

CUADROS

Cuadro 8.3.1(1) Prácticas Propuestas para el Manejo de Cultivos Bajo Riego en Xeatzan Bajo

Xeatzan Bajo	Prácticas Propuestas
Cultivo: Brócoli	
Varedades	Green Beret, Sakata, Green Mountain, Shogun, Manrathon
Densidad de Siembra y Material usado	30,000 plantas por manzana. Se siembran plantitas de "pilones" desarrollados en invernaderos comerciales.
Fertilización (lib/Manzana)	N=350; P=150; y K= 380
Mano de Obra (Jornales/Manzana)	pagado = 65 jornales; familiar = 160 jornales.
Riego	La programación del riego se realizará en base a requerimientos del cultivo.
Control de Insectos & Enfermedades	Aplicar importantes y económicas prácticas de Manejo Integrado de Cultivos (MIC) que han sido validadas por el ICTA, tal como la "Solarización del Suelo" que consiste en cubrir el suelo con plástico por un período de 6 semanas; Aplicar criterios de Umbral Económico de daños para el control de plagas. Hacer aplicaciones para control de insectos y nematodos aplicando pesticidas solo cuando se compruebe su necesidad. Usar insecticidas y fungicida de baja dosis letal para humanos.
Cultivo: Arvejas	
Varedades	Oregon Sugar Pod, Taichung, Melting Sugar
Densidad de Siembra y Material usado	80,000 plantas por manzana, siembra directa en el campo.
Fertilización (lib/Manzana)	N=50; P=90; y K=110
Mano de Obra (Jornales/Manzana)	pagado = 85 jornales; familiar = 120 jornales
Riego	La programación del riego se realizará en base a requerimientos del cultivo.
Control de Insectos & Enfermedades	Aplicar importantes y económicas prácticas de Manejo Integrado de Cultivos (MIC) que han sido validadas por el ICTA, tal como la "Solarización del Suelo" que consiste en cubrir el suelo con plástico por un período de 6 semanas; Aplicar criterios de Umbral Económico de daños para el control de plagas. Hacer aplicaciones para control de insectos y nematodos aplicando pesticidas solo cuando se compruebe su necesidad. Usar insecticidas y fungicida de baja dosis letal para humanos.
Cultivo: Ejote Francés	
Varedades	Processor, Strigless Blue Lake
Densidad de Siembra y Material usado	30,000 plantas/manzana; aproximadamente 120 lib de semillas por manzana; siembra directa.
Fertilización (lib/Manzana)	N=60; P=100; y K= 100
Mano de Obra (Jornales/Manzana)	pagado = 85 jornales; familiar = 120 jornales.
Riego	La programación del riego se realizará en base a requerimientos del cultivo.
Control de Insectos & Enfermedades	Similar que Arvejas
Cultivo: Zanahoria	
Varedades	Chantenay Red Cored, Tahoe, Bonanza, Spartan
Densidad de Siembra y Material usado	0.5 m entre surcos y 0.08 m plantas; Aprox. 175,000 plantas/manzana; 5 lib de semillas por manzana; Siembra directa.
Fertilización (lib/Manzana)	N=150; P=80; y K=225
Mano de Obra (Jornales/Manzana)	pagado = 60 jornales; familiar = 90 jornales.
Riego	La programación del riego se realizará en base a requerimientos del cultivo.
Control de Insectos & Enfermedades	Aplicar importantes y económicas prácticas de Manejo Integrado de Cultivos (MIC) que han sido validadas por el ICTA, tal como la "Solarización del Suelo" que consiste en cubrir el suelo con plástico por un período de 6 semanas; Aplicar criterios de Umbral Económico de daños para el control de plagas. Hacer aplicaciones para control de insectos y nematodos aplicando pesticidas solo cuando se compruebe su necesidad. Usar insecticidas y fungicida de baja dosis letal para humanos.
Cultivo: Black berry	
Varedades	Todas las actividades agrícolas son realizadas manualmente; no se usan tractores u otros equipos mecánicos
Densidad de Siembra y Material usado	Aproximadamente 3,000 plantas por manzana
Fertilización (lib/Manzana)	N=300; P=350; y K= 300
Mano de Obra (Jornales/Manzana)	pagado =70 jornales; familiar = 180 jornales.
Riego	La programación del riego se realizará en base a requerimientos del cultivo.
Control de Insectos & Enfermedades	Aplicar prácticas de Manejo Integrado de Plagas (MIP) que han sido validadas por el ICTA; Aplicar criterios de Umbral Económico; Hacer aplicaciones de pesticidas solo cuando se compruebe su necesidad, usar pesticidas de baja dosis letal para humanos.

Cuadro 8.3.1(2) Rendimiento y Producción Esperada de los Cultivos Propuestos

Crop	Unit	Expected Yield (per Manzana)	Planted Area (Manzana)	Expected Annual Production
1 Broccoli	heads	25,000	2	50,000
2 Brussels	qq.	480	0.5	240
3 Cabbage	heads	25,000	0.5	12,500
4 Snow Pea	qq.	180	4	720
5 Sugar Snap	qq.	180	3	540
6 French Bean	qq.	180	3	540
7 Cauliflower	heads	25,000	3	75,000
8 Carrot	qq.	600	2	1,200
9 Lettuce	heads	57,000	2	114,000
10 Black Berry	flats	2,700	1	2,700
Total			21	

Cuadro 8.3.1(3) Precios de Insumos Agrícolas

Type of Inputs	Unit	Unit Cost (Quetzals)
1 Seeds		
Tomato (Daniela)	1,000 seeds	850
Tomato (Alboran RZ)	1,000 seeds	500
Tomato (Santa Clara)	lib.	705
Chili pepper (agronomico 10 G)	lib.	401
Chili pepper (Natali)	1,000 seeds	450
Chili pepper	lib.	666
Carrot	lib.	85
Carrot (Cantenay Andina)	lib.	101
Snow pea (Goliath)	lib.	19
Snow pea	lib.	12
French bean (Masai)	lib.	33
Broccoli (Legacy)	1,000 seeds	40
Cauliflower (Snoval)	lib.	370
Cabbage (Indiana)	1,000 seeds	31
Lettuce	lib.	352
Guicoy	ounce	30
2 Fertilizers		
Urea	qq.	94
Supper phosphate	qq.	121
Potassium Chloride (KCl)	qq.	95
15-15-15	qq.	95
3 Insecticides		
Malathion	lit	27
Diazinon	lit	121
Thiodan	lit	66
Sevin	lib.	66
4 Fungicides		
Dithane M 45	kg.	44

Cuadro 8.3.1(4) Tarifa propuesta para el agua de riego en Xeatzan Bajo

1) Pump Condition

H = 162m CDT, Q = 7 lit/sec, 45HP	
Required water vokume	302.1 m3/day
Pumping-up Capacity :	25.2 m3/hr
Operation duration	12.0 hrs

2) Fuel Consumption

Fuel Consumption w/ 60HP-pump	9.5 lit/hr	0.21 lit/HP-hr
Fuel Cost for 1 hr operation	34.0 Q/hr	55gal=208lit=Q750, 1litter=Q3.60
Pumping-up Capacity	25.2 m3/hr	
Diesel cost for pumping 1m3 of water	1.35 Q/m3	

3) Water Charge

		say,	
Fuel Cost	1.35 Q./m3	1.30 Q./m3	65%
O & M Cost	0.27 Q./m3	0.30 Q./m3	15%
Miscellaneous*	0.41 Q./m3	0.40 Q./m3	20%
Total	2.03 Q./m3	2.00 Q./m3	

* Miscellaneous includes contingency cost and the curtain amount of money to be used for overall welfare programs in Xeatzan Bajo.

4) Water Consumption for Irrigation

Condition : 0.76 lit/s/ha for 1crop season (100days),
Avegare water consumption : 80% of max.

5,253 m3/ha/1crop
3,677 m3/manzana/1crop
609 m3/0.116ha(1cuerda)/1crop

5) Total Water Charge to be Collected in dry season

Total irrigated area : 4.6ha=40cuerda, 1 crop season = 100days

5,253 m3/ha/1crop : water consumption
24,164 m3/4.6ha/1crop : water consumption

Fuel Cost	31,414 Q./1 crop
O & M Cost	7,249 Q./1 crop
Miscellaneous*	9,666 Q./1 crop
Total	48,329 Q./1 crop

6) Water Charge for 1 pot (1/2cuerda = 0.058ha = 580m2)

Condition : 0.76 lit/s/ha for 1crop season (100days)

305 m3/0.058ha(0.5cuerda)/1crop : water consumption

617 Q./0.058ha(0.5cuerda)/1crop

Cuadro 8.3.1(5) Costos de Producción y Beneficios de Cultivos Sin Proyecto y Con Proyecto en el Area de Xeatzan Bajo (1/4)

Snow Pea (Arvejas Chinas)

Item	Unit	(1) Without Project			(2) With Project		
		Unit Price (Quetzal)	Quantity	Amount (Quetzal/Manz.)	Unit Price (Quetzal)	Quantity	Amount (Quetzal/Manz.)
A) Gross Income							
Unit Yield	quintal	180	125.0	22,500	200	180.0	36,000
B) Production Cost				5,250			7,150
1) Farm Inputs							
- Seeds	pound	12	100	1,200	19	110	2,090
- Fertilizers							
N	pound	2.00	35	70	50	100	
P	pound	1.7	75	128	90	153	
K	pound	1.6	85	136	110	176	
- Compost	quintal	30	20	600	30	30	900
- Insecticides	lit	95	6	570	5	475	
- Fungicides	pound	45	4	180	4	180	
- Hanging rope				500		500	
2) Labor (Paid)	man-day	25	30	750	45	1,125	
Labor (Family)	man-day	0	60	0	65	0	
3) Miscellaneous (10%)				413		570	
4) Financial cost (21% of Direct Cost)				703		878	
C) Net Income	(Quetzal/Manz.)			17,250			28,850

French Bean

Item	Unit	(1) Without Project			(2) With Project		
		Unit Price (Quetzal)	Quantity	Amount (Quetzal/Manz.)	Unit Price (Quetzal)	Quantity	Amount (Quetzal/Manz.)
A) Gross Income							
Unit Yield	quintal	125	150.0	18,750	200	180.0	36,000
B) Production Cost				7,660			9,690
1) Farm Inputs							
- Seeds	pound	20	100	2,000	25	120	3,000
- Fertilizers							
N	pound	2.00	30	60	60	120	
P	pound	1.7	70	119	100	170	
K	pound	1.6	85	136	100	160	
- Compost	quintal	30	20	600	30	30	900
- Insecticides	lit	100	6	600	6	600	
- Fungicides	pound	45	4	180	4	180	
- Hanging rope				500		500	
2) Labor (Paid)	man-day	25	75	1,875	85	2,125	
Labor (Family)	man-day	0	110	0	120	0	
3) Miscellaneous (10%)				607		776	
4) Financial cost (21% of Direct Cost)				982		1,162	
C) Net Income	(Quetzal/Manz.)			11,090			26,310

Cuadro 8.3.1(5) Costos de Producción y Beneficios de Cultivos Sin Proyecto y Con Proyecto en el Area de Xeatzan Bajo (2/4)

Brocoli

Item	Unit	(1) Without Project			(2) With Project			
		Unit Price (Quetzal)	Quantity	Amount (Quetzal/Manz.)	Unit	Unit Price (Quetzal)	Quantity	Amount (Quetzal/Manz.)
A) Gross Income								
Unit Yield	quintal	70	140.0	9,800	Head	1.2	25,000	30,000
B) Production Cost				6,480				10,530
1) Farm Inputs								
- Seeds	seedlings	0.1	25,000	2,500	0.12	30,000	3,600	
- Fertilizers								
N	pound	2.00	250	500		350	700	
P	pound	1.7	100	170		200	340	
K	pound	1.6	210	336		380	608	
- Compost	quintal	30	10	300	30	30	900	
- Insecticides	lit	95	6	570		6	570	
- Fungicides	pound	45	3	135		3	135	
2) Labor (Paid)	man-day	25	30	750		65	1,625	
Labor (Family)	man-day	0	150	0		160	0	
3) Miscellaneous (10%)				526			848	
4) Financial cost (21% of Direct Cost)				690			1,202	
C) Net Income	(Quetzal/Manz.)			3,320				19,470

Cauliflower

Item	Unit	(1) Without Project			(2) With Project			
		Unit Price (Quetzal)	Quantity	Amount (Quetzal/Manz.)	Unit	Unit Price (Quetzal)	Quantity	Amount (Quetzal/Manz.)
A) Gross Income								
Unit Yield	quintal	80	160.0	12,800	Head	1.2	25,000	30,000
B) Production Cost				7,650				10,600
1) Farm Inputs								
- Seeds	seedlings	0.1	27,000	2,700	0.12	30,000	3,600	
- Fertilizers								
N	pound	2.00	220	440		350	700	
P	pound	1.7	85	145		150	255	
K	pound	1.6	260	416		380	608	
- Compost	quintal	20	25	500	30	30	900	
- Insecticides	lit	95	4	380		4	380	
- Fungicides	pound	45	2	90		2	90	
2) Labor (Paid)	man-day	25	60	1,500		80	2,000	
Labor (Family)	man-day	0	145	0		150	0	
3) Miscellaneous (10%)				617			853	
4) Financial cost (21% of Direct Cost)				858			1,215	
C) Net Income	(Quetzal/Manz.)			5,150				19,400

Cuadro 8.3.1(5) Costos de Producción y Beneficios de Cultivos Sin Proyecto y Con Proyecto en el Area de Xeatzan Bajo (3/4)

Cabbage

Item	Unit	Unit Price (Quetzal)	(1) Without Project		(2) With Project			
			Quantity	Amount (Quetzal/Manz.)	Unit	Unit Price (Quetzal)	Quantity	Amount (Quetzal/Manz.)
A) Gross Income								
Unit Yield	qq.	25	650	16,250	Head	1.0	25,000	25,000
B) Production Cost				7,630				11,140
1) Farm Inputs								
- Seeds	seedlings	0.1	25,000	2,500		0.12	30,000	3,600
- Fertilizers								
N	pound	2.00	275	550			400	800
P	pound	1.7	100	170			200	340
K	pound	1.6	325	520			400	640
- Compost	quintal	10	10	100		30	30	900
- Insecticides	lit	95	9	855			9	855
- Fungicides	pound	45	4	180			4	180
2) Labor (Paid)	man-day	25	50	1,250			65	1,625
Labor (Family)	man-day	0	100	0			110	0
3) Miscellaneous (10%)				613				894
4) Financial cost (21% of Direct Cost)				890				1,309
C) Net Income	(Quetzal/Manz.)			8,620				13,860

Cole of Brussels

Item	Unit	Unit Price (Quetzal)	(1) Without Project		(2) With Project			
			Quantity	Amount (Quetzal/Manz.)	Unit Price (Quetzal)	Quantity	Amount (Quetzal/Manz.)	
A) Gross Income								
Unit Yield	quintal	65	300.0	19,500	65	400	26,000	
B) Production Cost				7,770			11,370	
1) Farm Inputs								
- Seeds	seedlings	0.1	20,000	2,000		0.12	30,000	3,600
- Fertilizers								
N	pound	2.00	220	440			300	600
P	pound	1.7	90	153			150	255
K	pound	1.6	260	416			380	608
- Compost	quintal	20	25	500		30	30	900
- Insecticides	lit	95	8	760			8	760
- Fungicides	pound	45	3	135			3	135
2) Labor (Paid)	man-day	25	70	1,750			90	2,250
Labor (Family)	man-day	0	150	0			165	0
3) Miscellaneous (10%)				615				911
4) Financial cost (21% of Direct Cost)				1,001				1,348
C) Net Income	(Quetzal/Manz.)			11,730				14,630

Cuadro 8.3.1(5) Costos de Producción y Beneficios de Cultivos Sin Proyecto y Con Proyecto en el Area de Xeatzan Bajo (4/4)

Carrot

Item	Unit	Unit Price (Quetzal)	(1) Without Project		(2) With Project		
			Quantity	Amount (Quetzal/Manz.)	Unit Price (Quetzal)	Quantity	Amount (Quetzal/Manz.)
A) Gross Income							
Unit Yield	qq.	55	425	23,380	55	600	33,000
B) Production Cost				6,030			7,600
1) Farm Inputs							
- Seeds	pound	100	5	500	150	6	900
- Fertilizers							
N	pound	2.00	150	300		250	500
P	pound	1.7	80	136		150	255
K	pound	1.6	225	360		300	480
- Compost	quintal	30	25	750	30	30	900
- Insecticides	lit	95	8	760		8	760
- Fungicides	pound	45	4	180		4	180
2) Labor (Paid)	man-day	25	65	1,625		75	1,875
Labor (Family)	man-day	0	90	0		100	0
3) Miscellaneous (10%)				461			585
4) Financial cost (21% of Direct Cost)				960			1,162
C) Net Income				17,350			25,400

Lettuce

Item	Unit	Unit Price (Quetzal)	(1) Without Project		(2) With Project		
			Quantity	Amount (Quetzal/Manz.)	Unit Price (Quetzal)	Quantity	Amount (Quetzal/Manz.)
A) Gross Income							
Unit Yield	heads	0.5	50,000	25,000	0.75	55,000	41,250
B) Production Cost				10,900			12,610
1) Farm Inputs							
- Seeds	seedlings	0.1	55,000	5,500	0.1	60,000	6,000
- Fertilizers							
N	pound	2.00	85	170		120	240
P	pound	1.7	40	68		50	85
K	pound	1.6	175	280		220	352
- Compost	quintal	20	35	700	30	30	900
- Insecticides	lit	95	2	190		2	190
- Fungicides	pound	75	2	150		2	150
2) Labor (Paid)	man-day	25	80	2,000		100	2,500
Labor (Family)	man-day	0	120	0		120	0
3) Miscellaneous (10%)				906			1,042
4) Financial cost (21% of Direct Cost)				937			1,146
C) Net Income				14,100			28,640

Cuadro 8.3.1 (6) Máxima Cantidad de Agua Disponible y Requerimiento Agua para el Mini-riego en Xeatzán Bajo, Chimaltenango

(1) Maximum Available Water

Maximum Available Water for the project : 7.0 lit/s (56% of the spring discharge)

- Name of spring : Pachomochai Spring
- Present discharge of the spring : 12.5 lit/s
- Annual increase rate of population : 3 % per year^{*1}
- Number of families 325 families
- Period to be considered 15 years
- The number of family member 5.3 persons/family^{*2}
- Assumed water consumption per capita in 15 years later 72 lit/person/day^{*3}
- Safety Factor in consideration of Dry Year 0.75
- Future Requirement for Drinking Water 3.0 lit/s for 14 hrs pumping up

(Note: *1: National population increasing rate based on the census '73 and '94 is 2.3%, 2: Based on the household survey. *3: 120 % of the present max consumption)

(2) Irrigation Water Requirement

The calculated irrigation water requirement : **6.6 mm/day, 0.76 liters/sec/ha.**

Irrigation water requirements for each crop are calculated by the following formula :

$$WRg = WRn / Ie * C_{loss}$$

$$WRn = ET_{crop} - Erain$$

here is, WRg : Gross Water Requirement (mm/day)
 WRn : Net Water Requirement (mm/day)
 ET_{crop} : Crop Evapotranspiration (mm/day)
 Ie : Irrigation Efficiency
 Erain : Effective Rain (mm/day)
 C_{loss} : Conveyance Loss Factor

$$ET_{crop} = ET_o * Kc$$

here is, ET_o : Potential Evapotranspiration (mm/day)
 Kc : Crop coefficient

NOTE > ET_o : Measured data by INSIVUMEH at San Matin Jilotepeque in Chimaltenango

Cuadro 8.3.1 (7) Cálculo de los Requerimientos de Agua de Riego: Xeatzán Bajo

	Jan.	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ETo (mm/mon.)	99	109	141	137	132	108	116	122	105	105	90	95
Ave. Kc	0.00	0.56	0.90	0.80	0.19	0.65	0.84	0.76	0.60	0.85	0.44	0.04
ETerop (mm/mon.)	0.0	61.0	126.3	109.6	24.8	69.8	96.9	92.9	63.2	89.1	39.9	3.8
ETerop (mm/day)	0.0	2.2	4.1	3.7	0.8	2.3	3.1	3.0	2.1	2.9	1.3	0.1
Rainfall (mm/mon.)	3.3	6.2	17.2	24.9	110.9	258.1	203.2	198	263.4	151	31.5	5
Effective rain(mm/mon)	1.98	3.72	10.32	9.96	44.36	103.24	81.28	79.20	105.36	60.40	18.90	3.00
Net Water Requirement(mm/mon)	0.0	57.3	116.0	99.6	0.0	0.0	15.6	13.7	0.0	28.7	21.0	0.8
Net Water Requirement(mm/day)	0.0	2.0	3.8	3.3	0.0	0.0	0.5	0.4	0.0	0.9	0.7	0.0
Gross Water Requirement (mm/day) *1	0.0	3.5	6.6	5.7	0.0	0.0	0.9	0.8	0.0	1.6	1.2	0.0
Gross Water Requirement (mm/day) *2	0.0	2.9	5.4	4.7	0.0	0.0	0.7	0.6	0.0	1.3	1.0	0.0
Gross Water Requirement (mm/day) max	0.0	3.5	6.6	5.7	0.0	0.0	0.9	0.8	0.0	1.6	1.2	0.0
Gross Water Requirement (lit/s/ha)	0.00	0.41	0.76	0.66	0.00	0.00	0.10	0.09	0.00	0.18	0.14	0.01

ETo : Measured data by INSIVUMEH at San Matin Jilotepeque in Chimaltenango

*1 : Case 1 for sprinkler irrigation without green house (70% of loss)

*2 : Case 2 for drip irrigation with green house (85% of loss)

Calculation condition

1) Cultivation :

Case 1 : Sprinkler irrigation

Case 2 : drip irrigation

2) Irrigation efficiency : 70 % for sprinkler irrigation
85% for drip irrigation

- Drip irrigation : more than 85-90%, say 85%

- Sprinkler irrigation : 70-85% say, 70%

- Surface irrigation : 50%

3) Conveyance loss factor : 1.2

Crops	cropping period (days)				Kc				
	Total	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Broccoli	80	20	30	20	10	0.5-0.6	0.78	0.95	0.80
Cabbage	90	25	30	25	10	0.5-0.6	0.78	0.95	0.80
Carrot	90	15	25	30	20	0.5-0.6	0.80	1.00	0.70
Guicoy	90	20	30	30	10	0.5-0.6	0.78	0.95	0.80
Brussela Spuraut	90	25	30	25	10	0.5-0.6	0.78	0.95	0.80
Cauliflower	80	20	30	20	10	0.5-0.6	0.78	0.95	0.80
French bean	70	10	25	25	10	0.5-0.6	0.78	0.95	0.85
Lettuce	75	20	30	15	10	0.5-0.6	0.78	0.95	0.90
Snow pea	80	15	20	30	15	0.5-0.6	0.83	1.05	0.95
Sugar Snap	90	15	25	35	15	0.5-0.6	0.83	1.05	0.95

NOTE> 1th : Initial period, 2nd : crop development period, 3 : mid-season, 4th : last season

Kc : Derived from FAO technical book, Condition: 4days interval irrigation, climate RH>70% & Wind0-5m/s

Cuadro 8.3.1(8) Requerimientos de Mano de obra no calificada de los Beneficiarios:
Mini-Riego, Chimaltenango

1) Calculation of Man-Powers

Items	Excavation Volume [m3]	Backfilling Volume [m3]	Pipe Placement [m]	Man-power [man-day]	Man-power [men/day]	2001			2002			
						Aug	Sep	Oct	Nov	Dec	Jan	Feb
Construction Stage												
Pump House and Suction Pit	40		0	34	1							
Pump Installation and Miscellaneous Works												
Upper Tank	100	30	0	96	2							
Conduction Pipes	390	312	1,320	532	12							
Distributary Pipes	1,650	1,320	12,000	2,634	20							
Valves / Filters / Regulator Installation etc.												
Miscellaneous Works 5%	LS			164.8								
Total				3,461								

Number of Beneficiaries : 80

2) Labor Productivity for Civil Works*

Work Items	Productivity	Unit
Excavation	0.84	man-day/m3
PVC Pipe Placement	0.06	man-day/m
Backfilling	0.40	man-day/m3

* : Derived from a Japanese Labor Productivities with modified factor Fm (=2.0)

3) Participation of the Beneficiaries in the Construction Period

769.1 man-day/month in total
9.6 man-day/month/family
2.4 times/week/family

Cuadro 8.3.1. (9) Concepto de Organización Propuesta para el Proyecto de Mini-riego (Xeatzan Bajo)

1. Beneficiaries	<ul style="list-style-type: none"> • The beneficiaries of the project will be the farmers in Caserío Xeatzan Bajo who are willing to participate in this project and satisfy the requirements stated below. <ul style="list-style-type: none"> - Engage in vegetable production at present - Be able to secure land area (0.058ha) in the assigned project area - Be able to afford initial investment for farm input (water charge, fertilizer, seeds, etc.) - Be able to afford initial investment for tertiary irrigation system - Agree with the project concepts - Cultivate the irrigated plot by himself. Tenant farming would not be accepted. - Be a member of water users' association formed by the beneficiaries. To be a member, it is required to provide hand labor in constructing irrigation system or for certain days that is decided among the association.
2. Water Users' Association	<ul style="list-style-type: none"> • The community has already established a committee by themselves for implementation of the irrigation project. With making this committee as an executing committee, water users' association will be established by the beneficiaries of the irrigation system. After the establishment of WUA, member of the original executing committee has to be revised or re-elected. • The committee will be an executing body of the water users' association and be named as irrigation committee. The structure of committee would be a) President (1 person), b) Vice-president (1 person), c) Secretary (1 person), d) Treasurer (1 person), e) Vocales (5 persons). • Since the development committee of the community is legally registered, legal registration would not be necessary. Rather, the function of water users' association will be added to constitute of the present development committee. • The Water Users' Association will be in charge of 1) collection of water charge, 2) operation and maintenance of the system, and 3) decision making on use of the irrigation facility.
3. Support System	
a) JICA Study Team	<ul style="list-style-type: none"> • Overall supervision of the project • Provision of equipment and facility • Monitoring and evaluation of the project
b) MAGA	<ul style="list-style-type: none"> • Assignment of at least one personnel for the liaison officer of the Project • Overall supervision and data collection for monitoring. • Provision of technical consultancy for the case irrigation system is broken down.
c) Consultant or NGO	<ul style="list-style-type: none"> • Provision of technical assistance for vegetable production • Assistance in finding market
d) Water Users' Association	<ul style="list-style-type: none"> • Operation and maintenance of the irrigation system • Collection of water charge
5. Land for Cultivation	<ul style="list-style-type: none"> • Beneficiaries will provide land for cultivation. Basically, those who have the land area in the potential command area will provide their land for cultivation. For those who do not have land, rental type of land use has to be considered.
6. Ownership of Irrigation Facility	<ul style="list-style-type: none"> • Ownership of the irrigation system will belong to the community (the development committee since it is registered civil association). • Any decisions on facility use have to be made by the consensus among the association members with appropriate procedure such as general assembly. Details has to be clarified during the establishment of the association. • The ownership of tertiary system will belong to the beneficiaries since they have to pay for the cost of material and installation.
7. Water charge	<ul style="list-style-type: none"> • Beneficiaries have to pay water charge that consists of electricity fee, maintenance and repair cost, a fee to be paid to the community, and miscellaneous. • Irrigation committee will collect water charge and deposit collected money into the bank account through the treasurer of association. • Necessary payment such as operation cost of pump or repair cost will be paid from this account as the needs arise.

Cuadro 8.3.1 (10) Instalaciones del Proyecto de Mini-Riego en Xeatzán Bajo

<p>1) Pump House</p>	<p><u>Pump</u> Design discharge of pump: 7 liters/sec = 111GPM Driving power and energy: Diesel engine 45 HP Suction pipe: 4 inches Pump-up Elevation: 145m (from pump station to the top storage tank)</p> <p><u>Pump House</u> Size : 3*4m Made of : Concrete blocks Fuel tank : Floor embedded type The existing suction tank for portable system will be used for the irrigation system simultaneously.</p>
<p>2) Water Conveyance System</p>	<p><u>Conduction pipe system</u> Closed type pipeline Length : 1.7 km in total Pipe type : GI pipe, PVC-250PSI and PVC-160PSI pipe Diameter : ϕ 4"</p> <p><u>Distributary pipe system</u> Semi-closed type pipeline with float valve system Length : 8 km in total approximately Pipe type : PVC-250PSI and PVC-160PSI pipe Diameter : ϕ 1"-4"</p>
<p>3) Tank</p>	<p><u>Top regulating storage tank</u></p> <ul style="list-style-type: none"> - Capacity : 75 m³ - Materials : reinforced concrete - Size : 2.1*6.0*6.0 m - Function : storage of pumped water before delivering to the field
<p>4) The farm plot system</p>	<p>Sprinkler irrigation system for 0.058ha (1/2cuarda) will be prepared by each farmer. Sprinkler system:</p> <ul style="list-style-type: none"> - sprinkler ; 1-2 nos. - design discharge for a sprinkler : 0.1-0.2 lit/s - required water pressure : 1.8-2.2 kgf/cm² = 18-21 N/cm² - tertiary pipe ; ϕ 3/4" or 1", 50m approx. - Pressure regulator : 1 nos.

Cuadro 8.3.1 (11) Costo del Proyecto de Mini-Riego en Xeatzan Bajo

(1) Construction Cost

Items	Q'ty	unit	Cost (Q)	Cost (Y)
Conduction pipe (spring-pump-drainage)			13,000	201,500
PVC pipe 3" 100PSI (spring[pump])	700.00	m		
Conduction pipe (pump-tank)			84,000	1,302,000
PVC pipe 4" 160PSI	540.00	m		
PVC pipe 4" 250PSI	270.00	m		
Galvanized Iron pipe 4"	264.00	m		
Distributary pipe			107,000	1,658,500
PVC pipe 1" 160PSI	3,015.00	m		
PVC pipe 1.25" 160PSI	778.00	m		
PVC pipe 1.5" 250PSI	825.00	m		
PVC pipe 2" 160PSI	1,316.00	m		
PVC pipe 3" 160PSI	1,124.00	m		
PVC pipe 4" 160PSI	556.00	m		
Pipe Miscellaneous		LS	104,000	1,612,000
Sub-total			308,000	4,774,000
Pump & Pump House		LS	204,000	3,162,000
Pump (7 lit/s) including valve etc.				
Pump House (3*4m)				
Upper Tank (75m3)		LS	81,000	1,255,500
Sub-total			285,000	4,417,500
Consturction Supervision (incl. Control Survey)		LS	39,000	604,500
skilled labor	270.0	man-day		
Topograhic Route Survey	8.0	km		
Sub-total			39,000	604,500
Miscellaneous Works		LS	101,000	1,565,500
Total			733,000	11,361,500
Price Escalation and Contingency 20%			147,000	2,272,300
Grand-Total			880,000	13,633,800

(2) Cost for training and initial agriculture input

Items	Q'ty	unit	Cost (Q)	Cost (Y)
(i) Training			26,000	390,000
Personnel charge	45.00	days		
Fuel and other expenditures		LS		
Others		LS		
(ii) Initial agriculture input (for 1st crop)			92,000	1,426,000
Seeds, pesticide and fertilizer	4.60	ha		
Water charge	4.60	ha		
Total			118,000	1,829,000

Exchange Rate Q.1.0 = Yen 15.5

Cuadro 8.3.1(12) Programa de Implementación: Mini-Riego Xeatzan Bajo

Items	2001			2002						2003											
	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	
a. Selection of Contractor for the implementation Contractor Selection and Contracting Works Contract with Contractor (Commencement of the		■	☆																		
b. Preparatory Works Plots Survey and Plots Registration Checking Survey Works Definitive Design Works		■	■																		
c. Construction Stage Preparation and Delivery of the Materials Pump House and Suction Pit Pump Installation and Miscellaneous Works Upper Tank Conduction Pipes Distributary Pipes Valves / Filters / Regulator Installation etc.		■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
d. Monitoring and Evaluation Capacity and Lecture for O&M Initial Condition Survey Interim Survey Monitoring and Evaluation Survey			■			■			■	■	■	■	■	■	■	■	■	■	■	■	■
e. Cultivation Ordering Seedlings Transplanting Crop Growing Management Harvesting					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
f. Agricultural Technical Assistance Decide on Marketing channel (negotiate and make agreement with company) Make arrangements for agricultural loan (BanRural or Contract growing) Make arrangements for technical transfer (INTECAP, ICTA, MAGA) Technical Transfer on Crop Management Technical Transfer on Irrigation Water Management				■																	

Cuadro 8.3.1 (13) Costo y Flujo de Beneficio: Mini-Riego en Xeatzan Bajo, Chimaltenango

(unit : Q.)

Year	Cost				Benefit	Net Cash Flow
	Capital Cost *1	O&M Cost*2	Replacement Cost*3	Total Cost		
1	1,050,520	50,572		1,101,092	148,957	-952,136
2		50,572		50,572	238,331	187,758
3		50,572		50,572	297,913	247,341
4		50,572		50,572	297,913	247,341
5		50,572	120,200	170,772	297,913	127,141
6		50,572		50,572	297,913	247,341
7		50,572		50,572	297,913	247,341
8		50,572		50,572	297,913	247,341
9		50,572		50,572	297,913	247,341
10		50,572	505,393	555,965	297,913	-258,052
11		50,572		50,572	297,913	247,341
12		50,572		50,572	297,913	247,341
13		50,572		50,572	297,913	247,341
14		50,572		50,572	297,913	247,341
15		50,572	120,200	170,772	297,913	127,141
16		50,572		50,572	297,913	247,341
17		50,572		50,572	297,913	247,341
18		50,572		50,572	297,913	247,341
19		50,572		50,572	297,913	247,341
20		50,572	505,393	555,965	297,913	-258,052
21		50,572		50,572	297,913	247,341
22		50,572		50,572	297,913	247,341
23		50,572		50,572	297,913	247,341
24		50,572		50,572	297,913	247,341
25		50,572	120,200	170,772	297,913	127,141
26		50,572		50,572	297,913	247,341
27		50,572		50,572	297,913	247,341
28		50,572		50,572	297,913	247,341
29		50,572		50,572	297,913	247,341
30		50,572		50,572	297,913	247,341

EIRR : 21.0%

Note:

*1 : Capital cost includes labor cost for the unskilled labors provided by the beneficiaries.

*2 : O & M Cost consists of fuel & lubricant cost, payment for pump operators and plumber, other administrative consumption and so on

*3 : Replacement Cost :

Sprinkler system ; all the devices will be replaced in every 5 years.

Pump replacement ; every 10 years

Cuadro 8.3.2(1) Costo Estimado del Hilo Necesario para Fabricar un Huipil

(1) Case Type-1, Q67 Huipil

(a) Present Cost of threads necessary for making one huipil in the case that threads are purchased at retailer in Patzun

Kinds of threads	Quantity necessary for making one huipil (Q/lb)	Type of thread	Wholesale price (Q/lb)	Retail price (Q/lb)	Total thread cost for one huipil (Q/one)
Base warp	0.55	Segunda	-	60.0	33.0
Base woof	0.55	Mish	-	20.0	11.0
Color warp	0.30	Segunda	-	40.0	12.0
Rims	0.17	Segunda	-	60.0	10.2
Total					66.2

(b) Expected cost of threads necessary for making one huipil at Cooperative

Kinds of threads	Quantity necessary for making one huipil (Q/lb)	Type of thread	Wholesale price (Q/lb)	Price at Cooperative (Q/lb)*	Total thread cost for one huipil (Q/huipil)
Base warp	0.55	100% Rayon Yarn	40.0	44.4	24.4
Base woof	0.55	100% Cotton yarn	17.0	18.9	10.4
Color warp	0.30	100% Rayon Yarn	35.0	38.9	11.7
Rims	0.17	100% Rayon yarn	40.0	44.4	7.6
Total					54.1

* Price at cooperative price is 110% of the wholesale price

(2) Case Type-2, Q112 Huipil

(a) Present Cost of threads necessary for making one huipil in the case that threads are purchased at retailer in Patzun

Kinds of threads	Quantity necessary for making one huipil (lb)	Type of thread	Wholesale price (Q/lb)	Retail price (Q/lb)	Total thread cost for one huipil (Q/one)
Base warp	0.55	Segunda	-	60.0	33.0
Base woof	0.55	Mish	-	20.0	11.0
Color warp	0.30	Segunda	-	192.0	57.6
Rims	0.17	Segunda	-	60.0	10.2
Total					111.8

(b) Expected cost of threads necessary for making one huipil at Cooperative

Kinds of threads	Quantity necessary for making one huipil (lb)	Type of thread	Wholesale price (Q/lb)	Price at Cooperative (Q/lb)*	Total thread cost for one huipil (Q/huipil)
Base warp	0.55	100% Rayon Yarn	40.0	44.4	24.4
Base woof	0.55	100% Cotton yarn	17.0	18.9	10.4
Color warp	0.30	100% Rayon Yarn	153.0	170.0	51.0
Rims	0.17	100% Rayon yarn	40.0	44.4	7.6
Total					93.4

* Price at cooperative price is 110% of the wholesale price

Remarks : All the cost were calculated based on the prices obtained in March, 2001.

Cuadro 8.3.2(2) Costos del Proyecto de Tejido a Mano

Item	Quantity*	Unit	Unit price (Q/lb)	Cost (Q)
(1) Initial capital as revolving fund				
(1) Type-1				
(i) base warp	330	lb	40	13,200
(ii) color warp	180	lb	35	6,300
(iii) woof	330	lb	17	5,610
(iv) rims	102	lb	40	4,080
(v) embroidery	LS			1,500
sub-total				30,690
(2) Type-2				
(i) base warp	330	lb	40	13,200
(ii) color warp	180	lb	153	27,540
(iii) woof	330	lb	17	5,610
(iv) rims	102	lb	40	4,080
(v) embroidery	LS			1,500
sub-total				51,930
(3) Sampel Use and adjustment purchase	LS			4,000
Total (1+2+3)				86,620
(2) Office equipment and materials				
(i) Storage shelves	4	no	2,000	8,000
(ii) Photocopy machine	1	no	10,000	10,000
(iii) Office materials		LS		2,000
(iv) Other costs		LS		1,500
sub-total				21,500
(3) Project management				
(i) Personal cost		LS		129,000
(ii) Travelling cost		LS		9,600
(iii) Training materials		LS		6,000
(iv) Others		LS		9,100
sub-total				153,700
Total cost				261,820

Remark: Initial investment as revolving funds is estimated as follows;

- (i) 200 women are to take part in cooperative purchase of thread.
- (ii) Each women weave 6 Huipils/month
- (iii) Total number of Huipil/month: 1,200 Huipils consisting of 600 (type1) and 600 (type-2)
- (iv) Total quantities is calculated by number of huipil and requiremnt of threads per huipil
- (v) requirement of threads per huipil is referred to Table 8.3.1

Cuadro 8.3.3(1) Costos del Proyecto: Plan de Calidad de Agua en Xeatzán Bajo

Q1.00=Yen15.5

Contenido	Especificacion	Cantidad	Unidad de Medida	Precio Unitario (Q.)	Costo (Q.)	Observacion
DOSIFICADOR	DSA 310 RE-IE	1	Unidad	4,886.60	4,886.60	* Tubo de aspiracion transparente, 1.20m
VALVULA ESFERA	PLASTICA 1"	2	Unidad	41.08	82.16	de largo equipado con lastre y crepina.
MANOMETRO	PRESION 0-100 PSI	1	Unidad	37.44	37.44	
RED.BUSHING	PVC 6" x 3"	2	Unidad	186.61	373.22	* La mano de obra no incluye trabajos de
RED.BUSHING	PVC 3" x 1"	2	Unidad	22.10	44.20	obra civil.
UNION UNIVERSAL	PVC 1"	4	Unidad	28.62	114.48	
FILTRO DE 1"	(ANILLOS) MARCA AZUD	1	Unidad	199.00	199.00	
TEE	PVC 6"	2	Unidad	588.82	1,177.64	
VALVULA MARIPOSA	HF 6" WD-3010-3	1	Unidad	1,470.56	1,470.56	
BRIDA	6" PVC	2	Unidad	324.89	649.78	
TORNILLOS 5/8 x 6" COMP		16	Unidad	11.47	183.52	9,218.60
MANO DE OBRA POR INSTALACION		1	Unidad	5,000.00	5,000.00	
ARTICULOS VARIOS Y MISCELANEOS		1	Unidad	1,100.00	1,100.00	
CASETA DE TANQUE DE DEPOSITO	0.8x0.8xH1.2m	1	Unidad			
BLOQUE DE CONCRETO	Tipo liviano de 14x19x39cms	0.096	Millar	2,546.67	244.48	
CEMENTO	Gris nacional	1	42.5kg	30.10	30.10	
ARENA	de rio	0.8	m3	74.62	59.70	
LAMINA GALVANIZADA LISA	3'x8'	1	Unidad	108.63	108.63	
PUERTA DE PLYWOOD	pino de 0.7x1.2m	1	Unidad	400.00	400.00	
TANQUE 55 GLS DE HIPOCLORITO	10%	1	55GLS	257.11	257.11	
TOTAL					16,418.62	

Cuadro 8.4.1(1) Costo de Proyecto

		unit cost	Quantity	Amount
1) Constriction of Nursely				
a. Vinylhouse A (Cofee)				
a) Construction	sq.m	68.00	420	28,560.00
b) Wood frame	unit	45.00	220	9,900.00
c) Shelf	unit	135.00	28	3,780.00
d) sub-total				42,240.00
b. Vinylhouse B (Fruits)				
a) Construction	sq.m	68.00	375	25,500.00
b) Wood frame	unit	45.00	190	8,550.00
c) Shelf	unit	135.00	24	3,240.00
d) sub-total				37,290.00
c. Water Tank	unit	2,500.00	1	2,500.00
d. Equipment				
a) Handcart	set	150.00	4	600.00
b) Forks etc.	set	30.00	8	240.00
c) Shovels, etc.	set	25.00	8	200.00
d) Water sprayer	set	35.00	8	280.00
e) Wood working tools	unit	100.00	2	200.00
f) Chemical sprayer	unit	500.00	2	1,000.00
g) Excavating machine	unit	200.00	2	400.00
h) sub-total				2,920.00
e. contingency	5% of construction cost			4,101.50
f. Total				89,051.50
2) Training				
a. Training (tech/management of sesdling)	time	1,300.00	7	9,100.00
b. Training for graft of tree /marketing	time	1,300.00	5	6,500.00
c. Total				15,600.00
3) Consuming matelial (for first cicle)				
a. Plastic Pot				
a) cofee	unit	5,500.00	0.08	412.50
b) Fruits	unit	3,000.00	0.13	390.00
b. Black Soil				
a) Coffee	QQ	5.00	36.18	180.92
b) Fruits	QQ	5.00	29.61	148.03
c. White Sand				
a) Coffee	QQ	15.00	36.18	542.76
b) Fruits	QQ	15.00	29.61	444.08
d. Compost				
a) Coffee	QQ	25.00	36.18	904.61
b) Fruits	QQ	25.00	29.61	740.13
e. Seeds				
a) Coffee	seed	5,500.00	0.15	847.00
b) Avocado	seed	2,220.00	0.50	1,110.00
c) Peach	seed	780.00	0.50	390.00
f. Seedling				
a) Avocado	seedling	2,220.00	0.50	1,110.00
b) Peach	seedling	780.00	0.50	390.00
g. Agricultural Chemical	unit	100.00	12.00	1,200.00
h. Fertilizers	QQ	100.00	3.65	365.00
i. Total				9,175.03
4) Plants				
a. Coffer	plants	2,500.00	1.50	3,750.00
b. Avocado	plants	500.00	15.00	7,500.00
c. Peach	plants	300.00	10.00	3,000.00
d. Total				14,250.00
5) Total Cost				128,076.53

Cuadro 8.4.1(3) Cálculo de Costos para la Operación del Vivero (2/2)

Items	Unit	Meses												Total
		1	2	3	4	5	6	7	8	9	10	11	12	
		Siembra de Frutales		Siembra de café		Ingreso de las frutales		Transplanta		Transplanta		Transplanta		
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
6) White Sand for Fruits														
a. Number	plants	3,000	0	0	0	0	0	0	0	0	0	0	0	0
b. Quantity	g/pot	450	0	0	0	0	0	0	0	0	0	0	0	0
c. Amount	Q/Q	29.61	0	0	0	0	0	0	0	0	0	0	0	0
d. Unit Cost	Q/Q	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
e. Cost for W. Sand for Fruits	Q	444.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	444.08
7) Compost for Coffee														
a. Number	plants	0	0	5,500	0	0	0	0	0	0	0	0	0	0
b. Quantity	g/pot	0	0	300	0	0	0	0	0	0	0	0	0	0
c. Amount	Q/Q	0	0	36.2	0	0	0	0	0	0	0	0	0	0
d. Unit Cost	Q/Q	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
e. Cost for Compost for Coffee	Q	0.00	0.00	904.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	904.61
8) Compost for Fruits														
a. Number	plants	3,000	0	0	0	0	0	0	0	0	0	0	0	0
b. Quantity	g/pot	450	0	0	0	0	0	0	0	0	0	0	0	0
c. Amount	Q/Q	29.6	0	0	0	0	0	0	0	0	0	0	0	0
d. Unit Cost	Q/Q	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
e. Cost for Compost for Fruits	Q	740.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	740.13
9) Seed of coffee														
a. Number	seeds	0	0	5,500	0	0	0	0	0	0	0	0	0	0
b. Unit Cost	Q/5000	770.00	770.00	770.00	770.00	770.00	770.00	770.00	770.00	770.00	770.00	770.00	770.00	770.00
c. Cost for seed of coffee	Q	0.00	0.00	847.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	847.00
10) Seed of avocado														
a. Number	seeds	2,220	0	0	0	0	0	0	0	0	0	0	0	0
b. Unit Cost	Q/seed	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
c. Cost for seed of avocado	Q	1,110.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,110.00
11) Seed of peach														
a. Number	seeds	780	0	0	0	0	0	0	0	0	0	0	0	0
b. Unit Cost	Q/seed	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
c. Cost for seed of peach	Q	390.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	390.00
12) Seedling of avocado														
a. Number	seeds	0	0	0	0	0	0	0	0	0	0	0	0	0
b. Unit Cost	Q/seed	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
c. Cost for seedling of avocado	Q	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13) Seedling of peach														
a. Number	seeds	0	0	0	0	0	0	0	0	0	0	0	0	0
b. Unit Cost	Q/seed	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
c. Cost for seedling of peach	Q	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14) Agricultural chemical														
a. Cost for Ag-chemical		100	100	100	100	100	100	100	100	100	100	100	100	100
15) Fertilizers														
a. Quantity	K-P	0.16	0.16	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.16	0.16	0.16	0
b. Unit Cost	Q/Q	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
c. Cost for Fertilizers	Q	16.00	16.00	43.00	43.00	43.00	43.00	43.00	43.00	43.00	16.00	16.00	16.00	0.00
d. Total Cost for Consuming Material	Q	3,338.24	116.00	3,030.79	143.00	143.00	1,643.00	143.00	143.00	143.00	116.00	116.00	100.00	9,175.03
4. Other Cost														
1) Administrative Cost	Q	596.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	596.03
2) Depreciation*1	Q	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	720.00
3) Miscellaneous*2	Q	166.91	5.80	151.54	7.15	7.15	82.15	7.15	7.15	7.15	5.80	5.80	5.80	458.75
4) Sub-total	Q	822.94	65.80	211.54	67.15	67.15	142.15	67.15	67.15	67.15	65.80	65.80	65.80	1,774.78
5. Total Cost	Q	4,757.31	339.93	4,715.36	368.28	363.18	4,943.28	368.28	352.98	368.28	334.83	339.93	318.03	17,571.67

*1: Depreciation cost is calculated for vnyal which is assumed to cost Q2,100 for 136 sq.m. of vnyal house. It is assumed to be replaced after 36 months. (Q2,100 / 36 months = approx. Q50)

*2: Miscellaneous cost is calculated as 5% of the total cost for consuming material.

Cuadro 8.4.2(1) Costos del Proyecto: Plan de Mejoramiento del Sistema de Agua Potable (1/2)

Q1.00=Yen15.5

Contenido	Especificacion	Cantidad	Unidad de Medida	Precio Unitario (Q.)	Costo (Q.)	Observacion
1. Obra de Cruse de Quebrada					25,292.79	
1-1 Obra de Cruse de Quebrada 20 ms.		4.00	unidad	3128.74	12,514.98	
1-2 Obra de Cruse de Quebrada 30 ms.		3.00	unidad	4259.27	12,777.81	
2. Obra de Proteccion de las Tuberias		200.00	unidad	1438.81	287,761.60	
3. Construccion del Tanque de Distribucion					174,835.57	
Preparacion de terreno		87.12	m2	15.60	1,359.07	
Marca en terreno		31.36	m2	39.00	1,223.04	
Excavacion	en terreno duro	65.34	m3	12.00	784.08	
Relleno y compactacion	suelo original	24.66	m3	20.57	507.26	
Cimiento	grava 3/4"	4.70	m3	132.50	622.75	
Concreto de base	f'c = 2,000psi	1.56	m3	1319.71	2,058.75	
Concreto	f'c = 3,000psi	26.14	m3	1384.84	36,199.72	
Hierro corrugado	Grado 40.0ksi	83.33	Hlb	507.00	42,248.31	
Parada de agua	150mm PVC	21.40	ml	117.00	2,503.80	
Escarela	Acero inoxidable 5/8"	18.00	unidad	522.60	9,406.80	
Formaletas		169.00	m2	273.00	46,137.00	
Tapa de manhole		1.00	unidad	1560.00	1,560.00	
Obra de soporte		50.00	m3	78.00	3,900.00	
Saffording		95.00	m2	156.00	14,820.00	
Sleeves		1.00	Global	585.00	585.00	
Impermeable		70.00	m2	156.00	10,920.00	

* except labor cost (civil work, pipe installation work, transportation fee)

Cuadro 8.4.3(1) Costos del Proyecto: Plan de Calidad de Agua en Panyebar

Q1.00=Yen15.5

Contenido	Especificacion	Cantidad	Unidad de Medida	Precio Unitario (Q.)	Costo (Q.)	Observacion
1) Instalacion de Equipo Dosificador						
DOSIFICADOR	DSA 310 RE-IE	1	Unidad	4,886.60	4,886.60	* Tubo de aspiracion transparente, 1.20m
VALVULA ESFERA	PLASTICA 1"	2	Unidad	41.08	82.16	de largo equipado con lastre y crepina.
MANOMETRO	PRESION 0-100 PSI	1	Unidad	37.44	37.44	
RED.BUSHING	PVC 6" x 3"	2	Unidad	186.61	373.22	* La mano de obra no incluye trabajos de
RED.BUSHING	PVC 3" x 1"	2	Unidad	22.10	44.20	obra civil.
UNION UNIVERSAL	PVC 1"	4	Unidad	28.62	114.48	
FILTRO DE 1"	(ANILLOS) MARCA AZUD	1	Unidad	199.00	199.00	
TEE	PVC 6"	2	Unidad	588.82	1,177.64	
VALVULA MARIPOSA	HF 6" WD-3010-3	1	Unidad	1,470.56	1,470.56	
BRIDA	6" PVC	2	Unidad	324.89	649.78	
TORNILLOS 5/8 x 6" COMP		16	Unidad	11.47	183.52	
MANO DE OBRA POR INSTALACION		1	Unidad	5,000.00	5,000.00	
ARTICULOS VARIOS Y MISCELANEOS		1	Unidad	1,100.00	1,100.00	
CASETA DE TANQUE DE DEPOSITO	0.8x0.8xH1.2m	1	Unidad			
BLOQUE DE CONCRETO	Tipo liviano de 14x19x39cms	0.096	Millar	2,546.67	244.48	
CEMENTO	Gris nacional	1	42.5kg	30.10	30.10	
ARENA	de rio	0.8	m3	74.62	59.70	
LAMINA GALVANIZADA LISA	3'x8'	1	Unidad	108.63	108.63	
PUERTA DE PLYWOOD	pino de 0.7x1.2m	1	Unidad	400.00	400.00	
TANQUE 55 GLS DE HIPOCLORITO	10%	1	55GLS	514.22	514.22	
sub-total					16,675.73	
Instalacion de Equipo Dosificador		2	unidad	16,675.73	33,351.45	
TOTAL					33,351.45	

Cuadro 8.4.4(1) Conceptos Básicos de Cálculo de Máquinas Despulpadoras

(1) Processing Days

Total beneficiaries	80 families
Total coffee area	40 manzana
Yield	120 qq (fresh-bean)/manzana
Total Production (fresh-bean)	4,800 qq (fresh-bean)
Capacity of processing machine, hand operated	5 qq (fresh-bean)/hr
Working hours per day	8 hrs/day
Coffee Processing Days	70 days
From fresh bean to dry beans	20%
From fresh bean to wet beans	30%
Total production (beans)	1,440 qq (beans)

(2) Drying Yard

Capacity of processing machine, hand operated	5 qq (fresh-bean)/hr
Working hours per day	8 hrs/day
Maximum fresh bean processing per day per machine	40 qq (fresh-bean)/day
Wet beans processed per day per machine	12.0 qq(wet beans)/day
Required area for drying yard per pulping machine	1.43 m ² /qq(wet beans)
Required area of drying yard per day per pulping machine	17.2 m ²
Drying-up days (1 rotation)	5 days
Required area of drying yard per pulping machine	86 m²
Number of pulping machines	6
Total area of drying yard	515 m²

(3) Required Water

Required water rate	20 liters/qq(fresh-bean)
Average fresh bean processing per day	40 qq (fresh-bean)/day
Average water required per day	800 liters/day
Required discharge (24hrs average)	0.009 lit./s = 0.56 lit./min
Required discharge (8hrs average)	0.028 lit./s = 1.67 lit./min
Times of 1 house domestic water consumption	1.3 times of 1 house consumption

Note : Domestic Water Consumption

Domestic water consumption (1house=6.9person, 90lit/day/person)	621 liters/day/house
Average for 24 hours	0.007 lit./s = 0.43 lit./min
Average for 8 hours	0.022 lit./s = 1.29 lit./min

Cuadro 8.4.4(2) Flujo de Costo y Beneficios

(unit : Q.)

Year	Cost				Benefit	Net Cash Flow
	Capital Cost *1	O&M Cost*2	Replacement Cost*3	Total Cost		
1	75,370	1,000		76,370	16,800	-59,570
2		1,000	2,000	3,000	16,800	13,800
3		1,000	2,000	3,000	16,800	13,800
4		1,000	2,000	3,000	16,800	13,800
5		1,000	2,000	3,000	16,800	13,800
6		1,000	2,000	3,000	16,800	13,800
7		1,000	2,000	3,000	16,800	13,800
8		1,000	2,000	3,000	16,800	13,800
9		1,000	2,000	3,000	16,800	13,800
10		1,000	75,370	76,370	16,800	-59,570
11		1,000	2,000	3,000	16,800	13,800
12		1,000	2,000	3,000	16,800	13,800
13		1,000	2,000	3,000	16,800	13,800
14		1,000	2,000	3,000	16,800	13,800
15		1,000	2,000	3,000	16,800	13,800
16		1,000	2,000	3,000	16,800	13,800
17		1,000	2,000	3,000	16,800	13,800
18		1,000	2,000	3,000	16,800	13,800
19		1,000	2,000	3,000	16,800	13,800
20		1,000	75,370	76,370	16,800	-59,570
21		1,000	2,000	3,000	16,800	13,800
22		1,000	2,000	3,000	16,800	13,800
23		1,000	2,000	3,000	16,800	13,800
24		1,000	2,000	3,000	16,800	13,800
25		1,000	2,000	3,000	16,800	13,800
26		1,000	2,000	3,000	16,800	13,800
27		1,000	2,000	3,000	16,800	13,800
28		1,000	2,000	3,000	16,800	13,800
29		1,000	2,000	3,000	16,800	13,800
30		1,000	2,000	3,000	16,800	13,800

EIRR :	16.7%
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Note:

*1 : Capital cost includes labor cost for the unskilled labors provided by the beneficiaries.

*2 : O & M Cost consists of cost for lubricant, payment for operators and so on.

*3 : Replacement Cost : pulping machines and others facilities, every 10 years.

Cuadro 8.5.1(1) Costos del Proyecto: Plan de Reforestación en Pachum

Item	Especificación	Cantidad	Unidad	Precio (Q)	Total (Q)	Notas
1. Establecimiento del Vivero						
1.1	Instalación de sistema de riego	2	unidad	896.00	1,792.00	
1.2	Construcción de vivero	10	unidad	71.47	714.70	1 unidad = 40 blocks
1.3	Materiales para invernadero	2	unidad	2,890.80	5,781.60	
1.4	Compra de plantitas y semillas					
1)	semilla	0.5	kg	1,250.00	625.00	
2)	semilla	0.5	kg	1,250.00	625.00	
3)	semilla	0.5	kg	800.00	400.00	
4)	plantita	200	unidad	10.00	2,000.00	
5)	plantita	1333	unidad	11.00	14,663.00	
6)	injerto	350	unidad	0.75	262.50	
1.5	Pote plástico					
1)	Tamaño para árbol de hoja puntiaguda	8,000	1,000 hojas	21.56	172.48	
2)	Tamaño para árbol frutal	2,000	1,000 hojas	37.73	75.46	
1.6	Compra de herramientas de jardinería	2	juego	5,597.50	11,195.00	
	Subtotal				38,306.74	
2. Contrucción de Caseta						
		2	unidad	3,675.70	7,351.40	
3. Herramientas para Plantación						
		2	juego	1,769.00	3,538.00	
					49,196.14	
4. Capacitación						
		60	día	1,300.00	78,000.00	
5. Gira de estudio						
	15 personas/bús	4	vez	2,147.00	8,588.00	
					86,588.00	
6. Transporte						
					4,919.61	10% de Costo de Materiales
TOTAL					140,703.75	

Cuadro 8.5.1(3) Resumen de Balance para Manejo de Invernadero en Pachum (1/4)

(1) Balance Total	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Notas
(1/4)											
(Ingresos)											
(1) Plantillas											
Pinos, Aliso	1,700	200	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	
Melocotón	1,600	2,400	2,400	3,200	4,800	4,800	4,800	4,800	4,800	4,800	
Aguacate	2,250	6,000	6,000	6,000	9,000	9,000	9,000	9,000	9,000	9,000	
Subtotal (Q)	5,550	8,600	10,400	11,200	15,800	15,800	15,800	15,800	15,800	15,800	
(2) Arboles Frutales											
Melocotón	0	0	0	35,000	96,250	218,750	315,000	385,000	420,000	420,000	
Aguacate	0	563	1,500	4,502	19,850	35,402	50,873	67,226	79,065	94,828	
Subtotal (Q)	0	563	1,500	39,502	116,100	254,152	365,873	452,226	499,065	514,828	
Ingresos Totales (Q)	5,550	9,163	11,900	50,702	131,900	269,952	381,673	468,026	514,865	530,628	
(Expensas)											
(3) Producción de plantillas											
Pinos, Aliso	0	0	135	135	135	135	135	135	135	135	
Melocotón	0	2,295	2,944	4,054	5,349	6,459	7,384	7,754	7,754	7,754	
Aguacate	0	1,925	2,389	3,314	4,239	4,979	5,719	6,089	6,089	6,089	
Subtotal (Q)	0	4,220	5,468	7,503	9,723	11,573	13,238	13,978	13,978	13,978	
(4) Costo de O & M											
Renovación de plástico	0	0	1,500	0	0	1,500	0	0	1,500	0	
Herramientas de jardinería	0	0	0	0	0	2,500	2,500	0	0	0	
Reparación de Caseta	0	0	50	0	0	50	0	0	50	0	
Subtotal (Q)	0	0	1,550	0	0	4,050	2,500	0	1,550	0	
Expensas Totales (Q)	0	4,220	7,018	7,503	9,723	15,623	15,738	13,978	15,528	13,978	(A)
TOTAL (Q)	5,550	4,943	4,882	43,199	122,178	254,329	365,938	454,049	499,337	516,650	
(Manejo de fondos del vivero)											
Ingresos por venta de plantillas											
Ahorros / persona / mes	5,550	8,600	10,400	11,200	15,800	15,800	15,800	15,800	15,800	15,800	
Ahorros / año	0.50	0.50	0.50	1.00	2.00	5.00	5.00	5.00	5.00	5.00	
Total (Q)	288	288	288	576	1,152	2,880	2,880	2,880	2,880	2,880	(B)
(B) - (A) en el próximo año	5,838	10,506	14,176	18,450	25,679	28,736	31,678	36,381	39,533	44,235	
	1,618	3,488	6,674	8,727	10,956	12,998	17,701	20,853	25,555		

Cuadro 8.5.1(3) Resumen de Balance para Manejo de Invernadero en Pachum (2/4)

(2/4)												
(2) Balance de Pinos (colorado y blanco) y Aliso												
(Ingresos)	año	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Notas
(1) Plantillas												
Cantidad de plantillas cultivadas		4,000	4,000	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250
Índice de germinación		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Cantidad de producción		3,200	3,200	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Plantilla plantada (producción)		1,500	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Plantilla plantada (compra)		1,500	0	0	0	0	0	0	0	0	0	0
Cantidad total de plantación		3,000	6,000	9,000	12,000	15,000	18,000	21,000	24,000	27,000	30,000	30,000
Plantillas para venta		1,700	200	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Precio por unidad (Q)		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Ingresos por plantillas (Q)		1,700	200	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Ingresos Totales (Q)												
(Expensas)												
(2) Compra de materiales												
Bolsas plásticas		4,000	4,000	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250
Precio por unidad (Q/1,000 hojas)		0	0	21.56	21.56	21.56	21.56	21.56	21.56	21.56	21.56	21.56
Costos de Materiales (Q)		0	0	135	135	135	135	135	135	135	135	135
Expensas Totales (Q)		0	0	135	135	135	135	135	135	135	135	135
TOTAL (Q)		1,700	200	1,865	1,865	1,865	1,865	1,865	1,865	1,865	1,865	1,865

Cuadro 8.5.1(3) Resumen de Balance para Manejo de Invernadero en Pachum (3/4)

(3/4)												
(3) Balance de Arboles Frutales (Melocotón)												
(Ingresos)	año	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Notas
(1) Plantillas												
Cantidad de plantillas cultivadas		834	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Índice de éxito de injerto y germinación		0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Cantidad de producción		500	600	600	600	600	600	600	600	600	600	600
Plantilla plantada (producción)		300	300	300	200	0	0	0	0	0	0	0
Plantilla plantada (compra)		100	0	0	0	0	0	0	0	0	0	0
Cantidad total de plantación		400	700	1,000	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Plantillas para venta		200	300	300	400	600	600	600	600	600	600	600
Precio por unidad (Q)		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Ingresos por plantillas (Q)		1,600	2,400	2,400	3,200	4,800	4,800	4,800	4,800	4,800	4,800	4,800
(2) Producto												
Cosecha (quintal/árbol)		0	0	0	0.25	0.50	1.00	1.00	1.00	1.00	1.00	1.00
Cantidad total (quintal)		0	0	0	100.00	275.00	625.00	900.00	1,100.00	1,200.00	1,200.00	1,200.00
Cosecha para venta (quintal)		0	0	0	70.00	192.50	437.50	630.00	770.00	840.00	840.00	840.00
Precio por unidad (Q/lb)		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Ingresos por frutas (Q)		0	0	0	35,000	96,250	218,750	315,000	385,000	420,000	420,000	420,000
Ingresos Totales (Q)		1,600	2,400	2,400	38,200	101,050	223,550	319,800	389,800	424,800	424,800	424,800
(Expensas)												
(3) Injertos												
Cantidad de injertos		834	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Precio por unidad (Q)		0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Subtotal (Q)		0	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
(4) Manejo de Enfermedades												
Productos químicos para desinfección		0	0	56	56	56	56	56	56	56	56	56
Insecticida y fungicida		0	1,295	1,850	2,960	4,255	5,365	6,290	6,660	6,660	6,660	6,660
Subtotal (Q)		0	1,295	1,906	3,016	4,311	5,421	6,346	6,716	6,716	6,716	6,716
(5) Materiales												
Bolsas plásticas		834	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Precio por Unidad (Q/1,000 unidades)		0.00	0.00	37.73	37.73	37.73	37.73	37.73	37.73	37.73	37.73	37.73
Costos de Materiales (Q)		0	0	38	38	38	38	38	38	38	38	38
Expensas Totales (Q)		0	2,295	2,944	4,054	5,349	6,459	7,384	7,754	7,754	7,754	7,754
TOTAL (Q)		1,600	105	544	34,146	95,701	217,091	312,416	382,046	417,046	417,046	417,046

Nota : El número de plantas de melocotón por familia es de 8 árboles; de los cuales 6, son para agroforestación y 2 para jardín doméstico. La suma abarca a 150 familias de la comunidad.

Cuadro 8.5.1(3) Resumen de Balance para Manejo de Invernadero en Pachum (4/4)

(4) Balance de Árboles Frutales (Aguacate)											(4/4)
(Ingresos)	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Notas
(1) Plantillas											
Cantidad de plantillas cultivadas	500	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
Índice de éxito de injerto y germinación	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	
Cantidad de producción	300	600	600	600	600	600	600	600	600	600	
Plantilla plantada (producción)	150	200	200	200	0	0	0	0	0	0	
Plantilla plantada (compra)	150	0	0	0	0	0	0	0	0	0	
Cantidad total de plantación	300	500	700	900	900	900	900	900	900	900	
Plantillas para venta	150	400	400	400	600	600	600	600	600	600	
Precio por unidad (Q)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	
Ingresos por plantillas (Q)	2,250	6,000	6,000	6,000	9,000	9,000	9,000	9,000	9,000	9,000	
(2) Producto											
Cosecha (lb/árbol)	0	2.5	5	16	50	75	100	112.5	125	150	1 lb = 45.4 g
Cantidad total (lb)	0	750	2,000	6,003	18,905	33,716	48,450	64,025	75,300	90,313	
Cosecha para venta (lb)	0	375	1,000	3,001	13,234	23,601	33,915	44,818	52,710	63,219	
Precio para venta (Q/lb)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
Ingresos por frutas (Q)	0	563	1,500	4,502	19,850	35,402	50,873	67,226	79,065	94,828	
Ingresos Totales (Q)	2,250	6,563	7,500	10,502	28,850	44,402	59,873	76,226	88,065	103,828	
(Expensas)											
(3) Injertos											
Cantidad de injertos	500	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
Precio por unidad (Q)	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Subtotal (Q)	0	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
(4) Manejo de Enfermedades											
Productos químicos para desinfección	0	0	56	56	56	56	56	56	56	56	
Insecticida y fungicida	0	925	1,295	2,220	3,145	3,885	4,625	4,995	4,995	4,995	
Subtotal (Q)	0	925	1,351	2,276	3,201	3,941	4,681	5,051	5,051	5,051	
(5) Materiales											
Bolsas plásticas	500	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
Precio por unidad (Q/1,000 unidades)	0.00	0.00	37.73	37.73	37.73	37.73	37.73	37.73	37.73	37.73	
Costos de Materiales (Q)	0	0	38	38	38	38	38	38	38	38	
Expensas Totales (Q)	0	1,925	2,389	3,314	4,239	4,979	5,719	6,089	6,089	6,089	
TOTAL (Q)	2,250	4,638	5,111	7,188	24,611	39,423	54,154	70,137	81,976	97,739	

Note : El número de plantas de aguacate por familia es de 6 árboles; de los cuales 4, son para agroforestación y 2 para jardín doméstico. La suma abarca a 150 familias de la comunidad.

Cuadro 8.5.2 (1) Costo de Proyecto

Description	Unit	Unit price (Q)	total value (Q)
18 weeks chicken	200 unit	37	7,400
Feed (concentrated)	264qq	110	29,040
Medicines			
-colera aviar	400 dosage	0.41	164
-newcastle cepa lasota	1,200 dosage	0.12	144
- coriza invecuosa	400 dosage	0.12	48
-viruela aviar	400 dosage	0.40	160
-bronquitis infecciosa	400 dosage	0.12	48
-vitamins	4,400 gram	0.41	1,804
sub-total			2,368
Hen house materials			
-lamina(roofing)	4 sheet	300	1,200
-iron net	40 yard	18	720
-nails	30 lbs.	4	120
-nylon net	40yard	10	400
-cement(500PSI)	4qq	60	240
-feeder	12pcs.	38	456
-water container	8 pcs.	25	200
-Wooden pillar	various		876
-Wooden board	various		1,320
-Nest	40	5	200
-Saw dust	20bag	5	100
-Labor for hen house construction and transport			(2,600)
sub-total			8,432
Feeding silo			
-Feeding silo	4	375	1,500
-Labors for construction			1,800
-Transportation of input materials			800
sub-total			4,100
Training / NGO technical guidance			22,100
Depreciation cost (5% of hen house cost)			422
Operational fee (3% of total income)			1,820
Total Cost			75,682

Supported by the project Q.73,082

Born by beneficiaries Q.2,600

Cuadro 8.5.2(2) Lista del Grupo de Beneficiarios

Beneficiaries of Group 1 from Sector 1

1.	Juana Ico
2.	Angelica Marina Lux Ico
3.	Maria Teresa Baten
4.	Catarina Lux Mejia
5.	Antonia Estela Lux Mejia
6.	Maria Chiti Lux
7.	Maria Mejia Lopez
8.	Magdalena Mejia
9.	Juana Chiti Lux
10.	Ana Lux Castro

Beneficiaries of Group 2 from Sector 1

1.	Elia Magdalena Lux Castro
2.	Elva Estela Lucas
3.	Ana Patricia Muy Gomez
4.	Elizabeth Chiti Lopez
5.	Magdalena Lopez Joj
6.	Antonia Chacaj Tzoy
7.	Antonia Lopez Chiti
8.	Ana Tosalia Lopez Chiti
9.	Celia Ofelia Muz Chiti
10.	Vilma Magdalena Muz Chiti

Beneficiaries of Group 1 from Sector 2

1.	Juana Lux Lopez
2.	Catarina Pu Chacaj
3.	Antonia Chiti Lux
4.	Maria Chiti Lux Segundo
5.	Magdalena Lopez Lux
6.	Maria Chiti Lux Tercero
7.	Antonia Pu Lopez
8.	Magdalena Lux Lopez
9.	Maria Pu Lopez
10.	Catarina Lux Mejia

Beneficiaries of Group 2 from Sector 2

1.	Cristina Lux Uz
2.	Ana Muz Lopez
3.	Catarina Muz Lopez
4.	Maria Chiti Lux
5.	Magdalena Lux Lopez
6.	Maria Lopez Lux
7.	Juan Lux Muz
8.	Magdalena Chiti Pu
9.	Antonia Luz Lopez
10.	Antonia Muz Lopez
11.	Magdalena Lopez Ixcoteyac

Cuadro 8.5.2 (3) Análisis del Flujo de Dinero del Proyecto de Crianza de Aves de Postura

Cycle	1st	Remark
Stage	<i>4 members (200 chickens)</i>	
<i>In-coming</i>		
1. Production *1	60,660	
2. Grant from JICA *2	27,932	
3. Transfer from previous period	0	
4. Provision for Revolving *3	38,808	
5. Total In-coming	127,400	
<i>Out-going</i>		
1. Project Cost		
1) Young Chicken (16 weeks)	7,400	
2) Feed, medicine and vitamin	31,408	
3) Labor for Caring Chicken	10,800	
4) Hen house	5,832	
5) Training / NGO technical guidance	22,100	
6) Maintenance & Repair	422	
7) Administrative charges	1,820	
8) Sub-total	79,782	
2. Contingency		
5% of total production cost : 1)-2)	1,940	
3. Total Out-going	81,722	
<i>Balance</i>		
Current Balance	45,678	
(Necessary investment for next cycle)	38,808	
Net Saving	6,870	

*1 : 24 eggs/month/chickin x 200 chickins x 1 cycle(18 months) = 86,400 eggs/cycle
86,450 eggs/chickin x 0.65 Q/egg = 56,160 Q
150 old chickins x 30 Q/chickin = 4,500 Q
total 60,660 Q

*2 : Training / NGO technical guidance fee = 22,100 Q
Hen house construction including labor fee = 5,832 Q
total = 27,932 Q

*3 : (Cost for young chickin) + (feed, medicine and vitamin)

Cuadro 8.5.3(1) Costo de Proyecto: Plan de Calidad de Agua Potable en Pachum (2/3)

Q1.00=Yen15.5

Contenido	Especificacion	Cantidad	Unidad de Medida	Precio Unitario (Q.)	Costo (Q.)	Observacion
DOSIFICADOR	DSA 310 RE-IE	1	Unidad	4,886.60	4,886.60	* Tubo de aspiracion transparente, 1.20m
VALVULA ESFERA	PLASTICA 1"	2	Unidad	41.08	82.16	de largo equipado con lastre y crepina.
MANOMETRO	PRESION 0-100 PSI	1	Unidad	37.44	37.44	
RED.BUSHING	PVC 6" x 3"	2	Unidad	186.61	373.22	* La mano de obra no incluye trabajos de
RED.BUSHING	PVC 3" x 1"	2	Unidad	22.10	44.20	obra civil.
UNION UNIVERSAL	PVC 1"	4	Unidad	28.62	114.48	
FILTRO DE 1"	(ANILLOS) MARCA AZUD	1	Unidad	199.00	199.00	
TEE	PVC 6"	2	Unidad	588.82	1,177.64	
VALVULA MARIPOSA	HF 6" WD-3010-3	1	Unidad	1,470.56	1,470.56	
BRIDA	6" PVC	2	Unidad	324.89	649.78	
TORNILLOS 5/8 x 6" COMP		16	Unidad	11.47	183.52	9,218.60
MANO DE OBRA POR INSTALACION		1	Unidad	5,000.00	5,000.00	
ARTICULOS VARIOS Y MISCELANEOS		1	Unidad	1,100.00	1,100.00	
CASETA DE TANQUE DE DEPOSITO	0.8x0.8xH1.2m	1	Unidad			
BLOQUE DE CONCRETO	Tipo liviano de 14x19x39cms	0.096	Millar	2,546.67	244.48	
CEMENTO	Gris nacional	1	42.5kg	30.10	30.10	
ARENA	de rio	0.8	m3	74.62	59.70	
LAMINA GALVANIZADA LISA	3'x8'	1	Unidad	108.63	108.63	
PUERTA DE PLYWOOD	pino de 0.7x1.2m	1	Unidad	400.00	400.00	
TANQUE 55 GLS DE HIPOCLORITO	10%	1	55GLS	514.22	514.22	
TOTAL					16,675.73	

