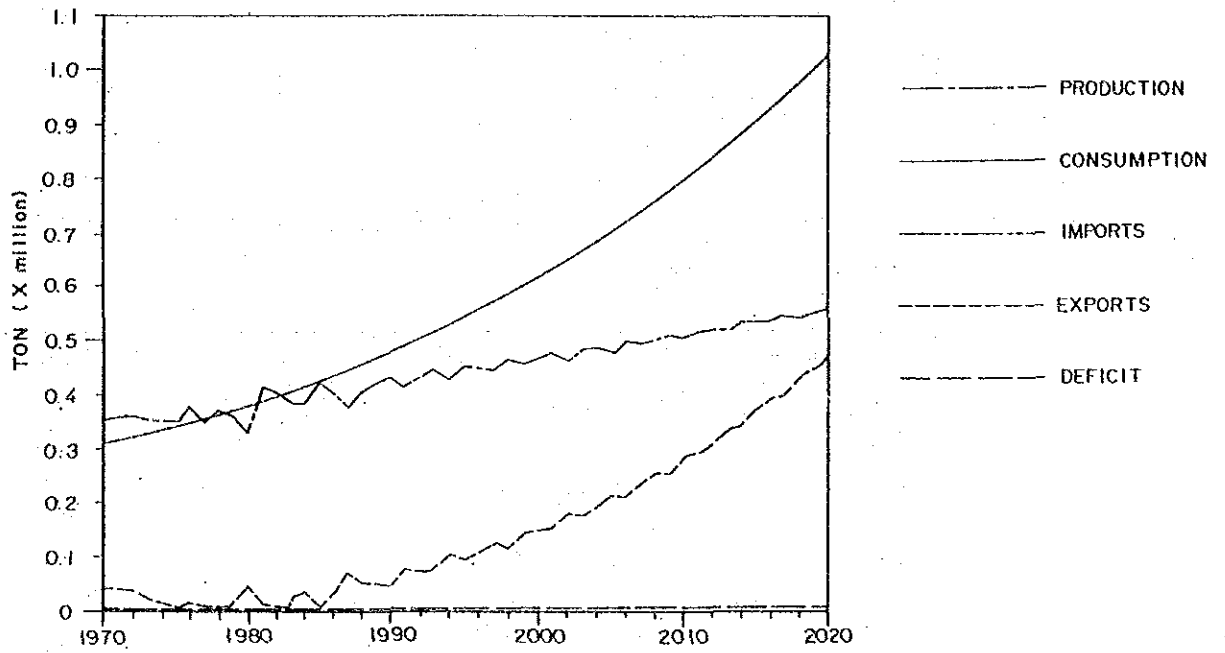


Fig. D.10-1 Production and Consumption of Maiz

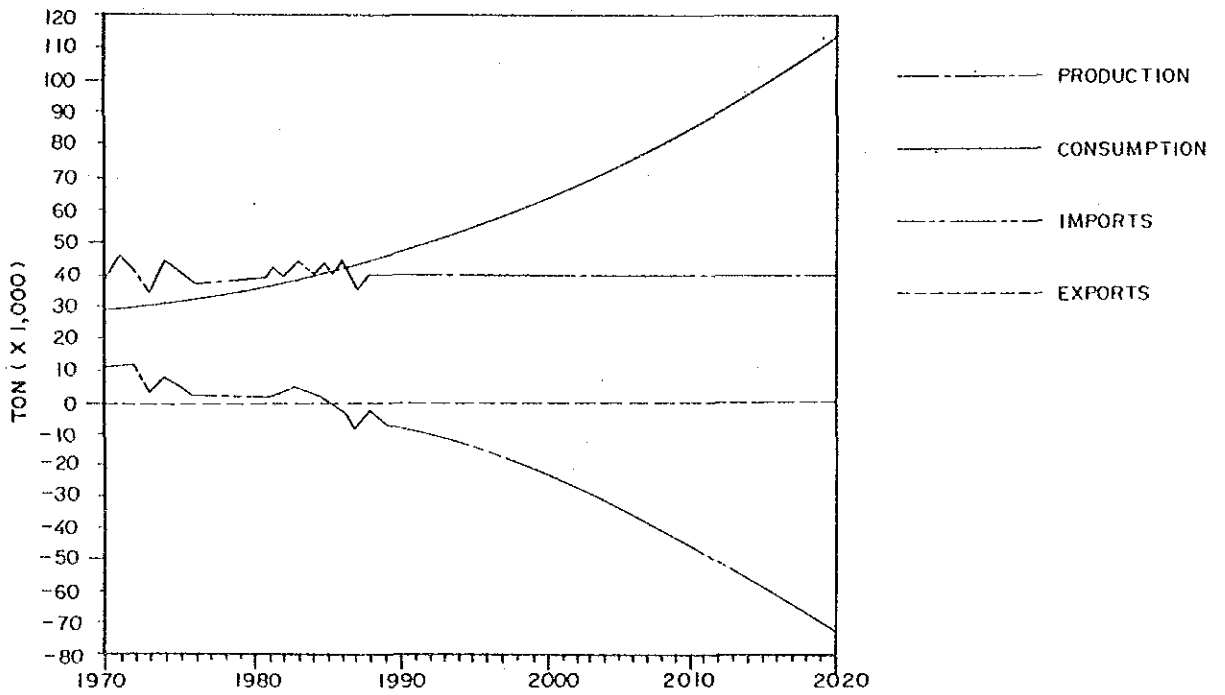


Fig. D.10-2 Production and Consumption of Kidney Beans

**ANNEX E : COYOLAR DAM REHABILITATION**



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## E.1 Dam Geology

### (1) Introduction

From January to August, 1990, a geological study was performed. It was divided in two phases for the purpose of obtaining necessary data and information to be utilized in planning of the Rehabilitation of Coyolar Dam and Irrigation Improvement Project. The geological studies were performed as follows:

- Collection of data and information;
- Review of previous reports;
- Interview to engineers concerned the dam construction;
- Geological survey at the dam site and irrigation district;
- Boring study and in-situ tests; and
- Laboratory test of dam material and foundation rock.

### (2) Regional Geology

The Comayagua Valley may be equivalent to the Honduran Graben. The surrounding mountains vary their elevation up to 1,500 m. Geographically, the Valley and surrounding area are divided into mountain area, piedmont and plane area. The Study Area except Coyolar Dam area correspond with plane area. The mountain area has an altitude of approximately 1,300 m, having relatively eroded figure. Connected with the mountain area, the piedmont has an altitude of 650-670 m and a gradient of 2 - 3 % with undulation, composing of alluvial fans and debris deposits. The plane area is distributed in the vessel-bottom shape and extends from north to south, having an altitude of 600-650 m and a gradient of 0.2-2 % except for several monadnocks.

The Tertiary pyroclastic deposits distributed in the surrounding mountain area form the base rocks of the Valley. The Diluvial lake deposits and the Alluvial fan deposits are the main geological units of the Comayagua Valley overlying the base rocks. The Diluvial lake deposits are crops out mainly in the Study Area, and composed of whitish to grayish silt and clay sediments. While the Alluvial fan deposits principally composed of sand and gravel supplied from the eastern mountain area, and distributed in the eastern parts of the Study Area.



(3) Geological Investigation

1) Drilling

Eight (8) drillings were performed for the purpose of studying geological conditions of the dam site and the spillway foundation by use of the following equipment.

- Drilling machine, model Longyear 34, hydraulic feed rotary type.
- Pump, model FMC WL122BI-CD, with discharge capacity of 130 liter/sec.

The quantity of drilling is detailed in Table E.1-1, the locations are shown in Fig. E.1-1, as logged in geological record of drilling in Fig. E.1-1(20 pages), are utilized as the basis for geological interpretation, together with the results for the water pressure tests and test aditting.

Table E.1-1 Coordinate of Drilling Point

No.	Depth		Direction Angle	Boring Start Point			Boring End Point			Basin Point			
	m			Y	X	E.L	Y	X	E.L	E.L	Y	X	
				m	m	m	m	m	m	m	m	m	
(DAM- N. End)				5023.48	1000.00								
( - S. End)	144			5148.88	1000.00								
90	No. 1	90.0	-	90	5058.18	1000.00	809.01	5058.18	1000.00	719.05	771.4	5058.2	1000.0
	No. 2	120.0	-	90	5105.45	1000.00	809.01	5105.45	1000.00	689.01	779.4	5105.4	1000.0
	No. 3	90.0	-	90	5165.53	983.19	805.49	5165.53	983.19	715.55			
	No. 4	60.0	-	90	5034.61	948.62	794.27	5034.61	948.62	734.32			
	No. 5	60.0	-	90	5123.52	963.72	790.49	5123.52	963.72	730.58			
	No. 6	60.0	-	90	5080.88	931.90	758.28	5080.88	931.90	698.34			
	No. 7	60.0	-	90	5178.65	1007.98	806.95	5178.65	1007.98	746.95			
	No. 8	90.0	164	45	5189.81	1009.88	807.48	5249.61	988.11	743.84			
84	P-1	33.1	144	45	5099.04	1000.34	809.08	5122.45	1000.34	785.67	797.1	5111.0	1000.3
	P-2	90.0	-	90	5090.34	1000.19	809.10	5090.34	1000.19	719.10	748.4	5090.3	1000.2
	P-3	70.0	144	45	5074.04	1000.17	809.10	5123.54	1000.17	759.60	778.2	5104.9	1000.2
	P-4	70.1	324	45	5071.64	1000.09	809.10	5022.07	1000.09	759.53	782.2	5044.7	1000.1
	P-5	78.0	234	78	5072.93	1000.57	809.10	5072.93	984.35	732.80	761.0	5072.9	990.3
84	BI-A	58.1	-	90	5169.36	1001.25	806.96	5169.36	1001.25	748.86			
	BI-B	70.0	190	45	5160.31	1012.13	806.78	5194.70	976.52	757.28			
	BI-C	90.0	190	45	5128.20	981.62	794.59	5172.41	935.84	730.95			
	BI-D	50.0	180	45	5184.04	1005.31	806.96	5212.65	984.53	771.60			
	BI-E	93.0	310	47	5141.00	987.50	804.60	5079.46	972.16	736.58			

Table E.1- 2 List of Drilling and Test

Year	No.	Ubication	Angle	Drilling			Permeability		LLT	Piezo-meter	Ensayo fisico
				Dam	Funda.	Total	Dam	Fund.			
1985	P-1	Dam	45°S	12.01m	21.09m	33.10m	1	4	-	-	-
	P-2		Vert.	60.70	29.30	90.00	5	5	-	○	3
	P-3		45°S	30.85	39.15	70.00	4	1	-	-	(5)
	P-4		45°N	26.91	43.19	70.10	3	2	-	-	(4)
	P-5		Vert.	48.10	29.90	78.00	6	2	-	○	4(5)
	BI-A	Spillway		-	58.05	58.05	-	-	-	○	(1)
	BI-B		45°S	-	70.00	70.00	-	7	-	-	(1)
	BI-C	Promont.	45°S	-	90.00	90.00	-	8	-	-	-
	BI-D	Left Abat.	45°S	-	50.00	50.00	-	-	-	-	-
	BI-E	Promont.	47°N	-	93.00	93.00	-	2	-	-	-
Sub-total 10				178.57m	523.68m	702.25m	19	31	-	-	7(16)
1990	1	Dam	Vert.	37.62	52.38	90.00	8	10	4	○	8
	2			29.62	90.38	120.00	6	18	7	○	8
	3	Spillway		0.31	89.69	90.00	-	11	3	-	7
	4	Right Abat.		-	60.00	60.00	-	10	4	○	6
	5	Promont.		-	60.00	60.00	-	11	4	○	4
	6	River Bed		-	60.00	60.00	-	10	3	-	5
	7	Spillway		-	60.00	60.00	-	9	3	○	5
	8	Left Abat.	45°S	-	60.00	60.00	-	8	-	-	4
Sub-total 8				67.55m	532.45m	600.00m	12	87	28		47
Total 18				246.12m	1056.13m	1302.25m	31	118	28	-	54(16)

Note: LLT is lateral loading test performed in bore hole.  
 Number within parenthesis corresponds to LAVALIN-GATESA's test.

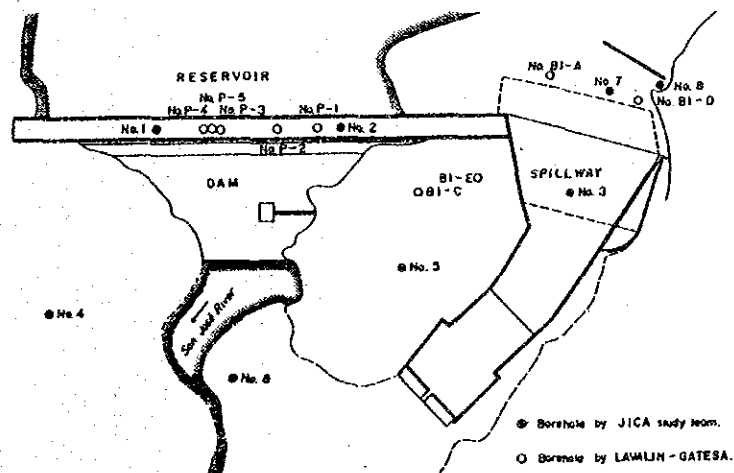


Fig. E.1-1 Borehole Location