Table 3.2.14 Water Test Results and Relevant Irrigation Water Quality Standards (2/3)

Test Results (1/2)

Water test carried out in Rep. Dominica	Q1 Sabaneta Reservoir	Q2 San Juan River, San Juan City	Q3 Hato Viej. Arroyo, Rolo R.	Q4 Mijo Head-Works, Mijo R.	Q5 Sabana Yegua Reservoir	Q6 Tabara Canal, Ysura R.	Q7 Jura River Lateral 7	Q8 Pueblo Viejo Grndwater
ammonium-N	0.018	0.18	not done	0.9	0.064	0.028	not done	0.077
bicarbonate	95.4	96.4	97.4	98.4	99.4	100.4	101.4	102.4
bicarbonate	1.56	1.58	1.60	1.61	1.63	1.65	1.66	1.68
calcium	23.6	94.4	56.1	16.2	39.5	44.0	114	65.00
calcium	0.59	2.35	1.40	0.40	0.99	1.10	2.84	1.62
carbonates	15.9	24.6	33.3	10.2	21.8	20.2	21.6	36.2
chloride	30.5	34.4	103.8	26.8	42.2	53.6	734.9	103.2
chloride	0.86	0.97	2.93	0.76	1.19	1.51	[illegible]	2.92
Escherichia coli	positive	positive	not done	ND	positive	positive	positive	not done
fluoride	1.38	0.128	not done	0.415	0.121	0.135	not done	not done
iron	ND	0.1	3.74	0	0.02	53.6	0.42	0.02
magnesium	4.88	9.75	29.2	4.82	8.88	9.75	10.3	12.0
magnesium	0.201	0.401	1.202	0.198	0.365	0.401	0.424	0.494
manganese	0.01	0.01	0.04	0.01	0.01	0.01	0.14	0.02
nitrate	1.26	4.26	not done	5.86	2.88	3.54	not done	1.66
phosphate	2.48	13.79	not done	10.03	4.06	3.16	not done	5.54
potassium	1.00	2.28	7.95	0.80	2.02	17.6	13.7	3.1
sodium	9.19	11.6	99	8.51	26.4	25.0	491	44.3
sodium	0.400	0.504	4.304	0.370	1.148	1.087	21.348	1.926
SAR	0.64	0.43	3.77	0.67	1.40	1.26	16.70	1.87
sulfates	2.46	2.88	41.2	2.16	4.15	3.98	37.8	103.2
pH	8.2	7.8	8.0	8.2	8.0	8.3	7.4	7.3
EC_w	200 : C1	460 : C2	[illegible]	160 : C1	390 : C2	410 : C2	700 : C2	620 : C2
TSS	50	30	140	110	80	80	520	90
BOD5	ND	ND	not done	ND	ND	ND	not done	ND
COD	ND	13.14	not done	6.57	ND	19.70	not done	6.56
DO	4.06	3.25	not done	4.87	5.48	6.9	not done	1.83

Table 3.2.14 Water Test Results and Relevant Irrigation Water Quality Standards (2/3)

Test Results (1/2)

Water test carried out in Rep. Dominica	Q1 Sabaneta Reservoir	Q2 San Juan River, San Juan City	Q3 Hato Viej. Arroyo. Rolo R.	Q4 Mijo Head-Works, Mijo R.	Q5 Sabana Yegua Reservoir	Q6 Tabara Canal, Ysura R.	Q7 Jura River Lateral 7	Q8 Pueblo Viejo Grndwater
ammonium-N	0.018	0.18	not done	0.9	0.064	0.028	not done	0.077
bicarbonate	95.4	96.4	97.4	98.4	99.4	100.4	101.4	102.4
bicarbonate	1.56	1.58	1.60	1.61	1.63	1.65	1.66	1.68
calcium	23.6	94.4	56.1	16.2	39.5	44.0	114	65.00
calcium	0.59	2.35	1.40	0.40	0.99	1.10	2.84	1.62
carbonates	15.9	24.6	33.3	10.2	21.8	20.2	21.6	36.2
chloride	30.5	34.4	103.8	26.8	42.2	53.6	734.9	103.2
chloride	0.86	0.97	2.93	0.76	1.19	1.51	20.76	2.92
Escherichia coli	positive	positive	not done	ND	positive	positive	positive	not done
fluoride	1.38	0.128	not done	0.415	0.121	0.135	not done	not done
iron	ND	0.1	3.74	0	0.02	53.6	0.42	0.02
magnesium	4.88	9.75	29.2	4.82	8.88	9.75	10.3	12.0
magnesium	0.201	0.401	1.202	0.198	0.365	0.401	0.424	0.494
manganese	0.01	0.01	0.04	0.01	0.01	0.01	0.14	0.02
nitrate	1.26	4.26	not done	5.86	2.88	3.54	not done	1.66
phosphate	2.48	13.79	not done	10.03	4.06	3.16	not done	5.54
potassium	1.00	2.28	7.95	0.80	2.02	17.6	13.7	3.1
sodium	9.19	11.6	99	8.51	26.4	25.0	491	44.3
sodium	0.400	0.504	4.304	0.370	1.148	1.087	21.348	1.926
SAR	0.64	0.43	3.77	0.67	1.40	1.26	16.70	1.87
sulfates	2.46	2.88	41.2	2.16	4.15	3.98	37.8	103.2
pH	8.2	7.8	8.0	8.2	8.0	8.3	7.4	7.3
EC_w	200 : C1	460 : C2	830 : C2	160 : C1	390 : C2	410 : C2	700 : C2	620 : C2
TSS	50	30	140	110	80	80	520	90
BOD5	ND	ND	not done	ND	ND	ND	not done	ND
COD	ND	13.14	not done	6.57	ND	19.70	not done	6.56
DO	4.06	3.25	not done	4.87	5.48	6.9	not done	1.83

Table [illegible] Water Test Results and Relevant Irrigation Water Quality Standards (2, 3)

Test Results (1)

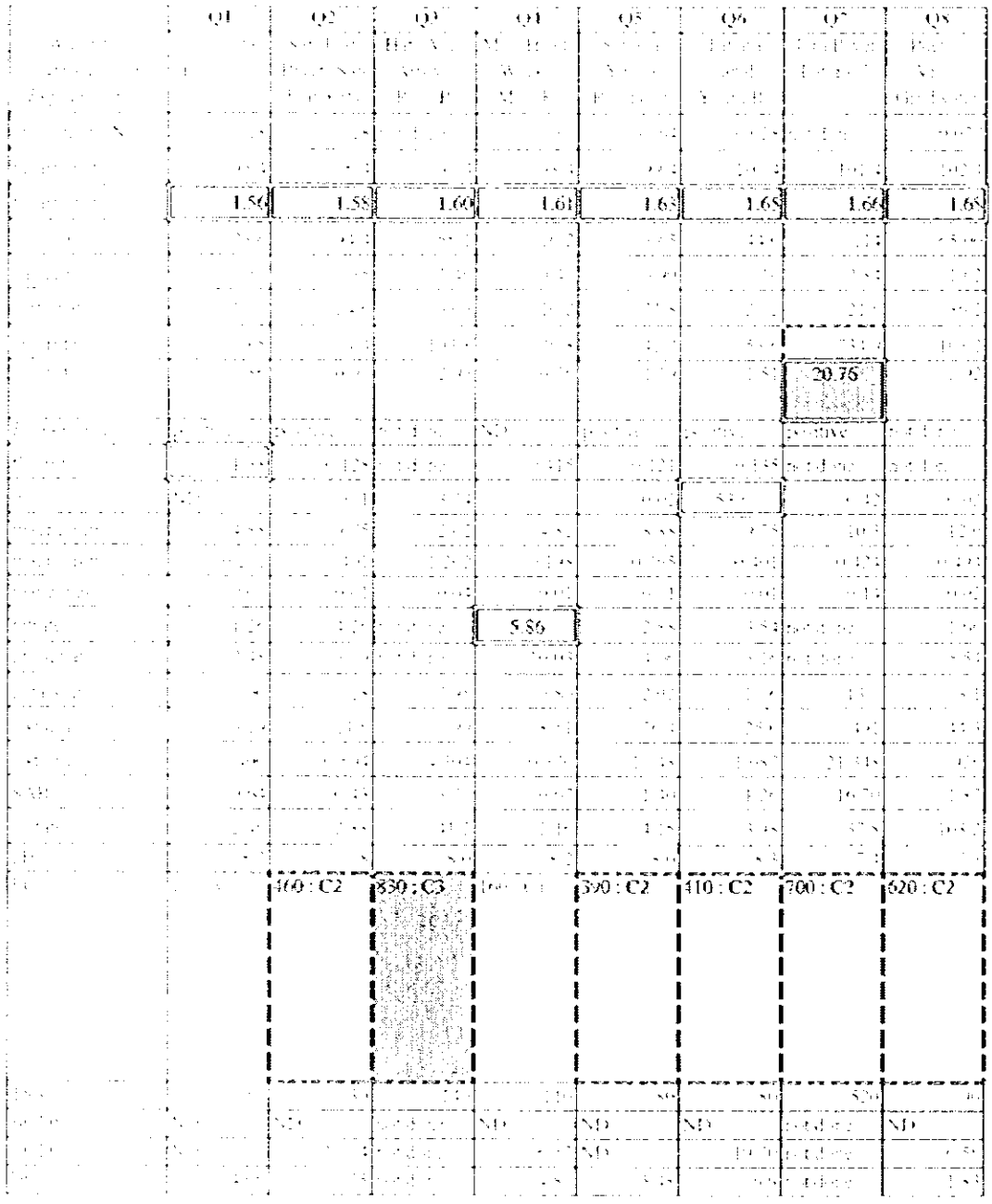


Table 3.2.14 Water Test Results and Relevant Irrigation Water Quality Standards (3/3)

Test Results (2/2)

Water test carried out in Rep. Dominica	Q9 Azua Extension Grndwater	Q10 Santana, Yaque del Sur	Q11 Intake to Rincon L., Yaque R.	Q12 Rincon Lake	Q13 Cachon, Yaque del Sur River	Q14 Arroyo, Main Drn. Endpoint	Q15 Galvan Grndwater	Q16 Enriquillo Lake
ammonium-N	0.011	0.014	not done	1.042	not done	not done	1.016	not done
bicarbonate	103.4	104.4	105.4	106.4	107.4	108.4	109.4	110.4
bicarbonate	1.70	1.71	1.73	1.74	1.76	1.78	1.79	1.81
calcium	72.5	74.6	106	76.5	96.4	87.2	96.8	654
calcium	1.81	1.86	2.64	1.91	2.40	2.17	2.41	16.31
carbonates	33.3	34.8	47.7	92.6	65.1	62.2	29	85.2
chloride	49.8	53.5	88.1	3350	161	134	80.3	58194
chloride	1.41	1.51	2.49	[redacted]	4.55	3.79	2.27	[redacted]
Escherichia coli	ND	positive	not done	ND	not done	not done	positive	not done
fluoride	0.199	0.186	not done	0.415	not done	not done	0.258	not done
iron	0	0.02	0.06	0.06	0.02	0	0.02	0.4
magnesium	12.5	26.2	30.3	240	22.2	30	20.2	2900
magnesium	0.514	1.078	1.247	9.877	0.914	1.235	0.831	119.342
manganese	ND	0	0.01	0.02	0.05	ND	0	0.08
nitrate	[redacted]	0.57	not done	11.9	not done	not done	8.78	not done
phosphate	3.86	5.19	not done	7.93	not done	not done	1.34	not done
potassium	3.35	4.00	3.38	42.0	2.69	8.15	0.75	785
sodium	35.9	93.3	63.6	2118	110	121	27.0	1478
sodium	1.561	4.057	2.765	92.087	4.783	5.261	1.174	64.261
SAR	1.45	3.35	1.98	[redacted]	3.71	4.03	0.92	7.80
sulfates	49.8	53.5	63.3	333	17.4	84.5	3.38	1029
pH	7.2	8.0	7.4	8.7	7.6	8.0	6.9	7.9
EC_w	630 : C2	[redacted]	[redacted]	7750 : C4	[redacted]	[redacted]	[redacted]	11800 : C4
TSS	60	120	100	240	160	160	1360	2360
BOD5	ND	ND	not done	60.9	not done	not done	ND	not done
COD	13.14	16.42	not done	134.64	not done	not done	19.70	not done
DO	5.28	6.69	not done	6.09	not done	not done	5.48	not done

Table 3.2.14 Water Test Results and Relevant Irrigation Water Quality Standards (3/3)

Test Results (2/2)

Water test carried out in Rep. Dominica	Q9 Azua Extension Grndwater	Q10 Santana, Yaque del Sur	Q11 Intake to Rincon L., Yaque R.	Q12 Rincon Lake	Q13 Cachon, Yaque del Sur River	Q14 Arroyo, Main Drn. Endpoint	Q15 Galvan Grndwater	Q16 Enriquillo Lake
ammonium-N	0.011	0.014	not done	1.042	not done	not done	1.016	not done
bicarbonate	103.4	104.4	105.4	106.4	107.4	108.4	109.4	110.4
bicarbonate	1.70	1.71	1.73	1.74	1.76	1.78	1.79	1.81
calcium	72.5	74.6	106	76.5	96.4	87.2	96.8	654
calcium	1.81	1.86	2.64	1.91	2.40	2.17	2.41	16.31
carbonates	33.3	34.8	47.7	92.6	65.1	62.2	29	85.2
chloride	49.8	53.5	88.1	3350	161	134	80.3	58194
chloride	1.41	1.51	2.49	94.63	4.55	3.79	2.27	1643.90
Escherichia coli	ND	positive	not done	ND	not done	not done	positive	not done
fluoride	0.199	0.186	not done	0.415	not done	not done	0.258	not done
iron	0	0.02	0.06	0.06	0.02	0	0.02	0.4
magnesium	12.5	26.2	30.3	240	22.2	30	20.2	2900
magnesium	0.514	1.078	1.247	9.877	0.914	1.235	0.831	119.342
manganese	ND	0	0.01	0.02	0.05	ND	0	0.08
nitrate	2.45	0.57	not done	11.9	not done	not done	8.78	not done
phosphate	3.86	5.19	not done	7.98	not done	not done	1.34	not done
potassium	3.35	4.00	3.38	42.0	2.69	8.15	0.75	785
sodium	35.9	93.3	63.6	2118	110	121	27.0	1478
sodium	1.561	4.057	2.765	92.087	4.783	5.261	1.174	64.261
SAR	1.45	3.35	1.98	37.94	3.71	4.03	0.92	7.80
sulfates	49.8	53.5	63.3	333	17.4	81.5	3.38	1029
pH	7.2	8.0	7.4	8.7	7.6	8.0	6.9	7.9
EC_w	630 : C2	1000 : C3	1130 : C3	9730 : C4	1150 : C3	1210 : C3	770 : C3	11800 : C4
TSS	60	120	100	240	160	160	1360	2360
BOD5	ND	ND	not done	60.9	not done	not done	ND	not done
COD	13.14	16.42	not done	134.64	not done	not done	19.70	not done
DO	5.28	6.69	not done	6.09	not done	not done	5.48	not done

Table 3.2.14 Water Test Results and Relevant Irrigation Water Quality Standards (3.2.3)

Test Results (3.2.2)

	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
	1.26	1.21	1.75	1.74	1.76	1.78	1.75	1.81
				94.63				1643.90
	ND			ND				
	ND							
	2.45			11.9			8.78	
SAR		3.35		37.93	3.71	4.03		7.80
	630 : C2	1000 : C3	1130 : C3	9730 : C4	1150 : C3	1210 : C3	770 : C3	11800 : C4
	ND	ND					ND	

Table 3.3.1 Average Cropping Intensity of Main Irrigation Systems in the Study Area

Irrigation District	Irrigation Area	Average Annual Cropping Intensity (%)					
	(ha)	1992-93	1993-94	1994-95	1995-96	1996-97	Mean
I. San Juan Irrigation District							
Irrigation Block							
(1) J. J. Puello *	11,000	71	70	65	66	65	67.4
(2) San Júan	5,500	105	118	115	120	123	116.2
(3) Hato del Padre	2,000	98	101	101	102	102	100.8
(4) Guanito San Juan	1,000						
(5) Mijo	2,400	115	119	116	122	123	119
(6) Other Small Systems	2,300						
II. Azua Irrigation District							
Irrigation Block							
(1) YSURA Head Race	1,100	82	75	88	93	93	86
(2) YSURA canal	7,700	102	103	98	108	106	103
(3) Extension Area	2,300	60	62	58	62	62	61
(4) Villarpando-Los Guiros	2,400						
(5) Padre las Casas	2,600						
(6) Other Small Systems	2,400						
III. Lago Enrriquillo Irrig. District							
Irrigation Block							
(1) Santana canal system	12,000	67	66	66	62	57	64
IV. Yaque del Sur Irrigation District							
Irrigation Block							
(1) Los Guiros to Santana	2,800						
(2) Tomate Mena System	370	94	94	96	97	97	96
(2) Santana to Tomate	2,800	89	92	92	93	93	92
(3) Tomate to Palo Alto	1,600	75	73	72	71	71	72
(4) Palo Alto to Down Stream	2,700	87	87	86	85	84	86

* There are about 3,000 ha afected by drainage problem, for this reason cropping intensity is very low.

Table 3.3.2 Present Farming Practices of Main Crops in the Study Area (1/2)

Farming Practices	Rice	Red Bean	Plantain & Banana
Land Preparation	62 % of rice farmers plow using tractors, and the rest use animal traction. About 60 % rice farmers make puddling using animal traction, and the rest use tractors. For land leveling 65 % of farmers use animal traction. Animal traction is used mainly by small farmers.	Most bean farmers in irrigated lands use tractors for plowing; but in rainfed lands use animal or manually. Majority of small farmers in irrigated lands use animal traction for Harrowing. Border stripes are made using animal traction.	Majority of plantain and banana farmers use tractors for land harrowing and less farmers use animal traction. Holes are opea manually at distance varying between 3m by 3m or 2 5 m by 2 5 m.
Planted Varieties	Half of farmers use Isa-40, 24 % use Juma-58, others use Taniola, Graciola, Mingolo, Isa-21, IZ-39, Diente de Gato, and IR-6.	The bean varieties commonly planted are PC-50, Jose Beta, P. Checa	Plantain varieties are "Macho por Hembra", "Barahonero". Banana varieties are "Cavendish", "Media mata", and "Gross Michel"
Planting Method	About 45 % of rice farmers use seeds that they keep from the previous harvest, while the rest get seeds from the rice mills or from other farmers. Only small percentage of rice farmers use certified seeds. Amount of seeds is from 120 to 150 kg/ha. All rice farmers pre-germinate the seeds previous to planting. 90 % of farmers plant by the direct seedling method, only 10 % use the transplanting method. Majority farmers plant rice from May to July, but it vary depending on water availability.	Planting period is fixed by SEA regulation from beginning Nov. to mid Dec. About half of farmers use planting materials that they buy from SEA, the rest use material kept from previous harvest or buy noncertified seeds. Average amount of seeds is 105 kg/ha. Almost all farmers plant within borders stripes and use planting machine pulled by animal (horse) traction. Planting density vary widely among farmers.	Planting material are obtained mostly from neighbor farmers and from SEA. Planting density vary from 1,300 to 1600 plant/ha. Fertilizers and some insecticides are located on the bottom of the hole, previous to planting.
Fertilization	All rice farmers apply fertilizers. Majority (87%) apply 3 times. 40 % of farmers use compound formulas such as 15-15-15, 12-24-12, or 16-20-0, and many farmers use only nitrogen fertilizers such as Urea or Ammonia sulfate. Average amount of fertilizer applied is 400kg/ha of compound fertilizer, and 100 kg/ha of Urea. Farmers drain the fields from 2 to 6 days before applying fertilizers.	All farmers apply fertilizers. Half of bean farmers in irrigated areas make 2 application of fertilizers, one compound such as 15-15-15 or 16-20-0 and a second application of Urea. Half of farmers only make the first application. Soil analysis is not done by majority of small and medium farmers. The amount of nutrients applied vary in the range of 30 to 50 kg/ha of N-P-K respectively. Large majority of bean producers in rainfed area do not apply fertilizers.	Majority of farmers apply fertilizers 3 to 4 times per year. The amount of nutrient applied vary widely among farmers, because of lack of technical guidance. Farmers normally apply low to medium level of fertilizers, 225 kg/ha N, and 108 kg/ha of P and K. Only small percentage of farmers make soil analysis before planting banana.
Irrigation	Inadequate management of on-farm irrigation and lack of drainage systems have caused problems such as elevation of freatic water level, salinization of some areas that have been used for rice production.	Majority of farmers make inadequate on-farm water management, and this have caused soil erosion in important areas. Almost all bean farmers apply water by border stripe flooding method. About 90 % farmers irrigate at interval between 10 to 15 days.	On-farm water management is inadequate. Majority of farmers apply excessive irrigation, causing loss of nutrients and drainage problems. Irrigation intervals vary from 15 to 30 days depending on water availability. Water is apply mainly in border strips flooding method.
Insect Control	Insect attack is a main problem for majority of rice farmers. Main insects are Stink bug, Steam borer, and Grasshopper. 80 % of farmers make 3 to 4 applications of chemicals for insect control. Amount of insecticide applied vary widely among farmers. IPM is not been implemented by rice farmers for reducing losses caused by insects.	Large incidence of insects (specially "White fly" Bemisia tabaci) is one of the main problems affecting bean production. Majority of farmers make 3 to 4 applications of insecticides. Majority of bean producers do not know the best insecticides, and the recommended amount, and best time of application. IPM is not been implemented extensively by bean farmers.	Main insects problem in the study area are "Cosmopolites" and "Trips". Majority of plantain and banana farmers within the study area do not make adequate insect control. Nematod are also considered important problem, but most farmers do not control it.
Disease Control	Main rice diseases are Blast, Stem rot and Brown spot. Majority of farmers make 2 to 3 applications of fungicides. The products mostly used are Zinc oxides, Dithane and Antracol. The dosage of fungicides vary greatly among farmers depending on the product used (1.3 to 3 lit/ha or kg/ha).	Many of the diseases problems are related to the large incidence of insects which transmit the diseases. Among the main diseases are Virus, Rust, Antracnosis, Mildiu, and various Bacterial diseases. Most farmers use different types of fongicides for disease control.	Because of the dry climate of the area, diseases are less spread compared to the North part of the country. Majority of plantain and banana farmers within the study area do not make control of diseases.
Weed Control	Main weed species affecting rice production are Sagitaria sp, Cyperus sp, Cynodon sp, and Imperata sp. About half of rice farmers make weed control using only herbicides and the other have use a combination of herbicides and manual weeding. Majority of rice farmers make weed control twice per season.	Almost all small and medium size farmers, and majority of large farmers make weed control manually using hoes. About 25 % of large farmers use a combination of herbicides and manual control of weeds.	Weed control is made 3 to 4 times per year. Majority of farmers in the study area make weed control manually, while smaller percentage use herbicides for weed control.
Harvesting	About 40 % of rice farmer harvest by hand, other 40 % harvest using both combines machines and manually, while only about 20 % harvest rice using combine machine only.	Harvesting is made 75 to 90 days after planting. It is done manually by all farmers. Labor requirement vary from 5 to 14 man-day to harvest 1 ha. Small and medium farmers make separation of grains from the pods by passing horses on top piles of beans. Majority of large bean farmers separate grain from pods by passing tractor on top of pile of bean. Small percentage of farmers use a locally made machine for separating the grains from the pods.	Harvesting begins 8 to 10 months after planting, and thereafter is made every 20 to 30 days. Harvest and handle is made manually.

Table 3.3.2 Present Farming Practices for Main Crops in the Study Area (2/2)

Farming Practices	Industrial Tomato	Pigeonpea	Sugar cane	Coffee
Land Preparation	Almost all tomato farmers prepare land using tractors. Because tomato need to be planted in relatively short period, the insufficiency of tractors is a bottle neck for increasing area planted to tomato in the study area.	Land preparation in irrigated areas is done using both tractors and animals for plowing and harrowing, while in rainfed areas is mostly animal and manually.	Normally land preparation is done using tractors, but during the last 10 to 12 years very little land preparation have been done within the study area, due to economic constraints of the sugar corporation.	All the process of land preparation for coffee planting is done manually. Land clearing and burning, and opening planting holes are the common land preparation practices.
Planted Varieties	Varieties planted in the area are being changing very often in order to reduce damage by insects and virus. Most used varieties are Gem, UC82, Pepto, Napoli, and Chico	UASD, Puerto Rico, Todo el año, Barrosial, and Kaki. Growing period of UASD is 90 days, but for other varieties is 7 month or more.	Main varieties are EROS, CR52-43, PR-980, UCW-51-65, PR10-28, RD75-10, RD75-11, B76-78, majority are old varieties.	Coffee variety extensively planted in the study area is "Typica", and in less area "Caturra" is planted.
Planting Method	Tomato is planted largely by transplanting method.small percentage of farmers make direct seedling. Seedling are grown mostly in open seed bed, and small percentage is grown in trays kept in shaded areas. Planting procedures, and most other farming practices are supervised by technician from the tomato paste companies.	Planting is manually, distance between planting sites vary widely among farmers, most common distance is 1 m by 1 m, and plant 3 to 4 seeds per hole, after growing only one plant is left per hole. Amount of seeds use vary from 7 to 20 kg/ha, in average is 11 kg/ha.	For long time (about 10 years or more) most of the sugar cane area has not been replanted. Most of the area has old ratoons, which productivity has declined.	Majority of coffee plantation in the study area are old. Planting of new areas or replanting of old coffee plantations is minimal.
Fertilization	Fertilizers are applied twice, the first application is made shortly after transplanting and the second application is made at the beginning of flowering stage. The amount of plant nutrients applied vary between 100 to 150 kg/ha of N, and from 75 kg/ha of P and K respectively. Most farmers do not make soil analysis to know the adequate quantity of fertilizers needed.	Amount of fertilizer applied to pigeonpea is in average 15 kg/ha of N, P, and K respectively, this amount is divided in two applications.	Fertilization is made very inefficiently, the average amount of fertilizers applied to sugar cane in the study area is much lower than requirements. Average amount of plant nutrients applied are N=90 kg/ha; P=60 kg/ha, and K= 60 kg/ha, respectively.	Amount of fertilizer applied vary according to the size of the coffee plantation of individual farmers. Small farmers apply very small amount of fertilizers, while large coffee farmers apply sufficient amount. Small farmers apply in average 15 kg/ha of N, and 10 kg/ha of P and K respectively.
Irrigation	Irrigation interval vary from 7 to 12 days, depending on water availability. Large number of tomato farmers do not make adequate management of on-farm water management, and this causes soil erosion and loss of plant nutrients.	Majority of area planted to pigeon pea in the study area is rainfed. In irrigated areas frequency of irrigation vary from 15 to 20 days, depending on water availability.	Management of on-farm water in the sugar cane area is very poorly done. Because inefficient application of irrigation water, it is common to find areas with water logging and areas with water deficit in different sites of one sugar cane irrigation plot.	
Insect Control	Large incidence of insects, specially white fly is one of the main problem affecting tomato production From 1990 to 1992 the insect problem was so large that the area planted to tomato was reduced significantly. Insect control is based mainly in application of insecticides. IPM is being introduce, but still not widely applied.	Main insect problems are armyworm, green stink bug, white fly, aphid. Control of insects is made using insecticides only, majority of pigeonpea farmers apply insecticides twice. IPM is not being implemented by pigeonpea farmers in the study area.	Insects attack is not considered a very important problem in the sugar cane plantation within the study area. Stem borer (Diatrae sp.) are the most common insects. Their control inefficiently made.	Insects affecting coffee plantations in the study area include aphids, mealy bug, and hemispherical scale. Most small scale farmers do not make insect control.
Disease Control	Main disease affecting tomato is the virus transmitted by "white fly", Other diseases are Rhizoctonia, Fusarium, and Alternaria.	Main diseases affecting pigeonpea in the Study area are "Antracnosis and leaf rust. Majority of farmers do not make control of pigeon pea diseases.	Diseases of importance affecting the sugar cane in the study area are "Roya" and "Carbon". Chemical control is not made. The control is made using cane varieties that are resistant to these diseases.	The main disease affecting coffee in the study area is the "brown leaf circle" caused by Cercospora sp. Majority of farmers do not make control of diseases.
Weed Control	Control of weed is made mostly manually. Some farmers use herbicides just after transplanting. Average labor used for weed control is 20 man-day/ha.	Weed control is made manually by almost all farmers. Labor used for weed control vary from 12 to 20 man-day/ha.	Weed control is made by a combination of herbicidas and manually. Labor used for weed control is about 15 man-day/ha	Weed control in coffee area is done manually; In small coffee farms weed control is made almost completely by family labor.
Harvesting	Harvesting of tomato is done manually by all farmers. Labor used for harvesting is about 10 man-day/ha.	Majority of pigeonpea farmers harvest when grains are green (young). Harvesting is made manually. Labor used for harvesting is 8 to 10 man-day/ha.	Harvesting of sugar cane is done manually. Often cane fields are burned up before harvesting in order to speed up harvesting.	Harvesting of coffee is done manually. Labor use for harvesting is between 3 to 5 man-day/ha.

Table 3.4.1 Market Conditions in the Study Area; Azua (1/5)

PROVINCE : Azua 1

COMMUNITY	Housing Conditions: Roof			Wall			Floor			Roads: Conditions					Schools: Type			Drinkable Water Souce						Health Center			Energy Availability		Sanitary Service: Type		Sanitary Service: Condition			Infrastructure Municipal			
	Cement	Tin Roof	Cana	Cement	Wood	Tejamani	Soil	Cement	Wood	Sand	Thin Asfalt	Asfalt	Regular	Good	Primary School	High School	Private School	Aqueduct	Manuel Pump	Rain	Direct Intake	Water Truck	Clinics	Rural Clinics	Subcentros	Hospital	Yes	No	Toilet	Latrine	Good	Bad	Regular	Cookpit	Market	Cemeteriy	Slaughterhouse
AZUA DE COMPOSTELA																							1	25	3	1	X										
AZUA DE COMPOSTELA		X		X				X			X	X	X		49			X								1	X		X				X	2	1	2	1
BARRERO O BARRERAS		X			X			X			X		X		6			X					1				X		X				X				
CLAVELLINAS		X			X			X			X		X		2			X									X		X				X				
LA ALTAGRACIA		X			X			X			X		X		5				X								X		X				X				
LAS LOMAS		X			X			X			X		X		4			X						1			X		X				X				
LOS JOVELLOS		X			X			X				X	X		12	X		X						1			X		X				X				
GUAYABAL																																					
GUAYABAL (M. DISTRICT)		X			X			X			X	X	X		18			X						1	1		X										
GUAYABAL		X			X			X			X		X		6												X										
EL NARANJITO		X			X			X			X		X		1												X										
LAS CHARCAS																																					
CANADA CHARRONA		X			X			X			X		X		2			X									X			X		X					
HATILLO		X			X			X			X		X		2			X									X			X		X					
LAS CHARCAS		X		X				X			X		X		3	X		X						1			X			X		X	1		1	1
SABANA YEGUA																													X		X				1		
SABANA YEGUA (M. D.)		X		X				X				X		X	9	1	2	X			X			1			X										
OJO DE AGUA			X				X			X			X		4																						
AZUA DE COMPOSTELA																							1	25	3	1	X										
TABARA ARRIBA		X			X			X			X		X		3			X						1			X			X	X		X				
AMIANA GOMEZ		X			X			X			X		X		1			X						1			X			X	X		X				
LA GUANABANA		X			X			X		X			X		3									1			X			X	X				X		
LOS TOROS		X			X			X		X			X		2									1			X			X	X						
SAJAOA		X			X			X		X			X		2									1			X			X	X						
ESTEBANIA																																					
ESTEBANIA		X		X				X			X		X		2	X	X	X						1			X		X		X			X		X	X
PUEBLO VIEJO																																					
PUEBLO VIEJO		X			X		X			X		X	X		2	X		X						1			X										
EL ROSARIO		X			X			X			X		X		11	X								2			X										
LAS YAYAS DE VIAJAMA																																					
YAYAS DE VIAJAMA (M. D.)		X			X			X			X		X		5			X					1				X			X			X	1			1
HATO NUEVO		X			X			X			X	X	X	X	6			X					1				X			X			X	1			
MAGUEYAL		X			X			X				X		X	1			X					1				X			X			X				
OREGANO CHIQUITO		X			X			X		X			X		1												X			X							
OREGANO GRANDE		X			X			X		X			X		1												X			X							
VIAJAMA		X			X			X		X			X		2								1				X			X							
PADRE LAS CASAS																																					
PADRE LAS CASAS		X		X				X			X	X	X		11			X							1		X			X			X	1	1	1	1
LAS CANITAS		X			X			X			X		X		12												X										
LA SIEMBRA		X			X			X			X		X		11												X										
MONTE BONITO		X			X			X			X		X		5									1			X										
VILLARPANDO		X			X			X			X		X		7	1		X				X					X							1			
PERALTA (11478)																																					
PERALTA		X			X			X			X		X		12			X							1		X							2	1	1	1
CARRIZAL Y PUERTO		X			X			X			X		X		8												X										
MAJAGUAL		X			X			X			X		X		2												X										
PERALTA		X			X			X			X		X		1												X										

Table 3.4.1 Market Conditions in the Study Area; San Juan (2/5)

PROVINCE : San Juan

COMMUNITY	Housing Conditions									Roads					Schools			Drinkable Water Souce					Health Center				Energy Available		Sanitary Service				Infrastructure Municipal			
	Roof			Wall			Floor			Conditions					Type														Type		Condition						
	Cement	Tin Roof	Cane	Cement	Wood	Tajamani	Soil	Cement	Wood	Sand	Thin Asfalt	Asfalt	Regular	Good	Primary School	Liph School	Private School	Aqueduct	Manual Pump	Rain	Direct Intake	Water Truck	Clinics	Rural Clinics	Subcentros	Hospital	Yes	No	Toilet	Latrine	Good	Bad	Regular	Cockpit	Market	Cementery	Slaughterhouse
SAN JUAN (1878.65)	X				X			X				X		X	44			X					1	25	2	2	X		X				1	1	2	1
CHALONA		X			X			X			X		X		8												X			X		X				
GUANITO		X			X			X			X	X	X		5												X			X		X				
HATO DEL PADRE		X			X			X			X		X		19			X									X			X		X				
HATO NUEVO		X			X			X			X		X		9												X			X		X				
LA JAGUA		X			X			X			X		X		9									1			X			X		X				
LA ZANJA		X			X			X			X	X	X		8			X									X			X		X				
LA CHARCA DE MARIA NOVA		X			X			X			X		X		7			X						1			X			X		X				
MOGOLLON															12												X									
PEDRO CORTO															11									1			X									
PUEBLO NUEVO			X			X	X			X			X		14				X								X									
RIO ARRIBA DEL NORTE															11									1			X									
SABANETA															5			X						1			X									
SABANA ALTA		X		X				X			X	X	X		2			X						1			X			X	X					
BOHECHIO (415.60)																																	1	2	2	1
BOHECHIO		X			X			X		X		X			7			X						1			X			X			X	1	1	1	1
ARROYO CANO		X			X			X		X	X	X			9			X						1			X			X			X		1		
YAQUE		X			X			X		X		X			7			X						1			X			X			X			1	
EL CERCADO (298.13)															31										1												
DERRUMBADERO		X		X				X				X	X		16			X						1			X			X			X	4	2	1	1
JUAN DE HERRERA															28																						
JUAN DE HERRERA (M. D.)		X		X				X				X	X		7									1			X			X	X		X		1	1	
JINOVA		X		X				X				X		X	13			X						1			X			X	X		X				
SOSA		X		X				X			X		X		2												X			X	X		X				
VALLEJUELO															17																						
VALLEJUELO		X			X			X		X			X		13			X							1		X			X			X		1	1	
JORGILLO		X			X			X		X			X		3			X						1			X			X			X				

Table 3.4.1 Market Conditions in the Study Area; Barahona (3/5)

PROVINCE : Barahona

COMMUNITY	Housing Conditions: Roof: Cement	Roof: Tin Roof	Roof: Cane	Wall: Cement	Wall: Wood	Wall: Tejamani	Floor: Soil	Floor: Cement	Floor: Wood	Roads Conditions: Sand	Roads Conditions: Thin Asfalt	Roads Conditions: Asfalt	Roads Conditions: Regular	Roads Conditions: Good	Schools Type: Primary School	Schools Type: High School	Schools Type: Private School	Drinkable Water Souce: Aqueduct	Drinkable Water Souce: Manual Pump	Drinkable Water Souce: Rain	Drinkable Water Souce: Direct Intake	Drinkable Water Souce: Water Truck	Health Center: Clinics	Health Center: Rural Clinics	Health Center: Subcentros	Health Center: Hospital	Energy Availability: Yes	Energy Availability: No	Sanitary Service Type: Toilet	Sanitary Service Type: Latrine	Sanitary Service Condition: Good	Sanitary Service Condition: Bad	Sanitary Service Condition: Regular	Infrastructure Municipal: Cockpit	Infrastructure Municipal: Market	Infrastructure Municipal: Cemeniery	Infrastructure Municipal: Slaughterhouse
BARAHONA (276.28)																							0	22	4	2											
BARAHONA (M.D.)		X		X				X				X	X		56			X						15		1	X		X		X			1	2	1	1
CACHON		X			X			X				X	X		4			X									X			X			X			1	
GUAZARA		X			X			X			X		X		3												X										
PALO ALTO		X			X			X			X		X		2												X										
PAYASO		X			X			X			X		X		2												X										
VICENTE NOBLE(225.45)															23									3	1		X			X			X	3	1	1	1
VICENTE NOBLE		X			X			X				X	X		10			X			X				1		X			X			X	1	1	1	1
CANOA			X		X			X				X	X		2							X		1			X			X			X	1		1	
FONDO NEGRO			X		X		X	X				X	X		4			X				X		1			X			X			X		1		
QUITA CORAZA			X		X			X				X	X		6			X						1			X			X			X	1	1		
CABRAL (149.25)															21			X							1		X			X			X	1	2	1	1
CABRAL		X			X			X				X		X	6			X							1		X			X					1		
TIERRA BLANCA			X			X	X								8																						
LAS SALINAS																																					
LAS SALINAS		X			X			X		X		X	X		3			X									X			X		X		1	1	1	
LENBA			X			X	X			X		X	X		2						X			1			X			X		X					
SALADILLO			X			X	X			X		X	X		2												X			X		X					
EL PENON																																					
EL PENON (M.D.)		X			X			X				X	X		5			X									X			X			X				
JUAN DE HERRERA		X			X			X				X	X		2												X			X			X				
JAQUIMEYES		X			X			X				X	X		2			X				X	X	1			X			X			X				
PALO ALTO		X	X		X			X		X		X	X		2			X			X						X			X	X		X	1			
FUNDACION																																					
FUNDACION (M. D.)		X		X				X				X	X		2			X						1			X			X	X						
BATEY LA ALTAGRACIA		X		X				X		X			X		1			X									X			X			X				
LA HOYA		X			X			X		X			X		4			X						1			X			X			X				
PESCADERIA		X	X		X			X		X			X		4			X												X			X				

Table 3.4.1 Market Conditions in the Study Area; Bahoruco (4/5)

PROVINCE : Bahoruco

COMMUNITY	Housing Conditions: Roof: Cement	Roof: Tin Roof	Roof: Cane	Wall: Cement	Wall: Wood	Wall: Tejamani	Floor: Soil	Floor: Cement	Floor: Wood	Roads Conditions: Sand	Thin Asfalt	Asfalt	Regular	Good	Schools Type: Primary School	High School	Private School	Drinkable Water Souce: Aqueduct	Manual Pump	Rain	Direct Intake	Water Truck	Health Center: Clinics	Rural Clinics	Subcentros	Hospital	Energy Availabity: Yes	No	Sanitary Service Type: Toilet	Latrine	Condition: Good	Bad	Regular	Infrastructure Municipal: Cockpit	Market	Cementery	Slaughterhouse
NEYBA (351.91)																																		7	1	2	1
NEYBA		X			X			X				X		X	19			X									X										
LOS GUINEOSS			X			X	X			X			X		14												X										
EL MANGUITO			X			X	X			X			X		1												X										
LA PETACA			X			X	X			X			X		1												X										
LOS ROAS			X			X	X			X			X		1												X										
EL COPEY			X			X	X			X			X		9												X										
GALVAN															37																				1		
GALVAN (M. D.)		X			X			X				X		X	3												X										
EL RODEO			X			X	X			X			X		1												X										
EL SALADO			X			X	X			X			X		5												X										
LAS TEJAS			X			X	X			X			X		8												X										
TAMARINDO			X			X	X			X			X		2												X										
EL MAMON			X			X	X			X			X		5												X										
TAMAYO (334.28)															25								3	1										1	1	1	1
TAMAYO		X			X			X				X	X		13				X				1	1		X									1		
BARRANCA			X			X	X			X			X		5								1			X											
CABEZA DE TORO			X			X	X			X			X		5								1			X											
UVILLA															21								2														
UVILLA (M. D.)															3																						
JUAN DE HERRERA															13																						
MENA															5																						

Table 3.4.1 Market Conditions in the Study Area; Indipendencia (5/5)

PROVINCE : Independencia and La Vega

COMMUNITY	Housing Conditions									Roads				Schools			Drinkable Water Souce					Health Center				Energy Availabity		Sanitary Service				Infrastructure Municipal			
	Roof			Wall			Floor			Conditions				Type														Type		Condition					
	Cement	Tin Roof	Cana	Cement	Wood	Tejamani	Soil	Cement	Wood	Sand	Thin Asfalt	Asfalt	Regular	Good	Primary School	High School	Private School	Aqueduct	Manual Pump	Rain	Direct Intake	Water Truck	Clinics	Rural Clinics	Subcentros	Hospital	Yes	No	Toilet	Letrine	Good	Bad	Regular	Cockpit	Market	Cementery	Slaughterhouse
MELLA			X		X			X				X		X	9			X						14	2	1	X		X		X			1		1	
MELLA (M.DISTRIC)																																					
ANGOSTURA																																					
CRISTOBAL																																					
CRISTOBAL (M.D.)			X		X		X								1			X			X	X		1			X		X			X			1	
BATEY 7			X		X	X				X			X					X									X		X			X				
BATEY 8			X		X	X				X			X		1			X									X		X			X				
BATEY 9			X		X	X				X			X		1			X									X		X			X				
LA VEGA																																	3	1	2	1
CONSTANZA																																					
CONSTANZA																																					
MALDONADO																																					
PALERO																																					

Table 3.5.1 List of Irrigation Areas and Major Irrigation Canals (1/2)

Name of System or sub-system	Water Source	Irrigation Area (ha)	Canal Length (km)			Service Road	Canal Capacity
			lining	earth	total	(km)	(m3/sec)
(1) San Juan Valley Irrigation District		**24,304**					
Area served by San Juan river		**20,070**					
Jose Joaquin Puello	San Juan	10986	25.0	0.0	25.0	25.0	8.00
San Juan	San Juan	5,526	10.2	0.0	10.2	10.2	6.00
Hato del Padre	San Juan	2059	7.6		7.6	0.0	4.25
Guanito-San Juan	San Juan	1,000	11.9	8.1	20.0	20.0	3.00
Other small systems	San Juan	499					
Area served by other source		**4,234**					
Mijo	Mijo	2,390	0.0	5.3	5.3	5.3	4.00
Vallejuelo I	Los Baos	205	11.1		11.1	11.1	1.40
Vallejuelo II	Los Baos	290	4.8	4.6	9.4	9.4	1.40
Other small systems		1,349					
(2) Azua Valley Irrigation District							
(2)-1 Azua Zone		**16,439**					
Area served by Yaque del Sur		**13,473**					
a) Canal YSURA area		10,007					
Ysura headrace	Yaque del Sur		24.5		24.5		
Ysura main canal	Yaque del Sur						
Lateral 1	Ysura main canal	2,237	16.2		16.2		3.77
Lateral 2	Ysura main canal	1,116	8.7		8.7		2.34
Lateral 3	Ysura main canal	184	1.5		1.5		0.75
Lateral 4	Ysura main canal	1,104	10.0		10.0		2.96
Lateral 5	Ysura main canal	1,408	9.0		9.0		1.50
Lateral 6	Ysura main canal	1,683	12.9		12.9		3.50
total of above laterals (1-6)	Ysura main canal	7,732	58.3		58.3		
Extension area	Ysura main canal	2,275					
b) Yaque del Sur river area		2,366					
Juan Sanchez	Yaque del Sur	119			2.5		0.20
El Corozo	Yaque del Sur	158	1.0	1.5	2.5		0.40
Los Corrales	Yaque del Sur	51			1.5		0.30
Los Bancos	Yaque del Sur	270			3.0		0.50
Villarpando	Yaque del Sur	200			2.5		0.30
Periquito	Yaque del Sur	300			4.5		0.60
Bastidas	Yaque del Sur	415			4.3		0.30
Magueyal	Yaque del Sur	250			1.7		0.25
Oregano Grande	Yaque del Sur	333			7.0		0.50
El Muey (Hato Nuevo)	Yaque del Sur	270			3.0	3.0	0.40
c) YSURA Headrace area	Ysura headrace	1,100					
Area served by other rivers		**1,182**					
Area served by groundwater		**1,784**					
Area influenced by Lateral No.1		369					
Lateral No.2		25					
Lateral No.4		20					
Area influenced by Lateral No.5		290					
Area influenced by Lateral No.6		454					
Area influenced by Lateral No.7		66					
Estebania and Las Charcas irrigation area		560					
(2)-2 Padres Las Casas Irrigation Sub-zone		**2,625**					
Bohechio		75	4.0		4.0		0.50
Las Yayas de Viajamas		629		7.8	7.8	7.8	0.94
Padre las Casas I		195	2.0	2.0	4.0	1.5	1.00
Sabana Yegua				8.0	8.0	5.0	
El Jobo			4.0	2.0	6.0		
Los Cucuces				3.0	3.0	0.8	
Agua Amarga			0.8	0.7	1.5		
Padre las Casas II		1726	11.0		11.0	11.0	4.59

Table 3.5.1 List of Irrigation Areas and Major Irrigation Canals (2/2)

Name of System or sub-system	Water Source	Irrigation Area (ha)	Canal Length (km)			Service Road	Canal Capacity
			lining	earth	total	(km)	(m3/sec)
(3) Yaque del Sur and Lago Enriquillo Districts' Irrigation Zone							
		26,495					
(3)-1 Area served by Yaque del Sur		**22,249**					
Reaches from Los Guilos - Santana		**2,791**					
Los Guiros	Yaque del Sur	160					
Monte Grande	Yaque del Sur	200			2.0		0.30
Vuelta Grande	Yaque del Sur	42		4.3	4.3		1.00
Quita Coraza	Yaque del Sur	317		5.0	5.0		2.30
El Hiquito (Honduras)	Yaque del Sur	30					
Honduras	Yaque del Sur	78		2.7	2.7		1.20
Fondo Negro	Yaque del Sur	768	4.0		4.0		0.47
Barranca	Yaque del Sur	58		4.3	4.3	1.0	2.00
El Montazo	Yaque del Sur	200		3.5	3.5		1.60
San Ramon (Pump)	Yaque del Sur	138	5.0		5.0		0.13
San Ramon	Yaque del Sur	366	5.0	6.0	11.0	5.0	1.00
Arroyo Grande	Yaque del Sur	308	2.3		2.3		0.16
Conuquito (Pump)	Yaque del Sur	126	3.2		3.2		0.16
Santana	Yaque del Sur	**12,000**		14.4	14.4		25.00
Reaches from Santana Downstream to Los Tomate	Yaque del Sur	**2,853**					
Vicente Noble	Yaque del Sur	1,804	7.0		7.0	7.0	4.00
Carro Sleo	Yaque del Sur	220					
Anon-Uvilla	Yaque del Sur	438		6.2	6.2		2.10
Los Habitantes	Yaque del Sur	391					
Tomate - Mena	Yaque del Sur	**371**					
Reaches from Tomate to Palo Alto	Yaque del Sur	**1,565**					
Bombita, CEA (Pump)	Yaque del Sur	725	7.0		7.0		0.55
Bombita, INDRHI (Pump)	Yaque del Sur	115	7.0		7.0		0.55
Juan Benito	Yaque del Sur	190					
Palo de Leche (Pump)	Yaque del Sur	180	1.8	1.7	3.5		0.32
Jaquimeyes (Pump)	Yaque del Sur	225	3.5		3.5		0.32
Penoo I	Yaque del Sur	130					
Reaches from Palo Alto to the Sea	Yaque del Sur	**2,669**					
Palo Alto (Pump) -INDRHI/IAD	Yaque del Sur	75	2.5	0.7	3.2		0.32
Palo Alto (Pump) - CEA	Yaque del Sur	700					
Fundacion I (Pump)	Yaque del Sur	252	4.0		4.0		0.32
Fundacion II	Yaque del Sur	138	1.5		1.5		0.32
Peñon II (Pump)	Yaque del Sur	220	2.0	1.5	3.5		0.16
La Isleta	Yaque del Sur	429	2.0		2.0		0.19
La Guinea	Yaque del Sur	68	2.2		2.2		0.19
Las Elenas	Yaque del Sur	59	1.2		1.2		0.14
Poso Elena (Cachon)	Yaque del Sur	157					
Hato Viejo-Pescaderia (Pump)	Yaque del Sur	154	3.5		3.5		0.32
La Hoya (Pump)	Yaque del Sur	115	3.5		3.5		0.32
Caballero	Yaque del Sur	70					
Habanero (Pump)	Yaque del Sur	195	3.5		3.5		0.30
Dumit	Yaque del Sur	37					
(3)-2 Area seved by other sources		**4,246**					
Irrigation area served by a tributary of Yaque del Sur		400					
Irrigation area served by other rivers		2,978					
Irrigation area served by groundwater		868					

Table 3.5.2 List of Major Drainage Canals (1/2)

Name of System or sub-system		Canal Capacity (m3/sec)	Canal length (km) Main	Canal length (km) Lateral	Service Road (km)
(1) San Juan Valley Irrigation District					
Arroyo loro		60.00	25.00		
La Ceyba		30.00	15.00		
Tenguerengue		8.00	8.00		
El Donao		20.00	4.00		
Fundillo		3.00	7.00		
Canada Seca		12.00	8.00		
La Cachimba		43.30	2.70		2.70
	Cerro Montoso	15.40		1.43	1.43
	Lateral Cachimba	1.50		1.36	
Sanchez-La Urca		20.40	3.30		3.30
	Lateral La Urca	1.00		2.20	2.20
	Lateral Sanchez	1.50		0.90	
Pedro Martin-Magueyal		2.00	3.20		3.20
	Magueyal	0.90		1.20	1.20
	Narciso Dotel	2.00		0.80	0.80
	Oviedo	1.00		1.86	1.86
San Antonio		54.50	2.20		2.20
	Lambedero	6.40		4.86	4.86
	Lateral San Antinio	0.80		1.89	1.89
El Rancho		22.10	2.00		2.00
Zabala I		3.00	1.40		1.40
	11-01	0.80		0.70	0.70
Zabala II		2.50	1.10		1.10
	11-02	0.50		1.10	1.10
Sanate		24.30	0.80		0.80
(2) Azua Valley Irrigation District					
(2)-1 Azua Zone					
No. 02		2.00	3.20		3.20
No. 04		4.00	5.90		5.90
No. 06		2.50	5.40		5.40
No. 07		2.00	3.04		3.04
No. 08		2.00	10.00		10.00
No. 08-		12.00	4.00		4.00
No. 09		2.50	7.08		3.60
No. 13		2.00	3.38		2.00
No. 17		1.70	2.40		2.40
No. 19		2.30	3.50		3.50
No. 20		1.50	3.70		3.70
No. 21		2.00	3.00		3.00
No. 23		1.50	2.60		2.60
La Gran Calle		1.50	3.50		3.50
La Prolongacion		2.50	7.30		7.30
	No. 01-A	0.13		1.00	1.00
	No. 02	0.05		1.20	1.20
	No. 03	0.05		1.20	1.20
	No. 04-C	0.08		2.90	2.90
	No. 07-1	0.30		2.80	2.80
	No. 10	0.10		1.00	1.00
	No. 10-A	0.10		1.00	1.00
	No. 11	0.30		1.60	1.60
	No. 14	0.15		1.91	1.91
	No. 15	0.25		1.40	1.40
	No. 17	0.13		1.50	1.50
	No. 18	0.20		1.60	1.60
	No. 22	0.30		2.30	2.30
	No. 24	0.15		1.90	1.90
	No. 26	0.07		0.80	0.80
	No. 27	0.02		0.60	0.60
	No. 32	0.14		1.80	1.80
	K	0.05		0.80	0.80

Table 3.5.2 List of Major Drainage Canals (2/2)

Name of System or sub-system		Canal Capacity	Canal length (km)		Service Road
		(m3/sec)	Main	Lateral	(km)
(2)-1 Azua Zone (Continue)	Domingo	0.03		0.20	0.20
	CIAZA	0.35		1.20	1.20
	Don Miguel	0.03		0.30	0.30
	Josefina	0.03		0.50	0.50
	Centro Poblado	0.03		0.50	0.50
	Joven	0.01		0.20	0.20
	Boza	0.05		0.15	0.15
	No. 01-B	0.15		1.80	1.80
	No. 02	0.20		2.20	2.20
	No. 02-B	0.23		2.60	2.60
	No. 03	0.07		0.80	0.80
	No. 06	0.12		1.20	1.20
	No. 12	0.20		2.60	2.60
	No. 14	0.09		1.00	1.00
	No. 15-B	0.14		1.70	1.70
	No. 17	0.13		1.70	1.70
	No. 18	0.25		2.10	2.10
	No. 21	0.06		0.64	0.64
	No. 22-C	0.08		0.90	0.90
	No. 24	0.05		0.56	0.56
	No. 26	0.13		1.70	1.70
	No. 27	0.15		1.91	1.91
	No. 30	0.06		0.70	0.70
	No. 32	0.09		1.00	1.00
	F-1	0.07		0.80	0.80
	F-2	0.08		0.90	0.90
	Los Talleres	0.08		0.90	0.90
	El General	0.14		1.70	1.70
(3) Yaque del Sur District Irrigation Zone					
(3)-1 Barahona Zone					
Los Tomates		25.00	3.80		3.80
	Mena Penon	1.50		4.00	4.00
Vicente Noble - Canoa		8.00	5.00		5.00
	Punta de Loma	1.00		6.00	6.00
	El Mu	0.70		4.00	4.00
	La Cerca	1.20		3.60	3.60
	El Quemao	2.00		7.50	7.50
Mira Mar		8.00	12.00		12.00
	La Surza	0.80		3.50	3.50
	No. 25	1.50		9.00	9.00
Habanero		3.00	3.00		3.00
	Habanero 1	0.90		6.00	6.00
	Habanero 2	0.60		3.20	3.20
Pescaderia		5.00	6.00		6.00
	No. 1	0.80		2.50	2.50
	No. 2	0.70		4.00	4.00
	No. 3	0.60		1.70	1.70
Rio Viejo		12.00	7.00		7.00
San Ramon		3.50	4.00		4.00
Cristobal		60.00	15.00		15.00
Colector Vicente Noble		4.00	6.00		6.00
Tres Puentes- Juan Benito		3.50	9.00		9.00
	Juan Benito	3.00		6.00	6.00
	Tres Puentes	4.00		7.00	7.00
(3)-2 Neiba Zone					
El Salado		12.00	20.00		20.00
Baitoa Seca		8.00	6.00		6.00
Guaraguao		15.00	12.00		12.00
Lateral Bombi		2.00	1.00		1.00
Lateral No. 13		10.00	6.00		6.00

Table 3.5.3 Evapotranspiration (ETo) by FAO IDP No.24 Approach

Station : SAN JUAN — Latitude: 18.8 — Altitude : 415 m

Item	Unit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
(1) Temperature (T)	C	22.2	22.9	24.2	25.1	25.5	25.8	26.0	26.2	25.8	25.0	24.0	22.5	
(2) Relative humidity (RH)	%	70.4	69.1	67.8	69.5	73.3	71.1	69.1	69.6	71.9	74.2	73.3	71.2	
(3) Wind speed at 2 m high	km/day	58.6	58.2	57.7	58.1	61.0	61.0	57.8	58.5	61.1	62.6	60.1	58.2	
(4) Sunshine hours (n/N)	%	71.1	73.5	66.6	65.1	59.2	59.4	63.3	61.3	57.6	60.9	70.0	69.4	
(5) ea (Table5)	mbar	26.7	27.9	30.2	31.9	32.7	33.2	33.6	34.0	33.2	31.7	29.8	27.3	
(6) ed (5)x(2)/100	mbar	18.8	19.3	20.5	22.2	23.9	23.6	23.2	23.7	23.9	23.5	21.8	19.4	
(7) f(U) 0.27(1+U/100)		0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.44	0.44	0.43	0.43	
(8) (1-W) (Table 8)		0.28	0.27	0.26	0.25	0.25	0.24	0.24	0.24	0.24	0.25	0.26	0.28	
(9) (1-W)f(U)(ea-ed)	mm	0.95	1.01	1.07	1.04	0.93	1.02	1.07	1.06	0.99	0.90	0.90	0.93	
(10) Ra (Table 10)	mm	11.4	12.9	14.5	15.6	16.2	16.2	16.2	15.8	14.9	13.5	11.8	10.9	
(11) (0.25+0.50n/N)		0.61	0.62	0.58	0.58	0.55	0.55	0.57	0.56	0.54	0.55	0.60	0.60	
(12) Rs (10)x(11)	mm	6.9	8.0	8.5	9.0	8.8	8.9	9.2	8.8	8.0	7.5	7.1	6.5	
(13) Rns Rs x (1-0.25)	mm	5.2	6.0	6.3	6.7	6.6	6.7	6.9	6.6	6.0	5.6	5.3	4.9	
(14) f(T) (Table 13)		15.0	15.2	15.5	15.7	15.8	15.9	15.9	15.9	15.9	15.7	15.4	15.1	
(15) f(ed) 0.34 - 0.044 x ed$^{1/2}$		0.15	0.15	0.14	0.13	0.12	0.13	0.13	0.13	0.12	0.13	0.13	0.15	
(16) f(n/N) 0.1 + 0.9 n/N		0.74	0.76	0.70	0.69	0.63	0.63	0.67	0.65	0.62	0.65	0.73	0.72	
(17) Rnl (14)x(15)x(16)	mm	1.7	1.7	1.5	1.4	1.2	1.3	1.4	1.3	1.2	1.3	1.5	1.6	
(18) Rn (13)-(17)	mm	3.5	4.3	4.8	5.3	5.4	5.4	5.5	5.3	4.8	4.3	3.8	3.3	
(19) W Rn	mm	2.5	3.1	3.6	4.0	4.1	4.1	4.2	4.0	3.6	3.2	2.8	2.4	
(19) W Rn +(1-W)f(U)(ea-ed)	mm	3.5	4.1	4.6	5.0	5.0	5.1	5.2	5.1	4.6	4.1	3.7	3.3	
(20) c		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
(21) ETo	mm	3.5	4.1	4.6	5.0	5.0	5.1	5.2	5.1	4.6	4.1	3.7	3.3	4.5

Source: Oficina Nacional de Meteorologia, Departmento de Climatologia

Station : BARAHONA — Latitude: 18.2 — Altitude : 10 m

Item	Unit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
1 Temperature (T)	C	24.9	25	25.5	26.2	26.8	27.4	28	28	27.5	26.7	26.3	25.3	
2 Relative humidity (RH)	%	73.2	72.8	72.1	72.6	76.2	76.3	72.2	73.1	76.4	78.3	75.1	72.8	
3 Wind speed at 2 m high	km/day	249.6	278.4	303.4	299.5	276.5	284.2	297.6	278.4	253.4	228.5	222.7	228.5	
4 Sunshine hours (n/N)	%	68	66	65	61	51	51	56	56	54	56	62	67	
5 ea (Table5)	mbar	31.51	31.7	32.65	34.02	35.28	36.54	37.8	37.8	36.75	35.07	34.23	32.27	
6 ed (5)x(2)/100	mbar	23.07	23.08	23.54	24.7	26.88	27.88	27.29	27.63	28.08	27.46	25.71	23.49	
7 f(U) 0.27(1+U2/100)		0.944	1.022	1.089	1.079	1.016	1.037	1.074	1.022	0.954	0.887	0.871	0.887	
8 (1-W) (Table 8)		0.261	0.26	0.255	0.248	0.242	0.236	0.23	0.23	0.235	0.243	0.247	0.257	
9 (1-W)f(U)(ea-ed)	mm	2.1	2.3	2.5	2.5	2.1	2.1	2.6	2.4	1.9	1.6	1.8	2.0	
10 Ra (Table 10)	mm	11.6	13.0	14.6	15.6	16.1	16.1	16.1	15.8	14.9	13.6	12.0	11.1	
11 (0.25+0.50n/N)		0.59	0.58	0.575	0.555	0.505	0.505	0.53	0.53	0.52	0.53	0.56	0.585	
12 Rs (10)x(11)	mm	6.8	7.5	8.4	8.7	8.1	8.1	8.5	8.4	7.7	7.2	6.7	6.5	
13 Rns Rs x (1-0.25)	mm	5.1	5.6	6.3	6.5	6.1	6.1	6.4	6.3	5.8	5.4	5.0	4.9	
14 f(T) (Table 13)		15.63	15.65	15.78	15.94	16.06	16.18	16.3	16.3	16.2	16.04	15.96	15.73	
15 f(ed) 0.34 - 0.044 x ed1/2		0.129	0.129	0.127	0.121	0.112	0.108	0.11	0.109	0.107	0.109	0.117	0.127	
16 f(n/N) 0.1 + 0.9 n/N		0.712	0.694	0.685	0.649	0.559	0.559	0.604	0.604	0.586	0.604	0.658	0.703	
17 Rnl (14)x(15)x(16)	mm	1.4	1.4	1.4	1.3	1.0	1.0	1.1	1.1	1.0	1.1	1.2	1.4	
18 Rn (13)-(17)	mm	3.7	4.2	4.9	5.2	5.1	5.1	5.3	5.2	4.8	4.3	3.8	3.5	
19 W Rn	mm	2.7	3.1	3.7	3.9	3.9	3.9	4.1	4.0	3.7	3.3	2.9	2.6	
19 W Rn +(1-W)f(U)(ea-ed)	mm	4.8	5.4	6.2	6.4	5.9	6.0	6.7	6.4	5.6	4.9	4.7	4.6	
20 c		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
21 ETo	mm	4.8	5.4	6.2	6.4	5.9	6.0	6.7	6.4	5.6	4.9	4.7	4.6	5.6

Source: Oficina Nacional de Meteorologia, Departmento de Climatologia, 1961-1997

Station : JIMANI — Latitude: 18.48 — Altitude : 31 m

Item	Unit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
1 Temperature (T)	C	26.1	26.5	27.3	28	28.2	29.1	29.7	29.6	29.3	28.5	27.4	26.3	
2 Relative humidity (RH)	%	64	62.5	61.4	62.3	66.1	63.2	59.7	61.2	63.5	66.5	67.6	61.7	
3 Wind speed at 2 m high	km/day	144	159.4	163.2	147.8	136.3	178.6	176.6	163.2	149.8	121	113.3	121	
4 Sunshine hours (n/N)	%	68	66	62	59	53	56	59	58	55	56	61	66	
5 ea (Table5)	mbar	33.81	34.65	36.33	37.8	38.26	40.33	41.71	41.48	40.79	38.95	36.54	34.23	
6 ed (5)x(2)/100	mbar	21.64	21.66	22.31	23.55	25.29	25.49	24.9	25.39	25.9	25.9	24.7	21.12	
7 f(U) 0.27(1+U2/100)		0.659	0.7	0.711	0.669	0.638	0.752	0.747	0.711	0.674	0.597	0.576	0.597	
8 (1-W) (Table 8)		0.248	0.244	0.236	0.229	0.228	0.224	0.221	0.221	0.223	0.227	0.235	0.246	
9 (1-W)f(U)(ea-ed)	mm	2.0	2.2	2.4	2.2	1.9	2.5	2.8	2.5	2.2	1.8	1.6	1.9	
10 Ra (Table 10)	mm	11.5	12.9	14.6	15.6	16.1	16.2	16.1	15.8	14.9	13.5	11.9	11.0	
11 (0.25+0.50n/N)		0.59	0.58	0.56	0.545	0.515	0.53	0.545	0.54	0.525	0.53	0.555	0.58	
12 Rs (10)x(11)	mm	6.8	7.5	8.1	8.5	8.3	8.6	8.8	8.5	7.8	7.2	6.6	6.4	
13 Rns Rs x (1-0.25)	mm	5.1	5.6	6.1	6.4	6.2	6.4	6.6	6.4	5.9	5.4	5.0	4.8	
14 f(T) (Table 13)		15.92	16	16.16	16.3	16.34	16.52	16.64	16.62	16.56	16.4	16.18	15.96	
15 f(ed) 0.34 - 0.044 x ed1/2		0.135	0.135	0.132	0.126	0.119	0.118	0.12	0.118	0.116	0.116	0.121	0.138	
16 f(n/N) 0.1 + 0.9 n/N		0.712	0.694	0.658	0.631	0.577	0.604	0.631	0.622	0.595	0.604	0.649	0.694	
17 Rnl (14)x(15)x(16)	mm	1.5	1.5	1.4	1.3	1.1	1.2	1.3	1.2	1.1	1.1	1.3	1.5	
18 Rn (13)-(17)	mm	3.6	4.1	4.7	5.1	5.1	5.3	5.3	5.2	4.7	4.2	3.7	3.3	
19 W Rn	mm	2.7	3.1	3.6	3.9	3.9	4.1	4.2	4.0	3.7	3.3	2.8	2.5	
19 W Rn +(1-W)f(U)(ea-ed)	mm	4.7	5.3	5.9	6.1	5.8	6.6	6.9	6.6	5.9	5.0	4.4	4.4	
20 c		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
21 ETo	mm	4.7	5.3	5.9	6.1	5.8	6.6	6.9	6.6	5.9	5.0	4.4	4.4	5.6

Source: Oficina Nacional de Meteorologia, Departmento de Climatologia, 1961-1997

Table 3.5.4 Field Measurement of Percolation Rate in Paddy in San Juan

Site : Paddy Plot of Lateral B of San Juan Canal system

	Time			Lapse, x	Seepage+ Evaporation Gauge reading (dial gauge), y	Evaporation by dia. 28 cm pan		
	(hour)	(min)	(min)	(min)	(mm)	(cc)	(cc)	(mm)
Plot 1	9	40	0	0	23.58	500 (9:45)		
	9	55	15	15	23.58			
	10	10	15	30	23.15			
	10	25	15	45	23.21			
	10	28	0	0	22.65			
	10	43	15	15	22.65			
	10	57	14	29	22.57			
	11	13	16	45	21.95			
	11	28	15	60	21.81			
	11	43	15	75	21.48			
	11	58	15	90	21.2			
	12	13	15	105	20.74			
	12	28	15	120	20.58	433	67	1.09
	Evapo + percoration =				1.04 mm/hr			
	Evaporation =		0.00668 mm/min		0.40 mm/hr			
	Percoration =				0.63 mm/hr			
					15.23 mm/day			
	y = 22.779 - 1.3229e-2x - 4.9039e-5x^2 R^2 = 0.978							
Plot 2	9	50	0	0	19.48			
	10	10	20	20	19.48			
	10	25	15	35	19.30			
	10	40	15	50	18.85			
	10	55	15	65	18.70			
	11	10	15	80	18.33			
	11	25	15	95	18.04			
	11	40	15	110	17.40			
	11	55	15	125	17.15			
	12	10	15	140	16.84			
	12	25	15	155	16.40			
	Evapo + percoration =				1.19 mm/hr			
	Evaporation =		0.00668 mm/min		0.40 mm/hr			
	Percoration =				0.79 mm/hr			
					19.00 mm/day			
	y = 19.621 - 1.0742e-2x - 6.7886e-5x^2 R^2 = 0.990							

Table 3.5.5 Estimate of Irrigation Water Requirements under Present Condition (1/16)
in the J. J. Puello Irrigation Area 10,986 ha

Crop		Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.
	Eto (mm/day)	4.1	4.8	5.4	5.7	5.6	5.9	5.9	5.8	5.1	4.5	4.2	3.8
Beans	Planting area (ha)	2,433	3,650	3,650	2,433	304							304
	kc	0.80	1.10	0.40									0.50
		0.50	0.80	1.10	0.40								
			0.50	0.80	1.10	0.40							
	Average kc	0.65	0.80	0.77	0.75	0.40							0.50
	CU (mm/day)	2.7	3.8	4.2	4.3	2.2							1.9
	CU(mm/month)	79.7	119.1	129.1	119.1	69.6							59.2
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8							84.5
	Net Requirement(MCM)	1.06	3.95	4.30	2.64	0.15							0.00
Rice1	Planting area (ha)	105						420	1261	1681	1681	1576	841
	kc							1.10	1.15	1.25	1.25	1.00	
									1.10	1.15	1.25	1.25	1.00
		1.00								1.10	1.15	1.25	1.25
	Average kc	1.00						1.10	1.13	1.17	1.22	1.17	1.13
	CU (mm/day)	4.1						6.5	6.5	6.0	5.5	4.9	4.3
	CU(mm/month)	122.6						202.9	195.1	185.6	171.1	145.9	133.11
	Percolation (mm/mon)	150.0						155.0	150.0	155.0	155.0	150.0	155.0
	Effective rainfall (mm)	36.2						90.9	52.6	65.9	80.0	94.8	84.5
	Land Preparation, 300 mm (MCM)							2.52	2.52				
	Net Requirement(MCM)	0.25						3.64	6.21	4.62	4.14	3.17	1.71
Sweet Potato 1	Planting area			32	95	158	190	158	95	32			
	kc			0.45	0.75	1.10	0.75						
					0.45	0.75	1.10	0.75					
						0.45	0.75	1.10	0.75				
							0.45	0.75	1.10	0.75			
	Average kc			0.45	0.60	0.77	0.76	0.87	0.93	0.75			
	CU (mm/day)			2.44	3.40	4.30	4.51	5.16	5.35	3.85			
	CU(mm/month)			75.77	95.25	133.45	135.36	159.85	160.42	119.29			
	Effective rainfall (mm)			11	10	22	45	91	53	66			
	Net Requirement(MCM)			0.02	0.08	0.18	0.17	0.11	0.10	0.02			
Sweet Potato 2	Planting area (ha)	225	75						75	225	375	450	375
	kc								0.45	0.75	1.10	0.75	
										0.45	0.75	1.10	0.75
		0.75									0.45	0.75	1.10
		1.10	0.75									0.45	0.75
	Average kc	0.93	0.75						0.45	0.60	0.77	0.76	0.87
	CU (mm/day)	3.78	3.60						2.60	3.08	3.48	3.18	3.31
	CU(mm/month)	113.4	111.6						78.0	95.4	107.8	95.4	102.5
	Effective rainfall (mm)	36	11						53	66	80	95	84
	Net Requirement(MCM)	0.17	0.08						0.02	0.07	0.10	0.00	0.07
Corn&Sorghum	Planting area (ha)						43	130	217	260	217	130	43
	kc						0.50	0.80	1.10	0.60			
								0.50	0.80	1.10	0.60		
									0.50	0.80	1.10	0.60	
										0.50	0.80	1.10	0.60
	Average kc						0.50	0.65	0.80	0.75	0.83	0.85	0.60
	CU (mm/day)						2.96	3.87	4.62	3.85	3.78	3.54	2.29
	CU(mm/month)						88.8	119.9	138.7	119.3	117.2	106.3	71.0
	Effective rainfall (mm)						45	91	53	66	80	95	84
	Net Requirement(MCM)						0.02	0.04	0.19	0.14	0.08	0.02	0.00
Plantain	(ha)	35	35	35	35	35	35	35	35	35	35	35	35
Banana		120	120	120	120	120	120	120	120	120	120	120	120
Papaya		100	100	100	100	100	100	100	100	100	100	100	100
Sub-total	Planting area	255	255	255	255	255	255	255	255	255	255	255	255
	kc	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
	CU (mm/day)	3.5	4.1	4.6	4.8	4.8	5.0	5.1	4.9	4.4	3.9	3.5	3.2
	CU(mm/month)	104.2	126.5	143.1	134.9	148.0	150.9	156.8	147.4	135.2	119.5	106.3	100.6
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8	45.5	90.9	52.6	65.9	80.0	94.8	84.5
	Net Requirement(MCM)	0.17	0.29	0.34	0.32	0.32	0.27	0.17	0.24	0.18	0.10	0.03	0.04
Pasture, Cassava, Pegion pea, Vegetables, and Others													
	Planting area (ha)	582	620	565	382	290	373	644	832	832	832	803	678
	Average kc	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
	CU (mm/day)	3.27	3.84	4.35	4.54	4.49	4.73	4.76	4.62	4.10	3.63	3.33	3.05
	CU(mm/month)	98.1	119.1	134.7	127.0	139.2	142.0	147.6	138.7	127.2	112.5	100.0	94.7
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8	45.5	90.9	52.6	65.9	80.0	94.8	84.5
	Net Requirement(MCM)	0.36	0.67	0.70	0.44	0.34	0.36	0.36	0.72	0.51	0.27	0.04	0.07
Total Net Requirements (MCM)		1.77	4.99	5.35	3.43	0.98	0.82	0.68	1.27	0.91	0.56	0.09	0.18
Total Net Requirement for Paddy (MCM)		0.25	0.00	0.00	0.00	0.00	0.00	3.64	6.21	4.62	4.14	3.17	1.71
Diversion Requirement (MCM)		5.29	13.48	14.47	9.42	2.66	2.21	9.43	16.36	12.08	10.13	6.85	4.05

Table 3.5.5 Estimate of Irrigation Water Requirements under Present Condition (2/16)
in the San Juan Irrigation Area 5,526 ha

Crop		Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.
	ETo (mm/day)	4.1	4.8	5.4	5.7	5.6	5.9	5.9	5.8	5.1	4.5	4.2	3.8
Beans	Planting area (ha)	1,467	2,200	2,200	1,467	183							183
	kc	0.80	1.10	0.40									0.50
		0.50	0.80	1.10	0.40								
			0.50	0.80	1.10	0.40							
	Average kc	0.65	0.80	0.77	0.75	0.40							0.50
	CU(mm/month)	79.7	119.1	129.1	119.4	69.6							59.2
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8							84.5
	Net Requirement(MCM)	0.64	2.38	2.59	1.59	0.09							0.00
Rice1	Planting area (ha)	133						554	1661	2215	2215	2077	1108
	kc							1.10	1.15	1.25	1.25	1.00	
									1.10	1.15	1.25	1.25	1.00
		1.00								1.10	1.15	1.25	1.25
	Average kc	1.00						1.10	1.13	1.17	1.22	1.17	1.13
	CU (mm/day)	4.1						6.5	6.5	6.0	5.5	4.9	4.3
	CU(mm/month)	122.6						202.9	195.1	185.6	171.1	145.9	133.11
	Percolation (mm/mon)	150.0						155.0	155.0	155.0	155.0	155.0	155.0
	Effective rainfall (mm)	36.2						90.9	52.6	65.9	80.0	94.8	84.5
	Land Preparation, 300 mm (MCM)							3.32	3.32				
	Net Requirement(MCM)	0.33						4.80	8.27	6.08	5.45	4.28	2.26
Rice2	Planting area (ha)	30	83	90	90	83	30						
	kc	1.10	1.15	1.25	1.25	1.00							
			1.10	1.15	1.25	1.25	1.00						
	Average kc	1.10	1.13	1.20	1.25	1.13	1.00						
	CU (mm/day)	4.5	5.4	6.5	7.1	6.3	5.9						
	CU(mm/month)	134.8	167.5	202.0	198.4	195.8	177.5						
	Percolation (mm/mon),	150.0	155.0	155.0	140.0	155.0	150.0						
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8	45.5						
	Land Preparation, 300 mm (MCM)	0.14	0.14										
	Net Requirement(MCM)	0.21	0.39	0.31	0.30	0.27	0.08						
Sweet Potato 1	Planting area	45	135	180	180	135	45						
	kc	0.45	0.75	1.10	0.75								
			0.45	0.75	1.10	0.75							
				0.45	0.75	1.10	0.75						
	Average kc	0.45	0.60	0.77	0.87	0.93	0.75						
	CU (mm/day)	1.8	2.9	4.2	4.9	5.2	4.4						
	CU(mm/month)	55.2	89.3	129.1	137.6	161.0	133.1						
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8	45.5						
	Net Requirement(MCM)	0.01	0.11	0.21	0.23	0.19	0.04						
Sweet Potato 2	Planting area (ha)	73						73	219	364	437	364	219
	kc							0.45	0.75	1.10	0.75		
									0.45	0.75	1.10	0.75	
										0.45	0.75	1.10	0.75
		0.75									0.45	0.75	1.10
	Average kc	0.75						0.45	0.60	0.77	0.76	0.87	0.93
	CU (mm/day)	3.1						2.7	3.5	3.9	3.5	3.6	3.5
	CU(mm/month)	91.9						83.0	104.1	121.9	107.2	108.4	109.4
	Effective rainfall (mm)	36.2						90.9	52.6	65.9	80.0	94.8	84.5
	Net Requirement(MCM)	0.04						0.00	0.11	0.20	0.12	0.05	0.05
Corn&Sorghum	Planting area (ha)	137						137	410	683	820	683	410
	kc							0.50	0.80	1.10	0.60		
									0.50	0.80	1.10	0.60	
										0.50	0.80	1.10	0.60
		0.60									0.50	0.80	1.10
	Average kc	0.60						0.50	0.65	0.80	0.75	0.83	0.85
	CU (mm/day)	2.5						3.0	3.8	4.1	3.4	3.5	3.2
	CU(mm/month)	73.5						92.2	112.7	127.2	105.5	104.2	100.6
	Effective rainfall (mm)	36.2						90.9	52.6	65.9	80.0	94.8	84.5
	Net Requirement(MCM)	0.05						0.00	0.25	0.42	0.21	0.06	0.07
Plantain	Planting area (ha)	134	134	134	134	134	134	134	134	134	134	134	134
	kc	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
	CU (mm/day)	3.5	4.1	4.6	4.8	4.8	5.0	5.1	4.9	4.4	3.9	3.5	3.2
	CU(mm/month)	104.2	126.5	143.1	134.9	148.0	150.9	156.8	147.4	135.2	119.5	106.3	100.6
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8	45.5	90.9	52.6	65.9	80.0	94.8	84.5
	Net Requirement(MCM)	0.09	0.15	0.18	0.17	0.17	0.14	0.09	0.13	0.09	0.05	0.02	0.02
Pasture, Cassava, Pegion pea, Vegetables, and Others													
	Planting area (ha)	288	288	271	232	229	237	271	288	285	288	288	288
	Average kc	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
	CU (mm/day)	3.3	3.8	4.3	4.5	4.5	4.7	4.8	4.6	4.1	3.6	3.3	3.1
	CU(mm/month)	98.1	119.1	134.7	127.0	139.2	142.0	147.6	138.7	127.2	112.5	100.0	94.7
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8	45.5	90.9	52.6	65.9	80.0	94.8	84.5
	Net Requirement(MCM)	0.18	0.31	0.33	0.28	0.26	0.23	0.15	0.25	0.18	0.09	0.02	0.03
Total Net Requirements (MCM)		1.01	2.95	3.31	2.26	0.70	0.41	0.24	0.33	0.89	0.45	0.15	0.17
Total Net Requirement for Paddy (MCM)		0.54	0.39	0.31	0.30	0.27	0.08	4.80	8.27	6.08	5.45	4.28	2.26
Diversion Requirement (MCM)		4.11	9.52	10.41	7.29	2.65	1.38	10.93	19.75	15.57	13.00	9.53	5.30

Table 3.5.5 Estimate of Irrigation Water Requirements under Present Conditio (3/16)
in the Hato de Padre Irrigation Area 2,659 ha

Crop		Nov.	Dec.	Jan.	Feb	Mar	Apr	May	Jun.	Jul	Aug.	Sep.	Oct
	ETo (mm/day)	4.1	4.8	5.4	5.7	5.6	5.9	5.9	5.8	5.1	4.5	4.2	3.8
Beans	Planting area (ha)	577	866	866	577	72							72
	kc	0.80	1.10	0.40									0.50
		0.50	0.80	1.10	0.40								
			0.50	0.80	1.10	0.40							
	Average kc	0.65	0.80	0.77	0.75	0.40							0.50
	CU (mm/day)	2.7	3.8	4.2	4.3	2.2							1.9
	CU(mm/month)	79.7	119.1	129.1	119.1	69.6							59.2
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8							84.5
	Net Requirement(MCM)	0.25	0.94	1.02	0.63	0.03							0.00
Rice1	Planting area (ha)	48						193	579	772	772	724	386
	kc							1.10	1.15	1.25	1.25	1.00	
									1.10	1.15	1.25	1.25	1.00
		1.00								1.10	1.15	1.25	1.25
	Average kc	1.00						1.10	1.13	1.17	1.22	1.17	1.13
	CU (mm/day)	4.1						6.5	6.5	6.0	5.5	4.9	4.3
	CU(mm/month)	122.6						202.9	195.1	185.6	171.1	145.9	133.11
	Percolation (mm/moo)	150.0						155.0	150.0	155.0	155.0	150.0	155.0
	Effective rainfall (mm)	36.2						90.9	52.6	65.9	80.0	94.8	84.5
	Land Preparation, 300 mm (MCM)							1.16	1.16				
	Net Requirement(MCM)	0.11						1.67	2.85	2.12	1.90	1.46	0.79
Rice2	Planting area (ha)		21	57	62	62	57	21					
	kc		1.10	1.15	1.25	1.25	1.00						
			1.10	1.15	1.25	1.25	1.00						
	Average kc		1.10	1.13	1.20	1.25	1.13	1.00					
	CU (mm/day)		5.3	6.1	6.8	7.0	6.7	5.9					
	CU(mm/month)		163.7	189.4	190.5	217.6	199.7	184.4					
	Percolation (mm/moo),		155.0	155.0	140.0	155.0	150.0	155.0					
	Effective rainfall (mm)		10.9	11.3	10.5	21.8	45.5	90.9					
	Land Preparation, 300 mm (MCM)		0.09	0.1									
	Net Requirement(MCM)		0.16	0.28	0.20	0.22	0.17	0.05					
Sweet Potato 1	Planting area		22.5	67.5	90	90	67.5	22.5					
	kc		0.45	0.75	1.10	0.75							
			0.45	0.75	1.10	0.75	0.75						
				0.45	0.75	1.10	0.75						
	Average kc		0.45	0.60	0.77	0.87	0.93	0.75					
	CU (mm/day)		2.2	3.3	4.3	4.9	5.5	4.5					
	CU(mm/month)		67.0	101.0	121.7	150.9	164.2	138.3					
	Effective rainfall (mm)		11	11	10	22	45	91					
	Net Requirement(MCM)		0.01	0.06	0.10	0.12	0.08	0.01					
Sweet Potato 2	Planting area (ha)	41						41	123	205	246	205	123
	kc							0.45	0.75	1.10	0.75		
									0.45	0.75	1.10	0.75	
										0.45	0.75	1.10	0.75
		0.75									0.45	0.75	1.10
	Average kc	0.75						0.45	0.60	0.77	0.76	0.87	0.93
	CU (mm/day)	3.1						2.7	3.5	3.9	3.5	3.6	3.5
	CU(mm/month)	91.9						83.0	104.1	121.9	107.2	108.4	109.4
	Effective rainfall (mm)	36						91	53	66	80	95	84
	Net Requirement(MCM)	0.02						0.00	0.06	0.11	0.07	0.03	0.03
Corn&Sorghum	Planting area (ha)	9						9	28	46	55	46	28
	kc							0.50	0.80	1.10	0.60		
									0.50	0.80	1.10	0.60	
										0.50	0.80	1.10	0.60
		0.60									0.50	0.80	1.10
	Average kc	0.60						0.50	0.65	0.80	0.75	0.83	0.85
	CU (mm/day)	2.5						3.0	3.8	4.1	3.4	3.5	3.2
	CU(mm/month)	73.5						92.2	112.7	127.2	105.5	104.2	100.6
	Effective rainfall (mm)	36						91	53	66	80	95	84
	Net Requirement(MCM)	0.00						0.00	0.02	0.03	0.01	0.00	0.00
Plantain		10	10	10	10	10	10	10	10	10	10	10	10
Banana		5	5	5	5	5	5	5	5	5	5	5	5
total	Planting area (ha)	15	15	15	15	15	15	15	15	15	15	15	15
	kc	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
	CU (mm/day)	3.5	4.1	4.6	4.8	4.8	5.0	5.1	4.9	4.4	3.9	3.5	3.2
	CU(mm/month)	104.2	126.5	143.1	134.9	148.0	150.9	155.8	147.4	133.2	119.5	106.3	100.6
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8	45.5	90.9	52.6	65.9	80.0	94.8	84.5
	Net Requirement(MCM)	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.00	0.00
Pasture, Cassava, Pegion pea, Vegetables, and Others													
	Planting area (ha)	63	63	57	56	38	56	57	63	63	63	59	63
	Average kc	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
	CU (mm/day)	3.3	3.8	4.3	4.5	4.5	4.7	4.8	4.6	4.1	3.6	3.3	3.1
	CU(mm/month)	98.1	119.1	134.7	127.0	139.2	142.0	147.6	138.7	127.2	112.5	100.0	94.7
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8	45.5	90.9	52.6	65.9	80.0	94.8	84.5
	Net Requirement(MCM)	0.04	0.07	0.07	0.06	0.04	0.05	0.03	0.05	0.04	0.02	0.00	0.01
Total Net Requirements (MCM)		0.33	1.03	1.17	0.81	0.21	0.15	0.05	0.15	0.19	0.11	0.03	0.04
Total Net Requirement for Paddy (MCM)		0.11	0.16	0.28	0.20	0.22	0.17	1.72	2.85	2.12	1.90	1.46	0.79
Diversion Requirement (MCM)		1.04	2.99	3.49	2.42	0.97	0.72	3.58	6.07	4.72	4.07	3.00	1.68

Table 3.5.5 Estimate of Irrigation Water Requirements under Present Condition (4/16)
in the Guanito San Juan Area

1,000 ha

Crop		Nov.	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
	ETo (mm/day)	4.1	4.8	5.4	5.7	5.6	5.9	5.9	5.8	5.1	4.5	4.2	3.8
Beans	Planting area (ha)	247	370	370	247	31							31
	kc	0.80	1.10	0.40									0.50
		0.50	0.80	1.10	0.40								
			0.50	0.80	1.10	0.40							
	Average kc	0.65	0.80	0.77	0.75	0.40							0.50
	CU (mm/day)	2.7	3.8	4.2	4.3	2.2							1.9
	CU(mm/month)	79.3	119.1	129.4	119.1	69.6							59.2
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8							84.5
	Net Requirement(MCM)	0.11	0.40	0.44	0.27	0.01							0.00
Rice1	Planting area (ha)	0				61	245	491	705	735	613	368	123
	kc					1.10	1.15	1.25	1.25	1.00			
							1.10	1.15	1.25	1.25	1.00		
								1.10	1.15	1.25	1.25	1.00	
									1.10	1.15	1.25	1.25	1.00
	Average kc					1.10	1.13	1.17	1.19	1.16	1.17	1.13	1.00
	CU (mm/day)					6.2	6.7	6.9	6.9	6.0	5.3	4.7	3.8
	CU(mm/month)					191.5	199.7	215.2	205.9	184.9	164.1	140.7	118.32
	Percolation (mm/mon)					155	150	155	150	155	155	150	155
	Effective rainfall (mm)					21.8	45.5	90.9	52.6	65.9	80.0	94.8	84.5
	Land Preparation, 300 mm (MCM)					0.74	0.74	0.74					
	Net Requirement(MCM)					0.94	1.48	2.11	2.14	2.02	1.47	0.72	0.23
Rice2	Planting area (ha)	13	14	14	13	5							5
	kc	1.15	1.25	1.25	1.00								1.10
		1.10	1.15	1.25	1.25	1.00							
	Average kc	1.13	1.20	1.25	1.13	1.00							1.10
	CU (mm/day)	4.6	5.8	6.8	6.4	5.6							4.2
	CU(mm/month)	137.9	178.6	210.5	178.6	174.1							130.1
	Percolation (mm/mon),	150.0	155.0	155.0	140.0	155.0							155.0
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8							84.5
	Land Preparation, 300 mm (MCM)	0.02											0.02
	Net Requirement(MCM)	0.05	0.05	0.05	0.04	0.01							0.03
Sweet Potato	Planting area	9	9	13	15	18	18	16	16	16	22	24	23
	Average kc	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
	CU (mm/day)	3.3	3.8	4.3	4.5	4.5	4.7	4.8	4.6	4.1	3.6	3.3	3.1
	CU(mm/month)	98.1	119.1	134.7	127.0	139.2	142.0	147.6	138.7	127.2	112.5	100.0	94.7
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8	45.5	90.9	52.6	65.9	80.0	94.8	84.5
	Net Requirement(MCM)	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.00	0.00
Corn&Sorghum	Planting area (ha)							1	4	5	5	4	1
	kc							0.50	0.80	1.10	0.60		
									0.50	0.80	1.10	0.60	
										0.50	0.80	1.10	0.60
	Average kc							0.50	0.65	0.80	0.83	0.85	0.60
	CU (mm/day)							3.0	3.8	4.1	3.8	3.5	2.3
	CU(mm/month)							92.2	112.7	127.2	117.2	106.3	71.0
	Effective rainfall (mm)							90.9	52.6	65.9	80.0	94.8	84.5
	Net Requirement(MCM)							0.00	0.00	0.00	0.00	0.00	0.00
Others													
	Planting area (ha)	11	11	10	7	5	7	10	11	11	11	11	11
	Average kc	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
	CU (mm/day)	3.27	3.84	4.35	4.54	4.49	4.73	4.76	4.62	4.10	3.63	3.33	3.05
	CU(mm/month)	98.1	119.1	134.7	127.0	139.2	142.0	147.6	138.7	127.2	112.5	100.0	94.7
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8	45.5	90.9	52.6	65.9	80.0	94.8	84.5
	Net Requirement(MCM)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00
Total Net Requirements (MCM)		0.12	0.42	0.46	0.29	0.04	0.02	0.01	0.03	0.02	0.01	0.00	0.00
Total Net Requirement for Paddy (MCM)		0.05	0.05	0.05	0.04	0.95	1.48	2.11	2.14	2.02	1.47	0.72	0.26
Diversion Requirement (MCM)		0.47	1.34	1.47	0.95	2.14	3.22	4.52	4.63	4.35	3.16	1.54	0.57

Table 3.5.5 Estimate of Irrigation Water Requirements under Present Condition (5/16)
In the Mijo Irrigation Area 2,390 ha

Crop		Nov.	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
	ETo (mm/day)	4.1	4.8	5.4	5.7	5.6	5.9	5.9	5.8	5.1	4.5	4.2	3.8
Beans													
	Planting area (ha)	281	773	843	773	281							
	kc	0.50	0.80	1.10	0.40								
			0.50	0.80	1.10	0.40							
	Average kc	0.50	0.65	0.95	0.75	0.40							
	CU (mm/day)	2.0	3.1	5.2	4.3	2.2							
	CU(mm/month)	61.3	96.8	160.0	119.1	69.6							
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8							
	Net Requirement(MCM)	0.07	0.66	1.25	0.84	0.13							
Rice													
	Planting area (ha)	417	104					208	625	1042	1250	1198	833
	kc							1.10	1.15	1.25	1.25	1.00	
									1.10	1.15	1.25	1.25	1.00
		1.00								1.10	1.15	1.25	1.25
		1.25	1.00								1.10	1.15	1.25
	Average kc	1.13	1.00					1.10	1.13	1.17	1.19	1.16	1.17
	CU (mm/day)	4.6	4.8					6.5	6.5	6.0	5.4	4.8	4.5
	CU(mm/month)	137.9	148.9					202.9	195.1	185.6	167.0	145.4	138.0
	Percolation (mm/moe)	150.0	155.0					155.0	150.0	155.0	155.0	150.0	155.0
	Effective rainfall (mm)	36.2	10.9					90.9	52.6	65.9	80.0	94.8	84.5
	Land Preparation, 300 mm (MCM)							1.25	1.25	1.25			
	Net Requirement(MCM)	1.05	0.31					1.81	3.08	4.11	3.03	2.40	1.74
Sweet Potato 1													
	Planting area	17.5	52.5	70	70	52.5	17.5						
	kc	0.45	0.75	1.10	0.75								
			0.45	0.75	1.10	0.75							
				0.45	0.75	1.10	0.75						
	Average kc	0.45	0.60	0.77	0.87	0.93	0.75						
	CU (mm/day)	1.84	2.88	4.16	4.91	5.19	4.44						
	CU(mm/month)	55.16	89.32	129.08	137.59	161.01	133.14						
	Effective rainfall (mm)	36	11	11	10	22	45						
	Net Requirement(MCM)	0.00	0.04	0.08	0.09	0.07	0.02						
Sweet Potato 2													
	Planting area (ha)						22	65	108	130	108	65	22
	kc						0.45	0.75	1.10	0.72			
								0.45	0.75	1.10	0.72		
									0.45	0.75	1.10	0.72	
										0.45	0.75	1.10	0.72
	Average kc						0.45	0.60	0.77	0.75	0.86	0.91	0.72
	CU (mm/day)						2.66	3.57	4.43	3.87	3.89	3.79	2.75
	CU(mm/month)						79.9	110.7	133.0	120.1	120.5	113.8	85.2
	Effective rainfall (mm)						45	91	53	66	80	95	84
	Net Requirement(MCM)						0.01	0.01	0.09	0.07	0.04	0.01	0.00
Corn&Sorghum													
	Planting area (ha)					33	100	167	200	167	100	33	
	kc					0.50	0.80	1.10	0.60				
							0.50	0.80	1.10	0.60			
								0.50	0.80	1.10	0.60		
									0.50	0.80	1.10	0.60	
	Average kc					0.50	0.65	0.80	0.75	0.83	0.85	0.60	
	CU (mm/day)					2.81	3.85	4.76	4.34	4.28	3.86	2.50	
	CU(mm/month)					87.03	115.39	147.55	130.07	132.54	119.55	75.04	
	Effective rainfall (mm)					22	45	91	53	66	80	95	
	Net Requirement(MCM)					0.02	0.07	0.09	0.15	0.11	0.04	0.00	
Plantain		0	0	0	0	0	0	0	0	0	0	0	0
Banana		30	30	30	30	30	30	30	30	30	30	30	30
Papaya		15	15	15	15	15	15	15	15	15	15	15	15
sub-total	Planting area (ha)	45	45	45	45	45	45	45	45	45	45	45	45
	Average kc	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
	CU (mm/day)	3.47	4.08	4.62	4.82	4.77	5.03	5.06	4.91	4.35	3.85	3.54	3.24
	CU(mm/month)	104.19	126.53	143.12	134.94	147.95	150.90	156.78	147.42	135.20	119.55	100.05	100.57
	Effective rainfall (mm)	36.18	10.93	11.30	10.49	21.84	45.50	90.94	52.58	65.89	79.97	94.75	84.48
	Net Requirement(MCM)	0.03	0.05	0.06	0.06	0.06	0.05	0.03	0.04	0.03	0.02	0.00	0.01
Others													
	Planting area (ha)	320	320	296	249	225	249	296	320	320	320	320	320
	Average kc	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
	CU (mm/day)	3.27	3.84	4.35	4.54	4.49	4.73	4.76	4.62	4.10	3.63	3.33	3.05
	CU(mm/month)	98.06	119.09	134.79	127.01	139.25	142.02	147.55	138.74	127.24	112.58	100.05	94.65
	Effective rainfall (mm)	36.18	10.93	11.30	10.49	21.84	45.50	90.94	52.58	65.89	79.97	94.75	84.48
	Net Requirement(MCM)	0.20	0.35	0.31	0.29	0.26	0.24	0.17	0.28	0.20	0.10	0.03	0.03
Total Net Requirements (MCM)		0.30	1.10	1.76	1.27	0.55	0.33	0.30	0.56	0.41	0.24	0.03	0.04
Total Net Requirement for Paddy (MCM)		1.05	0.31	0.00	0.00	0.00	0.00	1.81	3.08	4.11	3.03	2.40	1.74
Diversion Requirement (MCM)		3.51	4.40	5.87	4.25	1.83	1.27	5.32	9.20	11.45	7.89	5.83	4.27

Table 3.5.5 Estimate of Irrigation Water Requirements under Present Condition (6/16)
in the Other Small Irrigation Systems served by San Juan River

1,848 ha

Crop		Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.
	ETo (mm/day)	4.1	4.8	5.4	5.7	5.6	5.9	5.9	5.8	5.1	4.5	4.2	3.8
Beans	Planting area (ha)	617	925	925	617	77							77
	kc	0.80	1.10	0.40									0.50
		0.50	0.80	1.10	0.40								
			0.50	0.80	1.10	0.40							
	Average kc	0.65	0.80	0.77	0.75	0.40							0.50
	CU (mm/day)	2.7	3.8	4.2	4.3	2.2							1.9
	CU(mm/month)	79.7	119.1	129.1	119.1	69.6							59.2
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8							84.5
	Net Requirement(MCM)	0.27	1.00	1.09	0.67	0.04							0.00
Rice1	Planting area (ha)	58						231	694	925	925	857	463
	kc							1.10	1.15	1.25	1.25	1.00	
									1.10	1.15	1.25	1.25	1.00
		1.00								1.10	1.15	1.25	1.25
	Average kc	1.00						1.10	1.13	1.17	1.22	1.17	1.13
	CU (mm/day)	4.1						6.5	6.5	6.0	5.5	4.9	4.3
	CU(mm/month)	122.6						202.9	195.1	185.6	171.1	145.9	133.11
	Percolation (mm/mon)	150.0						155.0	150.0	155.0	155.0	150.0	155.0
	Effective rainfall (mm)	36.2						90.9	52.6	65.9	80.0	94.8	84.5
	Land Preparation, 300 mm (MCM)							1.39	1.39				
	Net Requirement(MCM)	0.14						2.00	3.42	2.54	2.28	1.74	0.94
Rice2	Planting area (ha)		15	41	45	45	41	15					
	kc		1.10	1.15	1.25	1.25	1.00						
				1.10	1.15	1.25	1.25	1.00					
	Average kc		1.10	1.13	1.20	1.25	1.13	1.00					
	CU (mm/day)		5.3	6.1	6.8	7.0	6.7	5.9					
	CU(mm/month)		163.7	189.4	190.5	217.6	199.7	184.4					
	Percolation (mm/mon),		155.0	155.0	140.0	155.0	150.0	155.0					
	Effective rainfall (mm)		10.9	11.3	10.5	21.8	45.5	90.9					
	Land Preparation, 300 mm (MCM)		0.07	0.07									
	Net Requirement(MCM)		0.11	0.20	0.18	0.16	0.13	0.04					
Sweet Potato 1	Planting area	13	38	63	75	63	38	13					
	kc	0.45	0.75	1.10	0.75								
			0.45	0.75	1.10	0.75							
				0.45	0.75	1.10	0.75						
					0.45	0.75	1.10	0.75					
	Average kc	0.45	0.60	0.77	0.76	0.87	0.93	0.75					
	CU (mm/day)	1.8	2.9	4.2	4.3	4.9	5.5	4.5					
	CU(mm/month)	55.2	89.3	129.1	121.1	150.9	164.2	138.3					
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8	45.5	90.9					
	Net Requirement(MCM)	0.00	0.03	0.07	0.08	0.08	0.04	0.01					
Sweet Potato 2	Planting area (ha)	28						28	85	142	170	142	85
	kc							0.45	0.75	1.10	0.75		
									0.45	0.75	1.10	0.75	
										0.45	0.75	1.10	0.75
		0.75									0.45	0.75	1.1
	Average kc	0.38						0.45	0.60	0.77	0.76	0.87	0.925
	CU (mm/day)	1.5						2.7	3.5	3.9	3.5	3.6	3.5
	CU(mm/month)	46.0						83.0	104.1	121.9	107.2	108.4	109.4
	Effective rainfall (mm)	36.2						90.9	52.6	65.9	80.0	94.8	84.5
	Net Requirement(MCM)	0.00						0.00	0.04	0.08	0.05	0.02	0.02
Corn&Sorghum	Planting area (ha)	46						46	138	229	275	229	138
	kc							0.50	0.80	1.10	0.60		
									0.50	0.80	1.10	0.60	
										0.50	0.80	1.10	0.60
		0.60									0.50	0.80	1.10
	Average kc	0.60						0.50	0.65	0.80	0.75	0.83	0.85
	CU (mm/day)	2.5						3.0	3.8	4.1	3.4	3.5	3.2
	CU(mm/month)	73.5						92.2	112.7	127.2	105.5	104.2	100.6
	Effective rainfall (mm)	36.2						90.9	52.6	65.9	80.0	94.8	84.5
	Net Requirement(MCM)	0.02						0.00	0.08	0.14	0.07	0.02	0.02
Plantain	(ha)	35	35	35	35	35	35	35	35	35	35	35	35
Banana		9	9	9	9	9	9	9	9	9	9	9	9
Subtotal	Planting area	44	44	44	44	44	44	44	44	44	44	44	44
	kc	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
	CU (mm/day)	3.5	4.1	4.6	4.8	4.8	5.0	5.1	4.9	4.4	3.9	3.5	3.2
	CU(mm/month)	104.2	126.5	143.1	134.9	148.0	150.9	156.8	147.4	135.2	119.5	106.3	100.6
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8	45.5	90.9	52.6	65.9	80.0	94.8	84.5
	Net Requirement(MCM)	0.03	0.05	0.06	0.05	0.06	0.05	0.03	0.04	0.03	0.02	0.01	0.01
Pasture, Cassava, Pegion pea, Vegetables, and Others													
	Planting area (ha)	41	41	38	29	19	20	39	57	60	60	58	45
	Average kc	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
	CU (mm/day)	3.3	3.8	4.3	4.5	4.5	4.7	4.8	4.6	4.1	3.6	3.3	3.1
	CU(mm/month)	98.1	119.1	134.7	127.0	139.2	142.0	147.6	138.7	127.2	112.5	100.0	94.7
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8	45.5	90.9	52.6	65.9	80.0	94.8	84.5
	Net Requirement(MCM)	0.03	0.04	0.05	0.03	0.02	0.02	0.02	0.05	0.04	0.02	0.00	0.00
Total Net Requirements (MCM)		0.35	1.13	1.27	0.84	0.19	0.11	0.06	0.22	0.29	0.15	0.05	0.06
Total Net Requirement for Paddy (MCM)		0.14	0.11	0.20	0.14	0.16	0.13	2.04	3.42	2.54	2.28	1.74	0.93
Diversion Requirement (MCM)		1.31	3.55	4.17	2.78	0.91	0.59	4.51	7.91	6.25	5.30	3.85	2.13

Table 3.5.5 Estimate of Irrigation Water Requirements under Present Condition (7/16)
in the Area of Vallejuelo Irrigation Systems

495 ha

Crop		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
	ETo (mm/day)	4.1	4.8	5.4	5.7	5.6	5.9	5.9	5.8	5.1	4.5	4.2	3.8
Beans	Planting area (ha)	195	179	65								65	179
	kc	1.10	0.40									0.50	0.80
		0.80	1.10	0.40									0.50
	Average kc	0.95	0.75	0.40								0.50	0.65
	CU (mm/day)	3.9	3.6	2.2								2.1	2.5
	CU(mm/month)	116.4	111.6	67.3								62.5	76.9
	Effective rainfall (mm)	36.2	10.9	11.3								94.8	84.5
	Net Requirement(MCM)	0.16	0.18	0.04								0.00	0.00
Corn (1)	Planting area (ha)						19	56	75	75	56	19	
	kc						0.50	0.80	1.10	0.60			
								0.50	0.80	1.10	0.60		
									0.50	0.80	1.10	0.60	
	Average kc						0.50	0.65	0.80	0.83	0.85	0.60	
	CU (mm/day)						3.0	3.9	4.6	4.3	3.9	2.5	
	CU(mm/month)						88.8	119.9	138.7	132.5	119.5	75.0	
	Effective rainfall (mm)						45.5	90.9	52.6	65.9	80.0	94.8	
	Net Requirement(MCM)						0.01	0.02	0.06	0.05	0.02	0.00	
Corn (2)	Planting area modified	75	75	56	19							19	56
	kc	1.10	0.60									0.50	0.80
		0.80	1.10	0.60									0.50
		0.50	0.80	1.10	0.60								
	Average kc	0.80	0.83	0.65	0.60							0.50	0.65
	CU (mm/day)	3.3	4.0	4.6	3.4							2.1	2.5
	CU(mm/month)	98.1	124.0	143.1	95.3							62.5	76.9
	Effective rainfall (mm)	36.2	10.9	11.3	10.5							94.8	84.5
	Net Requirement(MCM)	0.05	0.08	0.07	0.02							0.00	0.00
Onion (1)	Planting area (ha)								17	46	50	46	17
	kc								0.50	0.80	1.00	1.00	
										0.50	0.80	1.00	1.00
	Average kc								0.50	0.65	0.90	1.00	1.00
	CU (mm/day)								6.3	5.8	5.4	5.2	4.8
	CU(mm/month)								188.4	179.2	168.5	155.1	149.3
	Effective rainfall (mm)								52.6	65.9	80.0	94.8	84.5
	Net Requirement(MCM)								0.02	0.05	0.04	0.03	0.01
Onion (2)	Planting area				17	46	50	46	17				
	kc				0.50	0.80	1.00	1.00					
						0.50	0.80	1.00	1.00				
	Average kc				0.50	0.65	0.90	1.00	1.00				
	CU (mm/day)				2.8	3.6	5.3	5.9	5.8				
	CU(mm/month)				79.4	113.1	159.8	184.4	173.4				
	Effective rainfall (mm)				10.5	21.8	45.5	90.9	52.6				
	Net Requirement(MCM)				0.01	0.04	0.06	0.04	0.02				
Pigeon pea (1)	Planting area (ha)							13	25	25	13		
	kc							0.60	1.00	0.80			
									0.60	1.00	0.80		
	Average kc							0.60	0.80	0.90	0.80		
	CU (mm/day)							3.6	4.6	4.6	3.6		
	CU(mm/month)							110.7	138.7	143.1	112.5		
	Effective rainfall (mm)							90.9	52.6	65.9	80.0		
	Net Requirement(MCM)							0.00	0.02	0.02	0.00		
Pigeon pea (2)	Planting area (ha)	13									13	25	25
	kc										0.50	1.00	0.80
		0.80										0.60	1.00
	Average kc	0.80									0.50	0.80	0.90
	CU (mm/day)	3.3									2.7	3.3	3.4
	CU(mm/month)	98.1									84.4	100.0	106.5
	Effective rainfall (mm)	36.2									80.0	94.8	84.5
	Net Requirement(MCM)	0.01									0.00	0.00	0.01
Sweet Potato		15	11	4							4	11	15
	kc	0.75									0.45	0.75	1.10
		1.10	0.75									0.45	0.75
		0.75	1.10	0.75									0.45
	Average kc	0.87	0.93	0.75							0.45	0.60	0.77
	CU (mm/day)	3.5	4.4	4.1							2.0	2.5	2.9
	CU(mm/month)	106.2	133.7	126.3							63.3	75.0	90.7
	Effective rainfall (mm)	36.2	10.9	11.3							80.0	94.8	84.5
	Net Requirement(MCM)	0.01	0.01	0.00							0.00	0.00	0.00
Cassava	Planting area (ha)	10.0	10.0	8.3	5.0	1.7		1.7	5.0	8.3	10.0	10	10.0
	kc	1.12	0.82					0.45	0.45	0.75	0.80	0.80	1.12
		1.12	1.12	0.82					0.45	0.45	0.75	0.80	0.80
		0.80	1.12	1.12	0.82					0.45	0.45	0.75	0.80
		0.80	0.80	1.12	1.12	0.82					0.45	0.45	0.75
	Average kc	0.95	0.97	1.02	0.97	0.82		0.45	0.45	0.55	0.61	0.70	0.87
	CU (mm/day)	3.9	4.6	5.5	5.5	4.6		2.7	2.6	2.8	2.8	2.9	3.3
	CU(mm/month)	117.2	143.6	171.7	154.0	142.7		83.0	78.0	87.5	86.1	87.5	102.6
	Effective rainfall (mm)	36.2	10.9	11.3	10.5	21.8		90.9	52.6	65.9	80.0	94.8	84.5
	Net Requirement(MCM)	0.01	0.01	0.01	0.01	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Total Net Requirements (MCM)		0.23	0.29	0.13	0.03	0.04	0.07	0.06	0.13	0.12	0.07	0.03	0.02
Total Net Requirement for Paddy (MCM)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diversion Requirement (MCM)		0.67	0.56	0.38	0.19	0.13	0.19	0.18	0.38	0.36	0.21	0.09	0.06

Table 3.5.5 Estimate of Irrigation Water Requirements under Present Condition (8/16)

In the Area directly served by YSURA Head Race

1,100 ha

Crop		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
	ETo (mm/day)	4.6	4.5	4.7	5.4	6.1	6.3	5.9	6.3	6.8	6.5	5.8	5.0
Plantain & Banana	(ha)	310	310	310	310	310	310	310	310	310	310	310	310
Banana		43	43	43	43	43	43	43	43	43	43	43	43
Papaya		24	24	24	24	24	24	24	24	24	24	24	24
Sub-total		377	377	377	377	377	377	377	377	377	377	377	377
	kc	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
	CU (mm/day)	3.9	3.8	4.0	4.6	5.2	5.3	5.0	5.4	5.8	5.5	4.9	4.2
	CU(mm/month)	116.2	117.9	124.7	128.2	160.0	159.8	155.1	160.9	179.5	170.9	146.8	131.2
	Effective rainfall (mm)	26.7	12.1	15.0	9.1	19.8	25.0	52.6	37.5	25.3	57.6	72.1	81.6
	Net Requirement(MCM)	0.34	0.40	0.41	0.45	0.53	0.51	0.39	0.47	0.58	0.43	0.28	0.19
Cowa Sorghum	Planting area modified	24						24	73	121	145	121	73
	kc							0.50	0.80	1.10	0.60		
									0.50	0.80	1.10	0.60	
										0.50	0.80	1.10	0.60
		0.60									0.50	0.80	1.10
	Average kc	0.60						0.50	0.65	0.80	0.75	0.83	0.85
	CU (mm/day)	2.7						2.9	4.1	5.4	4.9	4.8	4.2
	CU(mm/month)	82.0						91.2	123.0	168.9	150.8	143.9	131.2
	Effective rainfall (mm)	26.7						52.6	37.5	25.3	57.6	72.1	81.6
	Net Requirement(MCM)	0.01						0.01	0.06	0.17	0.14	0.09	0.04
Cassava	Planting area (ha)	60	60	50	30	10		10	30	50	60	60	60
	kc	1.12	0.82					0.45	0.45	0.75	0.80	0.80	1.12
		1.12	1.12	0.82					0.45	0.45	0.75	0.80	0.80
		0.80	1.12	1.12	0.82					0.45	0.45	0.75	0.80
		0.80	0.80	1.12	1.12	0.82					0.45	0.45	0.75
	Average kc	0.96	0.97	1.02	0.97	0.82		0.45	0.45	0.55	0.61	0.70	0.87
	CU (mm/day)	4.4	4.3	4.8	5.2	5.0		2.6	2.8	3.7	4.0	4.0	4.3
	CU(mm/month)	133.2	133.8	149.7	146.2	154.3		82.1	85.2	116.1	123.2	120.9	133.9
	Effective rainfall (mm)	26.7	12.1	15.0	9.1	19.8		52.6	37.5	25.3	57.6	72.1	81.6
	Net Requirement(MCM)	0.06	0.07	0.07	0.04	0.01		0.00	0.01	0.05	0.04	0.03	0.03
Pigeon pea	Planting area (ha)	13					13	26	26	26	26	26	26
	kc						0.55	0.55	0.55	0.75	0.95	0.95	0.75
		0.75						0.55	0.55	0.55	0.75	0.95	0.95
	Average kc	0.75					0.55	0.55	0.55	0.65	0.85	0.95	0.85
	CU (mm/day)	3.4					3.4	3.2	3.5	4.4	5.5	5.5	4.2
	CU(mm/month)	102.5					103.4	100.3	104.1	137.3	170.9	164.0	131.2
	Effective rainfall (mm)	26.7					25.0	52.6	37.5	25.3	57.6	72.1	81.6
	Net Requirement(MCM)	0.01					0.01	0.01	0.02	0.03	0.03	0.02	0.01
Sweet Potato	Planting area (ha)	2.3	7.0	11.6	14	11.6	7.0	2.3					
	kc	0.45	0.75	1.10	0.75								
			0.45	0.75	1.10	0.75							
				0.45	0.75	1.10	0.75						
					0.45	0.75	1.10	0.75					
	Average kc	0.45	0.60	0.77	0.76	0.87	0.93	0.75					
	CU (mm/day)	2.0	2.7	3.6	4.1	5.3	5.8	4.4					
	CU(mm/month)	61.5	83.2	112.5	115.0	163.1	173.9	132.4					
	Effective rainfall (mm)	26.7	12.1	15.0	9.1	19.8	25.0	52.6					
	Net Requirement(MCM)	0.00	0.00	0.01	0.01	0.02	0.01	0.00					
Beans	Planting area (ha)	70	209	279	256	139	17						
	kc	0.50	0.80	1.10	0.80								
			0.50	0.80	1.10	0.40							
				0.50	0.80	1.10	0.40						
	Average kc	0.50	0.65	0.80	0.77	0.75	0.40						
	CU (mm/day)	2.3	2.9	3.8	4.1	4.6	2.5						
	CU(mm/month)	68.3	90.2	117.4	115.6	141.2	75.2						
	Effective rainfall (mm)	26.7	12.1	15.0	9.1	19.8	25.0						
	Net Requirement(MCM)	0.03	0.16	0.29	0.27	0.17	0.01						
Tobacco	Planting area (ha)	3	9	12	12	6	1						
	kc	0.40	0.70	1.10	1.00								
			0.40	0.70	1.10	1.00							
				0.40	0.70	1.10	1.00						
	Average kc	0.40	0.55	0.73	0.93	1.05	1.00						
	CU (mm/day)	1.8	2.5	3.5	5.0	6.4	6.3						
	CU(mm/month)	54.7	76.3	107.6	140.2	197.6	188.0						
	Effective rainfall (mm)	26.7	12.1	15.0	9.1	19.8	25.0						
	Net Requirement(MCM)	0.00	0.01	0.01	0.02	0.01	0.00						
Other Crops (ha)		0	0	0	0	0	0	4	7	7	7	7	4
	kc	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	CU (mm/day)	3.6	3.6	3.8	4.3	4.9	5.0	4.7	5.0	5.4	5.2	4.6	4.0
	CU(mm/month)	109.3	111.0	117.4	120.6	150.6	150.4	146.0	151.4	168.9	160.9	138.1	123.4
	Effective rainfall (mm)	26.7	12.1	15.0	9.1	19.8	25.0	52.6	37.5	25.3	57.6	72.1	81.6
	Net Requirement(MCM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00
Net Requirement for Upland (MCM)		0.45	0.65	0.79	0.79	0.74	0.54	0.42	0.57	0.84	0.61	0.43	0.27
Net Requirement for Paddy (MCM)		0	0	0	0	0	0	0	0	0	0	0	0
Diversion Requirement (MCM)		1.42	2.03	2.47	2.48	2.31	1.68	1.30	1.77	2.62	2.00	1.33	0.83

Table 3.5.5 Estimate of Irrigation Water Requirements under Present Condition (9/16)
in the Area Irrigated by YSURA Canal and Extension Area

YSURA area 7,732 ha
Extension area 1,138 ha

Crop		Nov.	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
	ETo (mm/day)	4.6	4.5	4.7	5.4	6.1	6.3	5.9	6.3	6.8	6.5	5.8	5.0
Plantain		2,893	2,893	2,893	2,893	2,893	2,893	2,893	2,893	2,893	2,893	2,893	2,893
Banana		543	543	543	543	543	543	543	543	543	543	543	543
Papaya		51	51	51	51	51	51	51	51	51	51	51	51
Sub-total		3,487	3,487	3,487	3,487	3,487	3,487	3,487	3,487	3,487	3,487	3,487	3,487
	kc	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
	CU (mm/day)	3.9	3.8	4.0	4.6	5.2	5.3	5.0	5.4	5.8	5.5	4.9	4.2
	CU(mm/month)	116.2	117.9	124.7	128.2	160.0	159.8	155.1	160.9	179.5	170.9	146.8	131.2
	Effective rainfall (mm)	26.7	12.1	15.0	9.1	19.8	25.0	52.6	37.5	25.3	57.6	72.1	81.6
	Net Requirement(MCM)	3.12	3.69	3.82	4.15	4.89	4.70	3.57	4.30	5.38	3.95	2.61	1.73
Tomato													
	Planting area modified	1971.7	2957.5	2957.5	1971.7	246.46							246.46
	kc	0.80	1.10	0.60									0.50
		0.50	0.80	1.10	0.60								
			0.50	0.80	1.10	0.60							
	Average kc	0.65	0.80	0.83	0.85	0.60							0.50
	CU (mm/day)	3.0	3.6	3.9	4.6	3.6							2.5
	CU(mm/month)	88.8	111.0	122.3	128.2	112.9							77.2
	Effective rainfall (mm)	26.7	12.1	15.0	9.1	19.8							81.6
	Net Requirement(MCM)	1.22	2.92	3.17	2.35	0.23							0.00
Corn&Sorghum	Planting area modified				316.88	950.63	1,268	1,268	951	316.88			
	kc				0.50	0.80	1.10	0.60					
						0.50	0.80	1.10	0.60				
							0.50	0.80	1.10	0.60			
	Average kc				0.50	0.65	0.80	0.83	0.85	0.60			
	CU (mm/day)				2.69	3.95	5.01	4.90	5.36	4.09			
	CU(mm/month)				75.4	122.4	150.4	152.0	160.9	126.7			
	Effective rainfall (mm)				9.1	19.8	25.0	52.6	37.5	25.3			
	Net Requirement(MCM)				0.21	0.97	1.59	1.26	1.17	0.32			
Rice													
	Planting area (ha)	3						11	34	45	45	42	23
	kc							1.10	1.15	1.25	1.25	1.00	
									1.10	1.15	1.25	1.25	1.00
		1.00								1.10	1.15	1.25	1.25
	Average kc	1.00						1.10	1.13	1.17	1.22	1.17	1.13
	CU (mm/day)	4.6						6.5	7.1	7.9	7.9	6.7	5.6
	CU(mm/month)	135.7						200.7	212.9	246.4	244.6	201.5	173.59
	Percolation (mm/mon)	150.0						155.0	150.0	155.0	155.0	150.0	155.0
	Effective rainfall (mm)	26.7						52.6	37.5	25.3	57.6	72.1	81.6
	Land Preparation, 300 mm (MCM)							0.07	0.07				
	Net Requirement(MCM)	0.01						0.10	0.18	0.17	0.15	0.12	0.06
Other crops		724	741	696	537	380	380	646	958	1049	1049	994	859
	kc	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
	CU (mm/day)	3.6	3.6	3.8	4.3	4.9	5.0	4.7	5.0	5.4	5.2	4.6	4.0
	CU(mm/month)	109.3	111.0	117.4	120.6	150.6	150.4	145.0	151.4	168.9	160.9	138.1	123.4
	Effective rainfall (mm)	26.7	12.1	15.0	9.1	19.8	25.0	52.6	37.5	25.3	57.6	72.1	81.6
	Net Requirement(MCM)	0.60	0.73	0.71	0.60	0.50	0.43	0.60	1.13	1.51	1.08	0.66	0.36
Net Requirement for Upland (MCM)		4.94	7.35	7.71	7.31	6.59	6.76	5.44	6.60	7.21	5.03	3.26	2.09
Net Requirement for Paddy (MCM)		0.01	0.00	0.00	0.00	0.00	0.00	0.10	0.18	0.17	0.15	0.12	0.06
Diversion Requirement (MCM)		15.96	23.70	24.87	23.57	21.26	21.82	17.81	21.75	23.68	16.64	10.82	6.89

Note: A half (1,138 ha) of the extension area (2,275 ha in total) is assumed to be irrigated

Table 3.5.5 Estimate of Irrigation Water Requirements under Present Condition(10/16)
in the Area from Villarpando and Los Guiros upstream

2,366 ha

Crop		Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.
	ETo (mm/Day)	4.6	4.5	4.7	5.4	6.1	6.3	5.9	6.3	6.8	6.5	5.8	5.0
Plantain	(ha)	600	600	600	600	600	600	600	600	600	600	600	600
Banana		160	160	160	160	160	160	160	160	160	160	160	160
Papaya		52	52	52	52	52	52	52	52	52	52	52	52
Sub-total		812	812	812	812	812	812	812	812	812	812	812	812
	kc	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
	CU (mm/day)	3.9	3.8	4.0	4.6	5.2	5.3	5.0	5.4	5.8	5.5	4.9	4.2
	CU(mm/month)	116.2	117.9	124.7	128.2	160.0	159.8	155.1	160.9	179.5	170.9	146.8	131.2
	Effective rainfall (mm)	26.7	12.1	15.0	9.1	19.8	25.0	52.6	37.5	25.3	57.6	72.1	81.6
	Net Requirement(MCM)	0.73	0.86	0.89	0.97	1.14	1.09	0.83	1.00	1.25	0.92	0.61	0.50
Corn&Serghum	Planting area modified	52						52	156	260	312	260	156
	kc							0.50	0.80	1.10	0.60		
									0.50	0.80	1.10	0.60	
										0.50	0.80	1.10	0.60
		0.60									0.50	0.80	1.10
	Average kc	0.60						0.50	0.65	0.80	0.75	0.83	0.85
	CU (mm/day)	2.7						2.9	4.1	5.4	4.9	4.8	4.2
	CU(mm/month)	82.0						91.2	123.0	168.9	150.8	143.9	131.2
	Effective rainfall (mm)	26.7						52.6	37.5	25.3	57.6	72.1	81.6
	Net Requirement(MCM)	0.03						0.02	0.13	0.37	0.29	0.19	0.08
Cassava	Planting area (ha)	130.0	130.0	108.3	65.0	21.7		21.7	65.0	108.3	130	130.0	130.0
	kc	1.12	0.82					0.45	0.45	0.75	0.80	0.80	1.12
		1.12	1.12	0.82					0.45	0.45	0.75	0.80	0.80
		0.80	1.12	1.12	0.82					0.45	0.45	0.75	0.80
		0.80	0.80	1.12	1.12	0.82					0.45	0.45	0.75
	Average kc	0.96	0.97	1.02	0.97	0.82		0.45	0.45	0.55	0.61	0.70	0.87
	CU (mm/day)	4.4	4.3	4.8	5.2	5.0		2.6	2.8	3.7	4.0	4.0	4.3
	CU(mm/month)	131.2	133.8	149.7	146.2	154.3		82.1	85.2	116.1	123.2	120.9	133.9
	Effective rainfall (mm)	26.7	12.1	15.0	9.1	19.8		52.6	37.5	25.3	57.6	72.1	81.6
	Net Requirement(MCM)	0.14	0.15	0.15	0.09	0.03		0.01	0.03	0.10	0.09	0.06	0.07
Pigeon pea	Planting area (ha)	28					28	55	55	55	55	55	55
	kc						0.55	0.55	0.55	0.75	0.95	0.95	0.75
		0.75						0.55	0.55	0.75	0.95	0.95	0.95
	Average kc	0.75					0.55	0.55	0.55	0.65	0.85	0.95	0.85
	CU (mm/day)	3.4					3.4	3.2	3.5	4.4	5.5	5.5	4.2
	CU(mm/month)	102.5					103.4	100.3	104.1	137.3	170.9	164.0	131.2
	Effective rainfall (mm)	26.7					25.0	52.6	37.5	25.3	57.6	72.1	81.6
	Net Requirement(MCM)	0.02					0.02	0.03	0.04	0.06	0.06	0.05	0.03
Sweet Potato	Planting area (ha)	5.0	15.0	25.0	30	25.0	15.0	5.0					
	kc	0.45	0.75	1.10	0.75								
			0.45	0.75	1.10	0.75							
				0.45	0.75	1.10	0.75						
					0.45	0.75	1.10	0.75					
	Average kc	0.45	0.60	0.77	0.76	0.87	0.93	0.75					
	CU (mm/day)	2.0	2.7	3.6	4.1	5.3	5.8	4.4					
	CU(mm/month)	61.5	83.2	112.5	115.0	163.1	173.9	132.4					
	Effective rainfall (mm)	26.7	12.1	15.0	9.1	19.8	25.0	52.6					
	Net Requirement(MCM)	0.00	0.01	0.02	0.03	0.04	0.02	0.00					
Beans	Planting area (ha)	150	450	600	550	300	38						
	kc	0.50	0.80	1.10	0.40								
			0.50	0.80	1.10	0.40							
				0.50	0.80	1.10	0.40						
	Average kc	0.50	0.65	0.80	0.77	0.75	0.40						
	CU (mm/day)	2.3	2.9	3.8	4.1	4.6	2.5						
	CU(mm/month)	68.3	90.2	117.4	115.6	141.2	75.2						
	Effective rainfall (mm)	26.7	12.1	15.0	9.1	19.8	25.0						
	Net Requirement(MCM)	0.06	0.35	0.61	0.59	0.36	0.02						
Tobacco	Planting area (ha)	6	19	25	25	13	2						
	kc	0.40	0.70	1.10	1.00								
			0.40	0.70	1.10	1.00							
				0.40	0.70	1.10	1.00						
	Average kc	0.40	0.55	0.73	0.93	1.05	1.00						
	CU (mm/day)	1.8	2.5	3.5	5.0	6.4	6.3						
	CU(mm/month)	54.7	76.3	107.6	140.7	197.6	188.0						
	Effective rainfall (mm)	26.7	12.1	15.0	9.1	19.8	25.0						
	Net Requirement(MCM)	0.00	0.02	0.02	0.03	0.02	0.00						
Rice	Planting area (ha)	0						1	4	5	5	5	3
	kc							1.10	1.15	1.25	1.25	1.00	
									1.10	1.15	1.25	1.25	1.00
		1.00								1.10	1.15	1.25	1.25
	Average kc	1.00						1.10	1.13	1.17	1.22	1.17	1.13
	CU (mm/day)	4.6						6.5	7.1	7.9	7.9	6.7	5.6
	CU(mm/month)	136.7						200.7	212.9	246.4	244.6	201.5	173.59
	Percolation (mm/mon)	150.0						155.0	150.0	155.0	155.0	150.0	155.0
	Effective rainfall (mm)	26.7						52.6	37.5	25.3	57.6	72.1	81.6
	Land Preparation, 300 mm (MCM)							0.01	0.01				
	Net Requirement(MCM)	0.00						0.01	0.02	0.02	0.02	0.01	0.01
Other Crops (ha)		0.0	0.0	0.0	0.0	0.0	1.3	6.3	10.0	10.0	10.0	8.8	3.8
	kc	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	CU (mm/day)	3.6	3.6	3.8	4.3	4.9	5.0	4.7	5.0	5.4	5.2	4.6	4.0
	CU(mm/month)	109.3	111.0	117.4	120.6	150.6	150.4	146.0	151.4	168.9	160.9	138.1	123.4
	Effective rainfall (mm)	26.7	12.1	15.0	9.1	19.8	25.0	52.6	37.5	25.3	57.6	72.1	81.6
	Net Requirement(MCM)	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00
Total Net Requirement for Upland (MCM)		0.98	1.40	1.70	1.71	1.59	1.16	0.90	1.21	1.80	1.37	0.91	0.58
Total Net Requirement for Paddy (MCM)		0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.01	0.01
Diversion Requirement (MCM)		3.06	4.36	5.31	5.33	4.97	3.63	2.82	3.80	5.61	4.32	2.88	1.82

Table 3.5.5 Estimate of Irrigation Water Requirements under Present Condition (11/16)
in the Irrigation Area from Los Guiros to Santana upstream

2,791 ha

Crop		Nov.	Dec.	Jan.	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
	ETo (mm/day)	4.6	4.5	4.7	5.4	6.1	6.3	5.9	6.3	6.8	6.5	5.8	5.0
Plantain	(ha)	1,890	1,890	1,890	1,890	1,890	1,890	1,890	1,890	1,890	1,890	1,890	1,890
Banana		470	470	470	470	470	470	470	470	470	470	470	470
Coconut		80	80	80	80	80	80	80	80	80	80	80	80
Sub-total		2,440	2,440	2,440	2,440	2,440	2,440	2,440	2,440	2,440	2,440	2,440	2,440
	kc	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
	CU (mm/day)	3.9	3.8	4.0	4.6	5.2	5.3	5.0	5.4	5.8	5.5	4.9	4.2
	CU(mm/month)	116.2	117.9	124.7	128.2	160.0	159.8	155.1	160.9	179.5	170.9	146.8	131.2
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1	20.0	41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)	2.35	2.57	2.93	2.99	3.66	3.41	2.76	2.94	4.00	3.21	2.61	2.21
Corn&Sorghum	Planting area modified							10	30	40	40	30	10
	kc							0.50	0.80	1.10	0.60		
									0.50	0.80	1.10	0.60	
										0.50	0.80	1.10	0.60
	Average kc							0.50	0.65	0.80	0.83	0.85	0.30
	CU (mm/day)							2.94	4.10	5.45	5.41	4.89	1.49
	CU(mm/month)							91.2	123.0	168.9	167.6	146.8	45.3
	Effective rainfall (mm)							41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)							0.00	0.02	0.06	0.05	0.03	0.00
Rice	Planting area (ha)	1						3	8	10	10	9	5
	kc							1.10	1.15	1.25	1.25	1.00	
									1.10	1.15	1.25	1.25	1.00
		1.00								1.10	1.15	1.25	1.25
	Average kc	1.00						1.10	1.13	1.17	1.22	1.17	1.13
	CU (mm/day)	4.6						6.5	7.1	7.9	7.9	6.7	5.6
	CU(mm/month)	136.7						200.7	212.9	246.4	244.6	201.5	173.6
	Percolation (mm/moc)	150.0						155.0	150.0	155.0	155.0	150.0	155.0
	Effective rainfall (mm)	20.0						41.9	40.2	15.4	39.3	39.9	40.4
	Land Preparation, 300 mm (MCM)							0.02	0.02				
	Net Requirement(MCM)	0.00						0.02	0.04	0.04	0.04	0.03	0.01
Beans	Planting area (ha)	10	18	20	15	5							3
	kc	0.80	1.10	0.40									0.50
		0.50	0.80	1.10	0.40								
			0.50	0.80	1.10	0.40							
	Average kc	0.65	0.80	0.77	0.75	0.40							0.50
	CU (mm/day)	3.0	3.6	3.6	4.0	2.4							2.5
	CU(mm/month)	88.8	111.6	112.5	113.1	75.3							77.2
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1							40.4
	Net Requirement(MCM)	0.01	0.02	0.02	0.02	0.00							0.00
Other Crops (ha)		96	105	85	44	11	20	63	88	90	90	90	89
	kc	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	CU (mm/day)	3.6	3.6	3.8	4.3	4.9	5.0	4.7	5.0	5.4	5.2	4.6	4.0
	CU(mm/month)	109.3	111.0	117.4	120.6	150.6	150.4	146.0	151.4	168.9	160.9	138.1	123.4
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1	20.0	41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)	0.09	0.10	0.10	0.05	0.02	0.03	0.07	0.10	0.14	0.11	0.09	0.07
Total Net Requirement for Upland (MCM)		2.44	2.69	3.05	3.06	3.68	3.44	2.83	3.07	4.20	3.37	2.73	2.29
Total Net Requirement for Paddy (MCM)		0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.04	0.04	0.03	0.01
Diversion Requirement (MCM)		7.62	8.40	9.53	9.54	11.49	10.74	8.90	9.67	13.23	10.62	8.59	7.19

Table 3.5.5 Estimate of Irrigation Water Requirements under Present Condition (12/16) in the Santana Irrigation Area

12,000 ha

Crop		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
	ETo (mm/day)	4.6	4.5	4.7	5.4	6.1	6.3	5.9	6.3	6.8	6.5	5.8	5.0
Sugar cane	(ha)	7,660	7,660	7,660	7,660	7,660	7,660	7,660	7,660	7,660	7,660	7,660	7,660
		0.85	0.80	0.65	0.50	0.80	0.95	1.10	1.15	1.15	1.15	1.15	1.15
	kc	1.15	0.85	0.80	0.65	0.50	0.80	0.95	1.10	1.15	1.15	1.15	1.15
		1.15	1.15	0.85	0.80	0.65	0.50	0.80	0.95	1.10	1.15	1.15	1.15
		1.15	1.15	1.15	0.85	0.80	0.65	0.50	0.80	0.95	1.10	1.15	1.15
		1.15	1.15	1.15	1.15	0.85	0.80	0.65	0.50	0.80	0.95	1.10	1.15
		1.15	1.15	1.15	1.15	1.15	0.85	0.80	0.65	0.50	0.80	0.95	1.10
		1.10	1.15	1.15	1.15	1.15	1.15	0.85	0.80	0.65	0.50	0.80	0.95
	Average kc	1.10	1.06	0.99	0.89	0.84	0.81	0.81	0.85	0.90	0.97	1.06	1.11
	CU (mm/day)	5.01	4.73	4.67	4.81	5.12	5.10	4.75	5.36	6.13	6.30	6.13	5.55
	CU(mm/month)	150.3	146.6	144.6	134.6	158.7	153.1	147.3	160.9	190.0	195.3	183.8	171.9
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1	20.0	41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)	9.98	10.26	10.73	9.87	11.38	10.19	8.07	9.24	13.38	11.95	11.02	10.08
Plantain	(ha)	85	85	85	85	85	85	85	85	85	85	85	85
Banana		21	21	21	21	21	21	21	21	21	21	21	21
Coconut		0	0	0	0	0	0	0	0	0	0	0	0
Sub-total		106	106	106	106	106	106	106	106	106	106	106	106
	kc	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
	CU (mm/day)	3.9	3.8	4.0	4.6	5.2	5.3	5.0	5.4	5.8	5.5	4.9	4.2
	CU(mm/month)	116.2	117.9	124.7	128.2	160.0	159.8	155.1	160.9	179.5	170.9	146.8	131.2
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1	20.0	41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)	0.10	0.11	0.13	0.13	0.15	0.15	0.12	0.13	0.17	0.14	0.11	0.10
Corn&Sorghum								0	0	80		0	0
	Planting area modified							20	60	80	80	60	20
	kc							0.50	0.80	1.10	0.60		
									0.50	0.80	1.10	0.60	
										0.50	0.80	1.10	0.60
	Average kc							0.50	0.65	0.80	0.83	0.85	0.30
	CU (mm/day)							2.93	4.10	5.45	5.41	4.89	1.49
	CU(mm/month)							91.2	123.0	168.9	167.6	146.8	46.3
	Effective rainfall (mm)							41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)							0.00	0.00	0.00	0.03	0.06	0.00
		0						0	0	13	13	0	0
Rice	Planting area (ha)	0.8						3	10	13	13	12	7
	kc							1.10	1.15	1.25	1.25	1.00	
									1.10	1.15	1.25	1.25	1.00
		1.00								1.10	1.15	1.25	1.25
	Average kc	1.00						1.10	1.13	1.17	1.22	1.17	1.13
	CU (mm/day)	4.6						6.5	7.1	7.9	7.9	6.7	5.6
	CU(mm/month)	136.7						200.7	212.9	246.4	244.6	201.5	173.6
	Percolation (mm/mon)	150.0						155.0	150.0	155.0	155.0	150.0	155.0
	Effective rainfall (mm)	20.0						41.9	40.2	15.4	39.3	39.9	40.4
	Land Preparation, 300 mm (MCM)							0.01	0.01	0.01			
	Net Requirement(MCM)	0.00						0.02	0.04	0.06	0.05	0.04	0.02
Beans		0	0	0	0	0							
	Planting area (ha)	15	28	30	23	8							4
	kc	0.80	1.10	0.40									0.50
		0.50	0.80	1.10	0.40								
			0.50	0.80	1.10	0.40							
	Average kc	0.65	0.80	0.72	0.75	0.40							0.50
	CU (mm/day)	3.0	3.6	3.6	4.0	2.4							2.5
	CU(mm/month)	88.8	111.0	112.5	113.1	75.3							77.2
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1							40.4
	Net Requirement(MCM)	0.01	0.03	0.03	0.02	0.00							0.00
Pasture & Other Crops (ha)		129	142	114	58	15	28	91	128	130	130	130	123
	kc	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	CU (mm/day)	3.6	3.6	3.8	4.3	4.9	5.0	4.7	5.0	5.4	5.2	4.6	4.0
	CU(mm/month)	109.3	111.0	117.4	120.6	150.6	150.4	145.0	151.4	168.9	160.9	138.1	123.4
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1	20.0	41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)	0.12	0.14	0.13	0.07	0.02	0.04	0.09	0.14	0.20	0.16	0.13	0.10
Total Net Requirement for Upland (MCM)		10.21	10.54	11.02	10.09	11.56	10.33	8.29	9.51	13.25	12.28	11.32	10.28
Total Net Requirement for Paddy (MCM)		0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.06	0.05	0.04	0.02
Diversion Requirement (MCM)		36.47	37.64	39.34	36.03	41.29	37.05	29.66	34.09	49.29	43.96	40.54	36.76

Table 3.5.5 Estimate of Irrigation Water Requirements under Present Condition (13/16)

in the Area from Santana downstream to Tomate upstream

2,853 ha

Crop		Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.
	ETo (mm/day)	4.6	4.5	4.7	5.4	6.1	6.3	5.9	6.3	6.8	6.5	5.8	5.0
Plantain	(ha)	1,840	1,840	1,840	1,840	1,840	1,840	1,840	1,840	1,840	1,840	1,840	1,840
Banana		464	464	464	464	464	464	464	464	464	464	464	464
Coconut		85	85	85	85	85	85	85	85	85	85	85	85
Sub-total		2,389	2,389	2,389	2,389	2,389	2,389	2,389	2,389	2,389	2,389	2,389	2,389
	kc	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
	CU (mm/day)	3.9	3.8	4.0	4.6	5.2	5.3	5.0	5.4	5.8	5.5	4.9	4.2
	CU(mm/month)	116.2	117.9	124.7	128.2	160.0	159.8	155.1	160.9	179.5	170.9	146.8	131.2
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1	20.0	41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)	2.30	2.51	2.87	2.92	3.59	3.34	2.70	2.88	3.92	3.14	2.55	2.17
Corn& Sorghum								10	15	30	30	15	5
	Planting area modified							8	23	30	30	23	8
	kc							0.50	0.80	1.10	0.60		
									0.50	0.80	1.10	0.60	
										0.50	0.80	1.10	0.60
	Average kc							0.50	0.65	0.80	0.83	0.85	0.30
	CU (mm/day)							2.94	4.10	5.45	5.41	4.89	1.49
	CU(mm/month)							91.2	123.0	168.9	167.6	146.8	46.3
	Effective rainfall (mm)							41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)							0.00	0.00	0.00	0.01	0.02	0.00
		5						2	5	10	10	8	5
Rice	Planting area (ha)	1						3	8	10	10	9	5
	kc							1.10	1.15	1.25	1.25	1.00	
									1.10	1.15	1.25	1.25	1.00
		1.00								1.10	1.15	1.25	1.25
	Average kc	1.00						1.10	1.13	1.17	1.22	1.17	1.13
	CU (mm/day)	4.6						6.5	7.1	7.9	7.9	6.7	5.6
	CU(mm/month)	136.7						200.7	212.9	245.4	244.6	201.5	173.6
	Percolation (mm/mon)	150.0						155.0	150.0	155.0	155.0	150.0	155.0
	Effective rainfall (mm)	20.0						41.9	40.2	15.4	39.3	39.9	40.4
	Land Preparation, 300 mm (MCM)							0.01	0.01	0.01			
	Net Requirement(MCM)	0.00						0.02	0.03	0.05	0.04	0.03	0.01
Beans		7	20	25	15	10							
	Planting area (ha)	13	23	25	19	6							3
	kc	0.80	1.10	0.40									0.50
		0.50	0.80	1.10	0.40								
			0.50	0.80	1.10	0.40							
	Average kc	0.65	0.80	0.77	0.75	0.40							0.50
	CU (mm/day)	3.0	3.6	3.6	4.0	2.4							2.5
	CU(mm/month)	88.8	111.0	112.5	113.1	75.3							77.2
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1							40.4
	Net Requirement(MCM)	0.01	0.02	0.03	0.02	0.00							0.00
Pasture & Other Crops (ha)		106	115	93	47	12	23	70	97	99	99	99	98
	kc	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	CU (mm/day)	3.6	3.6	3.8	4.3	4.9	5.0	4.7	5.0	5.4	5.2	4.6	4.0
	CU(mm/month)	109.3	111.0	117.4	120.6	150.6	150.4	145.0	151.4	168.9	160.9	138.1	123.4
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1	20.0	41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)	0.09	0.11	0.10	0.05	0.02	0.03	0.07	0.13	0.15	0.12	0.10	0.08
Total Net Requirement for Upland (MCM)		2.40	2.65	3.00	3.00	3.60	3.37	2.78	2.99	4.07	3.27	2.67	2.25
Total Net Requirement for Paddy (MCM)		0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.05	0.04	0.03	0.01
Diversion Requirement (MCM)		7.50	8.28	9.38	9.37	11.25	10.52	8.72	9.42	12.84	10.32	8.42	7.07

Table 3.5.5 Estimate of Irrigation Water Requirements under Present Condition (14/16) in the Area of Los Tomate - Mena

371 ha

Crop		Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.
	ETo (mm/day)	4.6	4.5	4.7	5.4	6.1	6.3	5.9	6.3	6.8	6.5	5.8	5.0
Plantain & Banana	(ha)	250	250	250	250	250	250	250	250	250	250	250	250
Banana		60	60	60	60	60	60	60	60	60	60	60	60
Coconut		20	20	20	20	20	20	20	20	20	20	20	20
Sub-total		330	330	330	330	330	330	330	330	330	330	330	330
	kc	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
	CU (mm/day)	3.9	3.8	4.0	4.6	5.2	5.3	5.0	5.4	5.8	5.5	4.9	4.2
	CU(mm/month)	116.2	117.9	124.7	128.2	160.0	159.8	155.1	160.9	179.5	170.9	146.8	131.2
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1	20.0	41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)	0.32	0.35	0.40	0.40	0.49	0.45	0.37	0.40	0.54	0.43	0.35	0.30
Corn & Sorghum	Planting area modified							1	3	4	4	3	1
	kc							0.50	0.80	1.10	0.60		
									0.50	0.80	1.10	0.60	
										0.50	0.80	1.10	0.60
	Average kc							0.50	0.65	0.80	0.83	0.85	0.30
	CU (mm/day)							2.94	4.10	5.45	5.41	4.89	1.49
	CU(mm/month)							91.2	123.0	168.9	167.6	146.8	46.3
	Effective rainfall (mm)							41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)							0.00	0.00	0.00	0.00	0.00	0.00
Rice	Planting area (ha)	0.1						1	2	2	2	2	1
	kc							1.10	1.15	1.25	1.25	1.00	
									1.10	1.15	1.25	1.25	1.00
		1.00								1.10	1.15	1.25	1.25
	Average kc	1.00						1.10	1.13	1.17	1.22	1.17	1.13
	CU (mm/day)	4.6						6.5	7.1	7.9	7.9	6.7	5.6
	CU(mm/month)	136.7						200.7	212.9	246.4	244.6	201.5	173.6
	Percolation (mm/mon)	150.0						155.0	150.0	155.0	155.0	150.0	155.0
	Effective rainfall (mm)	20.0						41.9	40.2	15.4	39.3	39.9	40.4
	Land Preparation, 300 mm (MCM)							0.00	0.00	0.00			
	Net Requirement(MCM)	0.00						0.00	0.01	0.01	0.01	0.01	0.00
Beans	Planting area (ha)	1	2	2	2	1							0
	kc	0.80	1.10	0.40									0.50
		0.50	0.80	1.10	0.40								
			0.50	0.80	1.10	0.40							0.50
	Average kc	0.65	0.80	0.77	0.75	0.40							2.5
	CU (mm/day)	3.0	3.6	3.6	4.0	2.4							77.2
	CU(mm/month)	88.8	111.0	112.5	113.1	75.3							40.4
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1							0.00
	Net Requirement(MCM)	0.00	0.00	0.00	0.00	0.00							
Pasture & Other Crops (ha)		16	17	14	8	2	3	10	15	16	16	16	16
	kc	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	CU (mm/day)	3.6	3.6	3.8	4.3	4.9	5.0	4.7	5.0	5.4	5.2	4.6	4.0
	CU(mm/month)	109.3	111.0	117.4	120.6	150.6	150.4	146.0	151.4	168.9	160.9	138.1	123.4
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1	20.0	41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)	0.01	0.02	0.02	0.01	0.00	0.00	0.01	0.02	0.02	0.02	0.02	0.01
Total Net Requirement for Upland (MCM)		0.33	0.37	0.41	0.41	0.50	0.47	0.38	0.41	0.57	0.46	0.37	0.31
Total Net Requirement for Paddy (MCM)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00
Diversion Requirement (MCM)		0.95	1.05	1.18	1.18	1.42	1.33	1.10	1.20	1.61	1.32	1.07	0.90

Table 3.5.5 Estimate of Irrigation Water Requirements under Present Condition (15/16)
in the Area from Tamote downstream to Palo Alto upstream

1,563 ha

Crop		Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.
	ETo (mm/day)	4.6	4.5	4.7	5.4	6.1	6.3	5.9	6.3	6.8	6.5	5.8	5.0
Sugar cane	(ha)	580	580	580	580	580	580	580	580	580	580	580	580
		0.85	0.80	0.65	0.50	0.80	0.95	1.10	1.15	1.15	1.15	1.15	1.15
	kc	1.15	0.85	0.80	0.65	0.50	0.80	0.95	1.10	1.15	1.15	1.15	1.15
		1.15	1.15	0.85	0.80	0.65	0.50	0.80	0.95	1.10	1.15	1.15	1.15
		1.15	1.15	1.15	0.85	0.80	0.65	0.50	0.80	0.95	1.10	1.15	1.15
		1.15	1.15	1.15	1.15	0.85	0.80	0.65	0.50	0.80	0.95	1.10	1.15
		1.15	1.15	1.15	1.15	1.15	0.85	0.80	0.65	0.50	0.80	0.95	1.10
		1.10	1.15	1.15	1.15	1.15	1.15	0.85	0.80	0.65	0.50	0.80	0.95
	Average kc	1.10	1.06	0.99	0.89	0.84	0.81	0.81	0.85	0.90	0.97	1.06	1.11
	CU (mm/day)	5.01	4.73	4.67	4.81	5.12	5.10	4.75	5.36	6.13	6.30	6.13	5.55
	CU(mm/month)	150.3	146.6	144.6	134.6	158.7	153.1	147.3	160.9	190.0	195.3	183.8	171.9
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1	20.0	41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)	0.76	0.78	0.81	0.75	0.86	0.77	0.61	0.70	1.01	0.91	0.83	0.76
Plantain	(ha)	415	415	415	415	415	415	415	415	415	415	415	415
Banana		105	105	105	105	105	105	105	105	105	105	105	105
Coconut		20	20	20	20	20	20	20	20	20	20	20	20
Sub-total		540	540	540	540	540	540	540	540	540	540	540	540
	kc	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
	CU (mm/day)	3.9	3.8	4.0	4.6	5.2	5.3	5.0	5.4	5.8	5.5	4.9	4.2
	CU(mm/month)	116.2	117.9	124.7	128.2	160.0	159.8	155.1	160.9	179.5	170.9	146.8	131.2
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1	20.0	41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)	0.52	0.57	0.65	0.66	0.88	0.75	0.61	0.65	0.89	0.71	0.58	0.49
Corn& Sorghum	Planting area modified							1	3	4	4	3	1
	kc							0.50	0.80	1.10	0.60		
									0.50	0.80	1.10	0.60	
										0.50	0.80	1.10	0.60
	Average kc							0.50	0.65	0.80	0.83	0.85	0.30
	CU (mm/day)							2.94	4.10	5.45	5.41	4.89	1.49
	CU(mm/month)							91.2	123.0	168.9	167.6	146.8	46.3
	Effective rainfall (mm)							41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)							0.00	0.00	0.00	0.00	0.00	0.00
Rice	Planting area (ha)	0						2	5	6	6	5	2
	kc							1.10	1.15	1.25	1.25	1.00	
									1.10	1.15	1.25	1.25	1.00
		1.00								1.10	1.15	1.25	1.25
	Average kc	1.00						1.10	1.13	1.17	1.22	1.17	1.13
	CU (mm/day)	4.6						6.5	7.1	7.9	7.9	6.7	5.6
	CU(mm/month)	136.7						200.7	212.9	246.4	244.6	201.5	173.6
	Percolation (mm/moe)	150.0						155.0	150.0	155.0	155.0	150.0	155.0
	Effective rainfall (mm)	20.0						41.9	40.2	15.4	39.3	39.9	40.4
	Land Preparation, 300 mm (MCM)							0.01	0.01	0.01			
	Net Requirement(MCM)	0.00						0.01	0.02	0.03	0.02	0.01	0.00
Beans	Planting area (ha)	3	5	5	4	1							1
	kc	0.80	1.10	0.40									0.50
		0.50	0.80	1.10	0.40								
			0.50	0.80	1.10	0.40							0.50
	Average kc	0.65	0.80	0.77	0.75	0.40							2.5
	CU (mm/day)	3.0	3.6	3.6	4.0	2.4							77.2
	CU(mm/month)	88.8	111.0	112.5	113.1	75.3							40.4
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1							0.00
	Net Requirement(MCM)	0.00	0.00	0.01	0.00	0.00							
Other Crops (ha)		22	27	23	15	6	4	12	17	18	18	18	18
	kc	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	CU (mm/day)	3.6	3.6	3.8	4.3	4.9	5.0	4.7	5.0	5.4	5.2	4.6	4.0
	CU(mm/month)	109.3	111.0	117.4	120.6	150.6	150.4	146.0	151.4	168.9	160.9	138.1	123.4
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1	20.0	41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)	0.02	0.03	0.03	0.02	0.01	0.00	0.01	0.02	0.03	0.02	0.02	0.01
Total Net Requirement for Upland (MCM)		1.30	1.38	1.49	1.43	1.68	1.53	1.24	1.37	1.93	1.64	1.43	1.27
Total Net Requirement for Paddy (MCM)		0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.02	0.01	0.00
Diversion Requirement (MCM)		3.71	3.93	4.26	4.08	4.80	4.37	3.55	3.96	5.57	4.73	4.12	3.63

Table 3.5.5 Estimate of Irrigation Water Requirements under Present Condition (16/16)
in the Area from Palo Alto to the Downstream 2,669 ha

Crop		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
	ETo (mm/day)	4.6	4.5	4.7	5.4	6.1	6.3	5.9	6.3	6.8	6.5	5.8	5.0
Sugar cane	(ha)	560	560	560	560	560	560	560	560	560	560	560	560
		0.85	0.80	0.65	0.50	0.80	0.95	1.10	1.15	1.15	1.15	1.15	1.15
	kc	1.15	0.85	0.80	0.65	0.50	0.80	0.95	1.10	1.15	1.15	1.15	1.15
		1.15	1.15	0.85	0.80	0.65	0.50	0.80	0.95	1.10	1.15	1.15	1.15
		1.15	1.15	1.15	0.85	0.80	0.65	0.50	0.80	0.95	1.10	1.15	1.15
		1.15	1.15	1.15	1.15	0.85	0.80	0.65	0.50	0.80	0.95	1.10	1.15
		1.15	1.15	1.15	1.15	1.15	0.85	0.80	0.65	0.50	0.80	0.95	1.10
		1.10	1.15	1.15	1.15	1.15	1.15	0.85	0.80	0.65	0.50	0.80	0.95
	Average kc	1.10	1.06	0.99	0.89	0.84	0.81	0.81	0.85	0.90	0.97	1.06	1.11
	CU (mm/day)	5.01	4.73	4.67	4.81	5.12	5.10	4.75	5.36	6.13	6.30	6.13	5.55
	CU(mm/month)	150.3	146.6	144.6	134.6	158.7	153.1	147.3	160.9	190.0	195.3	183.8	171.9
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1	20.0	41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)	0.73	0.75	0.78	0.72	0.83	0.74	0.59	0.68	0.93	0.87	0.81	0.74
Plantain	(ha)	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260
Banana		320	320	320	320	320	320	320	320	320	320	320	320
Coconut		60	60	60	60	60	60	60	60	60	60	60	60
Sub-total		1,640	1,640	1,640	1,640	1,640	1,640	1,640	1,640	1,640	1,640	1,640	1,640
	kc	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
	CU (mm/day)	3.9	3.8	4.0	4.6	5.2	5.3	5.0	5.4	5.8	5.5	4.9	4.2
	CU(mm/month)	116.2	117.9	124.7	128.2	160.0	159.8	155.1	160.9	179.5	170.9	146.8	131.2
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1	20.0	41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)	1.58	1.73	1.97	2.01	2.45	2.29	1.86	1.98	2.69	2.16	1.75	1.49
Corn&Sorghum	Planting area modified							5	15	20	20	15	5
	kc							0.50	0.80	1.10	0.60		
									0.50	0.80	1.10	0.60	
										0.50	0.80	1.10	0.60
	Average kc							0.50	0.65	0.80	0.83	0.85	0.30
	CU (mm/day)							2.94	4.10	5.45	5.41	4.89	1.49
	CU(mm/month)							91.2	123.0	168.9	167.6	146.8	46.3
	Effective rainfall (mm)							41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)							0.00	0.00	0.00	0.01	0.02	0.00
Rice	Planting area (ha)	0						1	4	5	5	5	3
	kc							1.10	1.15	1.25	1.25	1.00	
									1.10	1.15	1.25	1.25	1.00
		1.00								1.10	1.15	1.25	1.25
	Average kc	1.00						1.10	1.13	1.17	1.22	1.17	1.13
	CU (mm/day)	4.6						6.5	7.1	7.9	7.9	6.7	5.6
	CU(mm/month)	136.7						200.7	212.9	245.4	244.6	201.5	173.6
	Percolation (mm/mon)	150.0						155.0	150.0	155.0	155.0	150.0	155.0
	Effective rainfall (mm)	20.0						41.9	40.2	15.4	39.3	39.9	40.4
	Land Preparation, 300 mm (MCM)							0.01	0.01	0.01			
	Net Requirement(MCM)	0.00						0.01	0.02	0.02	0.02	0.01	0.01
Beans	Planting area (ha)	5	9	10	8	3							1
	kc	0.80	1.10	0.40									0.50
		0.50	0.80	1.10	0.40								
			0.50	0.80	1.10	0.40							
	Average kc	0.65	0.80	0.77	0.75	0.40							0.50
	CU (mm/day)	3.0	3.6	3.6	4.0	2.4							2.5
	CU(mm/month)	88.8	111.0	112.5	113.1	75.3							77.2
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1							40.4
	Net Requirement(MCM)	0.00	0.01	0.01	0.01	0.00							0.00
Pasture & Other Crops (ha)		70	75	60	29	7	15	47	66	68	68	68	67
	kc	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
	CU (mm/day)	3.6	3.6	3.8	4.3	4.9	5.0	4.7	5.0	5.4	5.2	4.6	4.0
	CU(mm/month)	109.3	111.0	117.4	120.6	150.6	150.4	146.0	151.4	168.9	160.9	138.1	123.4
	Effective rainfall (mm)	20.0	12.7	4.6	5.8	10.1	20.0	41.9	40.2	15.4	39.3	39.9	40.4
	Net Requirement(MCM)	0.06	0.07	0.07	0.03	0.01	0.02	0.05	0.07	0.10	0.08	0.02	0.06
Total Net Requirement for Upland (MCM)		2.37	2.56	2.83	2.72	3.30	3.06	2.50	2.73	3.77	3.12	2.64	2.28
Total Net Requirement for Paddy (MCM)		0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.01	0.01
Diversion Requirement (MCM)		6.78	7.31	8.09	7.91	9.43	8.73	7.15	7.83	10.83	8.96	7.51	6.54

Table 3.5.6 Field Experiment for Sepage Loss from Small Canal (1/2)

Site No.1 Site : Small field canal of Lateral H of Santana system in sugarcane field
Date : Jan. 14 1998

	Time				Seepage+ Evaporation Gauge reading (dial gauge)	Evaporation by dia. 28 cm pan		
			Lapse					
	(hour)	(min)	(min)	(min)	(mm)	(cc)	(cc)	(mm)
Ex.1	13	53	0	0	26.8	916		
	14	0	7	7	19.5			
	14	5	5	12	14.2			
	14	10	5	17	9			
	14	16	6	23	3.7			
	Result:	1.004	mm/min					
Ex 2	14	30	0	0	37.4			
	14	35	5	5	31.8			
	14	40	5	10	25.1			
	14	45	5	15	19.1			
	14	50	5	20	13.7			
	14	55	5	25	7.8			
	15	0	5	30	2.7	860	56	0.909
	Result:	1.157	mm/min					
Average :		1.081	mm/min					

Measurement of Canal Wetted Perimeter and Loss through Wetted Perimeter

Canal section	W.Surface Width, A	Water Depth	Wetted Perimeter, B	B/A	Loss through wetted perimeter	
	(m)	(m)	(m2/m)		(mm/min)	(litre/min.m2)
1	0.8	0.18	0.88	1.10	0.99	0.99
2	0.59	0.13	0.64	1.09	0.99	0.99
3	0.54	0.11	0.58	1.08	1.00	1.00
4	0.75	0.14	0.80	1.07	1.01	1.01
					Average	1.00

Note: No consideration of evaporation due to the small value compared with seepage.

Site No.2. Site : Small field canal of Lateral A of Santana system in sugarcane field
Date : Jan. 15 1998

	Time				Seepage+ Evaporation Gauge reading (dial gauge)	Evaporation by dia. 28 cm pan		
			Lapse					
	(hour)	(min)	(min)	(min)	(mm)	(cc)	(cc)	(mm)
Ex 2	13	0	0	0	41.5	500		
	13	5	5	5	38.7			
	13	10	5	10	35.0			
	13	15	5	15	33.0			
	13	25	10	25	30.4			
	13	35	10	35	27.2			
	13	45	10	45	24.5			
	13	55	10	55	21.8			
	14	5	10	65	19.5	474	26	0.42
	Average	0.274	mm/min					

Measurement of Canal Wetted Perimeter and Loss through Wetted Perimeter

Canal section	W.Surface Width, A	Water Depth	Wetted Perimeter, B	B/A	Loss through wetted perimeter	
	(m)	(m)	(m2/m)		(mm/min)	(litre/min.m2)
1	1.3	0.23	1.38	1.06	0.26	0.26
2	1.5	0.19	1.55	1.03	0.27	0.27
3	1.15	0.15	1.19	1.03	0.27	0.27
4	1.2	0.24	1.29	1.08	0.25	0.25
5	1.35	0.19	1.49	1.04	0.26	0.26
					Average	0.26

Note: Evaporation is neglected due to the small value compared with seepage.

Table 3.5.6 Field Experiment for Seepage Loss from Small Canal (2/2)

Site No.3 Site : Small field canal of Lateral D-1 of Santana system in sugarcane field Near Bomba de Agua town
Date: Jan. 26 1988

	Time				Seepage+ Evaporation Gauge reading (dial gauge)	Evaporation by dia. 28 cm pan		
			Lapse					
	(hour)	(min)	(min)	(min)	(mm)	(cc)	(cc)	(mm)
Ex 2	11	46	0	0	24.75	500		
	11	51	5	5	24.20			
	11	56	5	10	23.85			
	12	1	5	15	23.45			
	12	6	5	20	22.75			
	12	11	5	25	22.40			
	12	16	5	30	21.70			
	12	21	5	35	21.35			
	12	26	5	40	20.70			
	12	31	5	45	20.50			
	12	36	5	50	19.60			
	12	41	5	55	19.40			
	12	46	5	60	18.60			
	12	51	5	65	18.10			
	12	56	5	70	17.40			
	13	1	5	75	17.00	489	11	0.18
	Average	0.104 mm/min						

Measurement of Canal Wetted Perimeter and Loss through Wetted Perimeter

Canal section	W.Surface Width, A	Water Depth	Wetted Perimeter, B	B/A	Loss through wetted perimeter	
	(m)	(m)	(m2/m)		(mm/min)	itre/min.m2)
1	0.7	0.19	0.80	1.14	0.091	0.091
2	0.75	0.22	0.87	1.16	0.090	0.090
3	0.8	0.18	0.88	1.10	0.095	0.095
4	0.86	0.24	0.98	1.15	0.091	0.091
5	0.86	0.15	0.91	1.06	0.098	0.098
					Average	0.093

Note: Evaporation is neglected due to the small value compared with seepage.

Site No.4 Site : Small field canal of Lateral D-1 of Santana system in sugarcane field North, about 500 m from Santa Maria town
Date: Jan. 26 1988

	Time				Seepage+ Evaporation Gauge reading (dial gauge)	Evaporation by dia. 28 cm pan		
			Lapse					
	(hour)	(min)	(min)	(min)	(mm)	(cc)	(cc)	(mm)
Ex 2	14	33	0	0	29.50	489		
	14	38	5	5	28.50			
	14	43	5	10	27.00			
	14	48	5	15	25.30			
	14	53	5	20	23.95			
	14	58	5	25	22.70			
	15	3	5	30	21.10			
	15	8	5	35	19.80			
	15	13	5	40	18.40			
	15	18	5	45	17.30			
	15	23	5	50	15.80			
	15	28	5	55	14.30			
	15	33	5	60	12.65			
	15	38	5	65	11.47			
	15	43	5	70	9.60			
	15	48	5	75	8.70			
	15	53	5	80	7.30			
	15	58	5	85	5.85			
	16	3	5	90	4.40	474	15	0.24
	Average	0.281 mm/min						

Measurement of Canal Wetted Perimeter and Loss through Wetted Perimeter

Canal section	W.Surface Width, A	Water Depth	Wetted Perimeter, B	B/A	Loss through wetted perimeter	
	(m)	(m)	(m2/m)		(mm/min)	(l/min.m2)
1	0.67	0.15	0.73	1.10	0.26	0.26
2	0.67	0.18	0.76	1.14	0.25	0.25
3	0.66	0.21	0.78	1.19	0.24	0.24
4	0.7	0.14	0.75	1.08	0.26	0.26
5	0.7	0.23	0.84	1.20	0.23	0.23
					Average	0.25

Note: Evaporation is neglected due to the small value compared with seepage.

Table 3.5.7 Basic Intake Rate

Series of Soil	Basic Intake Rate (cm/hour)	Location
San Juan Zone		
J.J. Puello and San Juan Irrigation Area		
Unidad de Manejo 4	4.68	del Conjunto Canada Honda
Unidad de Manejo 5	4.65	del Conjunto Los Orosco
Unidad de Manejo 5	3.31	del Conjunto Punta Cana
Unidad de Manejo 5	2.22	del Conjunto La Javilla
average	3.39	
Unidad de Manejo 6	2.77	del Conjunto Cana Seca
Unidad de Manejo 6	2.34	del Conjunto La Isla
Unidad de Manejo 6	3.17	del Conjunto Macasia
Unidad de Manejo 6	5.06	del Conjunto Carrera de la Ceiba
average	3.34	
Unidad de Manejo 7	9.91	del Conjunto Las Charcas, fase pedoregosa
Unidad de Manejo 8	0.28	del Conjunto Aeropuerto
Unidad de Manejo 8	0.08	del Conjunto La Higuera
average	0.18	
Unidad de Manejo 9	1.77	del Conjunto Yabano
Unidad de Manejo 9	1.50	del Conjunto La Pena
Unidad de Manejo 9	0.53	del Conjunto San Juan
Unidad de Manejo 9	0.70	del Conjunto Arroyo Loro
average	1.13	
Unidad de Manejo 10	0.77	del Conjunto La Pena
Unidad de Manejo 10	2.47	del Conjunto Yabano
Unidad de Manejo 10	0.35	del Conjunto Arroyo Loro
average	1.20	
Source: Estudio de Suelo Semi-Detellado de la Zona de San Juan de la Maguana		
Realizado por : Secretoria de Estado de Agricultura, Departomento Tieras Y Agua		
Azua Zone		
1	4.86	Rio Tabara-Rio Palmarejo
2	2.28	Rio Palmarejo-Rio Tabara
3	2.88	Cons.Pueblo Viejo
4	0.48	
5	2.46	Cons. Ansonia
6	0.84	Ansonia-Loa Jobillos
7	3.78	Cons. Ansonia
average	2.51	
Source: Estudio de Suelo Semi-Detellado de Azua		
Realizado por : Secretoria de Estado de Agricultura, Departomento Tieras y Agua		
Brahona-Neiba Zone		
De la Serie Fundacion	1.2	
De la Serie Canoa	1.1	
De la Serie Tamayo	0.4	
De la Serie Vicente Noble	0.8	
Average	0.88	
Source: Division de Agrologio del INDRHI, year1982		
Canal seepage loss experimented		
Field canal of Lateral H	6.00	near Mena along the Palo Alto-Neiba highway
Field canal of Lateral A	1.57	near Santana town
Field canal of Lateral D-1	0.56	near Bomba de Agua town
Field canal of Lateral D-1	1.48	North, about 500 m from Santa Maria town
Average	2.40	

Table 3.6.1 Rural Infrastructure in Census 1993

	Water Supply	Electricity Supply	Rabbish Disposal Service	Sanitary Service
	(%)	(%)	(%)	(%)
Azua (Whole Province)	(65)	(70)	(47)	(71)
Azua (Project Area)	**64**	**70**	**48**	**72**
1 Azua de Compostela	69	77	54	78
2 Guayabal	55	33	41	82
3 Las Charcas	69	81	41	73
4 Las Yayas de Biajama	47	54	41	62
5 Padre Las Casas	50	50	34	60
6 Peralta	59	69	54	67
7 Sabana Yegua	62	75	64	79
8 Tabara Arriba	76	80	51	65
9 Estebania	75	61	38	75
10 Pueblo Viejo	67	88	43	73
San Juan (Whole Province)	(56)	(56)	(34)	(66)
San Juan (Project Area)	**55**	**62**	**37**	**68**
1 San Juan De La Maguana	59	64	39	72
2 Bohechio	38	58	33	62
3 Juan De Herrera	42	60	27	56
4 Vallejuelo	52	49	42	52
Barahona (Whole Province)	(72)	(82)	(43)	(83)
Barahona (Project Area)	**76**	**90**	**53**	**84**
1 Santa Cruz de Barahona (Capital)	81	93	55	89
2 Cabral	80	86	51	72
3 Vicente Noble	47	84	47	77
4 El Penon	84	85	46	83
5 Fundacion	86	84	46	87
Bahoruco (Whole Province)	(57)	(66)	(29)	(67)
Bahoruco (Project Area)	**58**	**67**	**33**	**68**
1 Neyba	64	62	39	70
2 Galvan	34	61	21	57
3 Tamayo	64	72	43	80
4 Uvilla	57	80	18	56
La Vega (Project Area)	**57**	**73**	**49**	**83**
1 Constanza	57	73	49	83
Independencia (Project Area)	**59**	**65**	**56**	**44**
1 Mella	67	87	28	80
2 Cristobal	55	55	69	25
Total (Project Area)	**62**	**71**	**44**	**73**
National Average	**67**	**82**	**56**	**88**

Table 3.6.2 Inventory of INAPA Water Supply Systems

Project	Treatment Plant	System	Population		Water Source	Intake	Discharge (lt/sec)	
			Actual	Future			Actual	Future
Azua								
Acueducto Multiple Las Lomas	Simple Chlorination	Gravity	3,168	5,009	Irabon River			
Acueducto Sabana Yegua	Simple Chlorination	Gravity	13,548	18,432	Yaque Del Sur	Intake Weir	9.9	15.8
Acueducto Multiple San Antonio	Simple Chlorination	Pump	4,434	7,094	Groundwater			
Barrios Nuevos		Gravity	13,358	21,372			9.62	15.39
Barreras	Simple Chlorination	Gravity / Pump	3,450	5,520				
Acueducto Multiple Villapando	Filteration	Bomeo	3,240		Groundwater		7.45	11.58
Las Charcas			5,378	8,604	Grande River	Caucasian Intake		
Acueducto Mult. De Ansonia		Pump	10,265	13,321	Groundwater			
Azua		Pump	60,874		Groundwater and Azua River		43.85	59.95
Padre Las Casas		Gravity	5,998	9,597	Las Cuevas River			
Bohechio		Pump		3,540	Al Medio River			
Estebania		Pump	4,950		Groundwater			
Las Charcas		Pump	7,680		Groundwater			
Peralta		Gravity		5,244	Jura River			
Mult. La Estancia		Pump		7,878	Groundwater			
Mult. Pueblo Viejo		Pump		6,566	Groundwater			
Mult. Los Javillos		Pump		4,213	Groundwater			
Mult. Guayabal		Gravity		3,585	Guayabal River			
Las Yayas De Viajama		Pump	7,513	9,765	Groundwater			
Hatillo		Pump	882	1,411	Groundwater			
Mult. Villarpando		Pump		3,240	Groundwater			
Mult. Tabara Arriba		Pump		13,920	Tabara River			
Mult. Tabara Abajo (P.T.)		Gravity		6,134	Tabara River			
Los Tranojos		Gravity		1,936	Cisterna			
Mult. Hato N. De Cortes		Pump		9,939				
Amiama Gomez-Biafara Lop.		Pump		2,928	Groundwater			
San Juan								
Acueducto Multiple Arroyo Dulce		Pump						
El Higuero-Madrigal		Pump	4,074	6,909			8.84	14.99
Acueducto Multiple De Cabral		Pump	24,033	37,821	Groundwater		52.15	83.44
Acueducto Mult. Enriquillo-Oviedo	Rapid Filteration and Chlorination	Gravity / Pump	26,400	42,240	Nizaito River		68.73	110
Acueducto Fondo Negro-Quita Coraza	Filteration	Pump	6,335	10,138	Yaque del Sur River		13.75	22
Acueducto Mult. Polo-Los Arroyos	Simple Chlorination	Gravity	4,428	7,085	Surface Water	Intake Box	9.61	15.38
Acueducto Mult. Las Salinas	Filteration	Gravity	11,562	18,499	Saladillo Canal		25.09	50
Acueducto Ven A Ver	Simple Chlorination	Gravity	1,470	2,352	Acueducto Mult. Duverge		3.75	6
Acueducto Vicente Noble		Pump	13,333	21,333	Yaque del Sur River		28.93	46.3
Acueducto Mult. Loma Del Yaque	Simple Chlorination	Pump	3,972	5,941	Yaque del Sur River		8.63	12.9
Acueducto Las Matas De Farfan	Filteration	Gravity	28,296	45,274	Macasia River	Caucasian Dike	81.88	130
Acueducto Mult. Punta Cana-Arroyo Loro	Filteration	Gravity	2,172	3,775	Jose J. Puello Canal		4.71	7.54
Acueducto Mult. Rosario-Pueblo Nuevo-Cardon		Pump	11,520	18,433	Surface Water		25	40
Acueducto Multiple De Sabaneta	Simple Chlorination	Gravity	17,571	8,531	La Cacita River		16.43	18.52
Acueducto Mult. El Corbano- La Mesopotamia	Rapid Filteration and Chlorination	Gravity	17,280	27,648	Sist. Independiente	Dike constructed by INDRHI	62.5	100
Acueducto Babor-Babor Barranca	Filteration	Gravity	2,448	5,530	Seco River		3.9	8.8
Acueducto Bohechio	Simple Chlorination	Pump	4,300	9,816	Rio Medio		15.4	24.65
Acueducto Mult. Canoa-Los Bancos	Filteration	Pump	6,406	10,252	Yaque del Sur River		13.9	22.24
Acueducto Carreras De Yeguas	Filteration	Gravity	5,820	9,312		Dique Caucasina	12.63	20.21
Acueducto Mult. El Cercado	Filteration	Gravity	9,216	14,746	Vallejuelo River		23.33	40
Acueducto Cuenta La Culata	Simple Chlorination	Pump	2,712	4,339	Groundwater		7.87	9.41
Acueducto Mult. Las Charcas De Maria Nova	Filteration	Gravity	4,044	6,470	Babor River		8.76	15
Acueducto Los Jobos	Simple Chlorination	Pump	900	1,440	Surface water, Maria Simeon Spring		3.66	7
Acueducto San Juan		Gravity	133,588	21,372			48.31	77.31
Barahona								
Acueducto Multiple De Polo-Los Arroyos	Simple Chlorination	Gravity	4,428	7,085	Surface Water, Juan Moni River	Intake Box	9.61	15.38
Acueducto Multiple De Las Salinas	Filteration	Gravity	11,562	1,849	Saladillo Canal		25.09	50
Acueducto San Rafael		Gravity	674	1,078	San Rafael		1.46	2.34
Acueducto Ven A Ver	Simple Chlorination		1,470	2,352	Acued. Multiple Duverge		3.75	6
Acueducto Vicente Noble		Pump	13,333	21,333	Yaque del Sur River		28.93	46.3
Acueducto Pescaderia		Pump			Groundwater			
Acueducto Cabral		Pump			Groundwater and Spring			
Independencia								
Acueducto Multiple La Descubierta-Bartolome	Filteration	Pump	8,267	13,227			14.47	2.15
Acueducto Multiple Duverge	Rapid Filteration	Gravity	13,500	21,600	Las Damas River	Direct Spad Dike Intake	65.5	100
Acueducto El Guayabal	Simple Chlorination	Pump	1,405	2,248	Guayabal		3.05	4.87
Acueducto Jimani	Rapid Filteration	Gravity	8,000	12,800		Lateral Intake Box	33.33	53.33
Acueducto Pastor Rio	Double Filteration	Gravity	2,822	4,525	Caliente Canal	Box Type	6.12	9.82
Baoruco								
Acueducto Muelle Urvilla-El Jobo	Simple Chlorination	Pump	2,754	4,406	Groundwater		5,589.56	
Acueducto Villa Jaragua			13,010	20,816	Cercano Spring		28.23	45.17
Acueducto Multiple Mena	Simple Chlorination	Pump	2,448	3,917	Groundwater		5.31	8.5
Acueducto Multiple La Cienega-Baboruco	Simple Chlorination	Gravity	7,926	12,682	Baja Guste Spring		47.2	27.22
Acueducto Galvan	Filteration	Gravity	9,404	15,046	Majagual Canal	Direct	20.41	23.15
Acueducto De Neyba	Filteration	Gravity	30,208	33,333	Manguito River	Caucasian Intake	60.28	96.45
Acueducto Los Rios-Las Clavellinas	Double Filteration	Gravity	5,334	8,534	Barrero River	Direct		
Acueducto Multiple Tamayo	Filteration	Pump	11,568	18,500	Yaque del Sur River		32.52	50.42
Acueducto El Palmar		Pump	1,332	2,131	Groundwater		4.14	5.09
Acueducto Mult.Santana-Conuquito		Pump	1,378	2,388	Groundwater			

Source ; INAPA, 1998

Table 3.6.3 Inventory of Hydropower Stations

		1. Sabana Yegua Hydropower Station	2. Sabaneta Hydropower Station
Location		Sabana Yegua, Azua province	San Juan de la Maguana, San Juan province
Water Source		Yaque del Sur river	San Juan river
Capacity of the Generating Plant		13,000 kW	6,400 kW
Generating Power	Rainy season	6.5 GWh/month	3.0 GWh/month
	Dry season	3.0 GWh/month	1.3 GWh/month
Type of plant / turbine		Vertical Francis type	Vertical Francis type
Operation hour	Rainy season	24 hrs/day	18 hrs/day
	Dry season	16 hrs/day	12 hrs/day
Construction year		1980	June, 1981
Construction cost		RD$97,000,000	RD$57,500,000

		3. Las Damas Hydropower Station	4. El Salto se Constanza Hydropower Station
Location		Duverge, Independencia province	Constanza, La Vega province
Water Source		Las Damas river	El Salto river
Capacity of the Generating Plant		7,500 kW	606 kW
Generating Power	Rainy season	2.6 GWh/month	1.1 GWh/month
	Dry season	2.9 GWh/month	2.0 GWh/month
Type of plant / turbine		Horizontal Pelton type	Cross flow type
Operation hour	Rainy season	24 hrs/day	-
	Dry season	24 hrs/day	-
Construction year		November, 1967	December, 1994
Construction cost		RD$3,000,000	RD$30,000,000

Table 3.7.1 Facilities for Extension Offices in the Study Area

PROVINCE	MEAN OF TRANSPORTATION			OTHER FACILITIES					REMARKS
	LIGHT TRUCK	MOTORYCLE	JEEP	COMPUTER	FILE CABINET	TYPEWRITER	DISSK	CHAIRS	
BARAHONA	0	21	2	0	6	5	8	2	
BARAHONA			2						ONE JEEP OF TWO IS NOT WORKING
CABRAL		9		0	1	1	2	2	INCLUDE POLO AND SALINAS
FUNDACION		7		0	3	3	4		INCLUDES PENON AND JAQUIMEYES AREAS WHICH DO NOT HAVE OFFICES SPACES
VICENTE NOBLE		5		0	2	1	2		
BAHORUCO	1			0	3	3	6	4	
NEYBA	1			0	1	1	2	2	RADIO WORKS OCCASIONALLY
TAMAYO		5		0	1	1	2	2	
GALVAN				0	1	1	2		
SAN JUAN DE LA MAGUANA	9	22	2	1	34	14	73	36	
SAN JUAN	9		2	1	25	10	62	0	TWO OF THEM ARE IN BAD CONDITIONS IN SAN JUAN MUNICIPALITY
BOHECHIO		5		0	2	1	2	6	
JUAN DE HERRERA		8		0	2	1	3	10	
VALLEJUELO		4		0	2	1	3	8	
EL CERCADO		5		0	3	1	3	12	
SABANA ALTA		3		0	2	1	3	8	
ARROYO LORO		4		0	1	1	2	8	
PEDRO CORTO		5		0	2	1	4	15	
AZUA	4	15	0	0	17	12	19	39	TWO OF THEM ARE VERY OLD IN LIGHT TRUCS IN AZUA
AZUA	3	9			10	6	8	1	
EL SISTAL		3			3	2	4	7	DOES NOT HAVE PHONE SERVICE
LAS YAYAS		2			2	2	3	7	DOES NOT HAVE PHONE SERVICE
PADRRE LAS CASAS	1	1			2	2	4	10	
Total	14	58	4	1	60	34	106	81	

Table 3.7.2 Credit Provided by the Agricultural Bank in the Study Area, 1996

	San Juan			Azua			Barahona			Bahoruco (Neyba)		
Activity	# of Loans	Value (RD$000)	Coverage (Ha)	# of Loans	Value (RD$000)	Coverage (Ha)	# of Loans	Value (RD$000)	Coverage (Ha)	# of Loans	Value (RD$000)	Coverage (Ha)
Rice	70	3,000	209	54	1,167	104	6	299	17			
Corn	10	99	21	2	67	18				2	317	212
Sorghum	1	70	25	1	65	13	37	1,164	307			
Coffee *	54	552	98	31	816	155	16	1,561	374	7	100	23
Red Beans	399	22,204	1,737	80	1,798	168				1	12	3
Pigeon Peas	15	185	74	3	42	21				7	102	25
Sweet Potato	19	415	83							4	49	9
Cassava	3	18	3				3	55	4			
Plantain*				81	2,310	146	72	2,451	258	20	451	28
Yams							33	1,238	193			
Yautia							5	73	6			
Potatoes							6	233	16			
Papaya	2	140	1							28	1,257	57
Grapes										30	874	22
Tobacco				12	246	25						
Total	573	26,683	2,251	264	6,510	649	178	7,073	1,176	99	3,162	350

* Includes rehabilitation and maintenance

Source: Banco Agricola, Boletin Estadistico 1996

	Study area			National			Share of Total		
Activity	# of Loans	Value (RD$000)	Coverage (Ha)	# of Loans	Value (RD$000)	Coverage (Ha)	# of Loan(%	Value (%)	Coverage (%)
Rice	130	4,465	330	3,779	512,879	27,799	3	1	1
Corn	14	483	251	39	1,051	602	36	46	42
Sorghum	39	1,299	345	41	1,492	3,219	95	87	11
Coffee *	108	3,029	650	417	21,276	5,078	26	14	13
Red Beans	480	24,014	1,908	588	27,855	3,180	82	86	60
Pigeon Peas	25	329	120	113	878	850	22	37	14
Sweet Potato	23	464	92	56	1,076	495	41	43	19
Cassava	6	73	7	213	3,072	1,463	3	2	0
Plantain*	173	5,211	433	1,118	15,061	3,130	15	35	14
Yams	33	1,238	193	103	2,523	412	32	49	47
Yautia	5	73	6	116	1,839	248	4	4	3
Potatoes	6	233	16	131	5,737	740	5	4	2
Papaya	30	1,397	58	N.A.	N.A.	N.A.	0	N.A.	N.A.
Grapes	30	874	22	30	874	23	100	100	100
Tobacco	12	246	25	233	7,120	2,685	5	3	1
Total	1,114	43,427	4,456	6,977	602,733	49,924	16	7	9

Table 3.7.3 Main Cooperatives and Farmer Associations in the Study Area

Location	Number of Associations	Male	Female	Total
Cabral	43	1,556	573	2,129
Vicente Noble	21	746	297	1,043
Fundacion	34	1,576	614	2,190
Tamayo	49	1,468	90	151
Neyba	28	1,020	200	1,220
Galvan	25	1,241	176	1,417
Azua	205	4,150	565	4,715
San Juan	609	125	734	859
Total	1,014	11,882	3,249	13,724

Source: Ministry of Agriculture: Department of Rural Organization and interview with Farmers Federations in the Study area, 1998.

Table 3.7.4 List of Main Non Government Organizations Which Operates in the Study Area.

Name	Location	Main Activities
servicio Social de Iglesias	Study area	Technical and Finacial assistance for small development projects
Mujeres en Desarrollo	Azua, Barahona	Support to women groups (training, credit)
Fundacion para el Desarrollo Dominicano (FDD)	Neyba, Barahona	Economic support to farmers associations and microenterprises
Asociacion Dominicana de Microempresas (ADEMI)	Study area	Credit to small business
Vision Mundial (World Vision)	Study area	Technical assistance in agroecology, funding for community projects
Centro Lemba	Barahona	Education, Technical and financial assistance, marketing for agricultural commodities
Fondo FIME	Study area	Credit provision to small farmers and rural poor
Instituto de Desarrollo de la Empresa Asociativa Campesina	Barahona and Bahoruco	Legal support and credit to farmer's associations
Buen Samaritano	Tamayo, Sugar plantation	Health and nutrition programs
Centro de Promocion de Agricultura Organica	Bahoruco	Education, Agroecology and environmental programs
Plan International	Study area	Education, community projects
Fundacion para el Desarrollo de Barahona	Barahona	Community projects
Fundacion para el Desarrollo de Azua	Azua	Community projectss
Fundacion para el Desarrollo de San Juan	San Juan	Community projects
CEPROS	Padre Las Casas	Natural Resources conservation projects
Source: JICA study Team, 1998		

Table 3.7.5 Main Land Reform Laws in the Dominican Republic

Law 282. March 1972. Declare public utility and social interest the acquisition by the Government of all Land not in use to be managed by the Agrarian institute.

It is considered Land not in use when it is not currently cultivated and do not are included as national park.

Law 287. March 1972. Declare of public utility any land rent contract in Government land which exceed 100 tareas (6.25 hectares) in irrigated areas, done with individuals.

Law 289. march 1972. Prohibit the sharecropping system in the country on agricultural areas which do not allow enough income to sustain a rural family. The rural family has the option to own the land being sharecropped.

Law 290. March. declare of public utility any plot of land dedicated to rice production which are not in the hands of the Agrarian Institute and irrigated by canals built by the Government. Specifically this law is applied to those rice farms which exceed 500 tareas (32.25 hectares).

Law 314. Define and prohibit Latifundio (Big Land ownership) in the country according to the following type of land.:

Type I	1,500 tareas (94 ha)
Type II	2,100 tareas (131.ha)
Type III	4,000 tareas (250 ha)
Type IV	8,000 tareas (500 ha)
Type V	15,000 tareas (937 ha)
Type VI	25,000 tareas (1,562 ha)
Type VII	45,000 tareas (2,812 ha)

Law 391. Established that all rice land in the hand of the Agrarian Institute should distributed collectively among landless peasants. All collective farm should have the guidance and technical assistance of an IAD's agronomist

Source: Instituto Agrario Dominicano (IAD). 1995.

Table 3.7.6 Land Reform Settlement in the Study area (1/2)

LAND SETTLEMENT	MUNICIPAL DISTRICTS	LAND DISTRIBUTED (ha)	NUMBER OF BENIFICIARIES	MAIN PURPOSE	AVERAGE FARM SIZE (ha)
NATIONAL	NATIONAL	567,308.81	95,250	Crops, livestock, forestry	5.96
BARAHONA					
Vicente Noble	Vicente Noble	311.57	100	coconuts and roots and tubers	3.12
Santo Elena I	Vicente Noble	2,221.95	466	coffee, citrus, roots and tubers	4.77
Monteada Nueva	Vicente Noble	408.43	110	coffee, roots and tubers	3.71
Pescaderia	Vicente Noble	275.47	83	coffee, roots and tubers	3.32
La Cienaga	Vicente Noble	233.27	50	coffee, roots and tubers	4.67
Polo	Vicente Noble	982.08	226	coffee, roots and tubers	4.35
La Malanga	Paraiso	268.99	75	Coffee, citrus, roots and tubers	3.59
Canoa	Vicente Noble	143.08	44	coconuts, roots and tubers	3.25
Loma del Curro	Vicente Noble	137.93	342	Roots and tubers	0.40
Santa Elena II	Barahona	94.34	25	coffee, roots and tubers	3.77
Chene	Barahona	94.34	30	Coffee, Citrus and tubers	3.14
Los tres puentees	Barahona	162.89	136	Roots and tubers	1.20
Dumit	Barahona	53.14	54	Roots and tubers	0.98
Mena	Barahona	142.01	121	Roots and tubers	1.17
SUBTOTAL		5,529.50	1,862		2.97
BAHORUCO					
San Ramon	Tamayo	768.30	170	Roots and tubers	4.52
Tamayo	Tamayo	72.96	58	Roots and tubers	1.26
Jaragua	Villa Jaragua	217.11	78	Coconuts and roots and tubers	2.78
Plaza Cacique	Neyba	408.99	96	Roots and tubers	4.26
Galvan	Galvan	1,635.22	82	Roots and tubers	19.94
SUBTOTAL		3,102.58	484		6.41
INDEPENDENCIA					
Cristobal	Cristobal	191.70	72	Coconuts, Roots and tubers	2.66
Cristobal II	Duverge	181.45	84	Roots and tubers	2.16
Tierra Nueva	Jimani	250.82	81	Roots and tubers	3.10
Angel Feliz	La Descubierta	5,031.45	241	Coffee, Roots and tubers	20.88
Puerto Escondido	Duverge	251.57	100	Roots and tubers	2.52
Enriquillo	Jimani	128.30	80	Roots and tubers	1.60
San Jose	Independencia	1,383.65	74	Roots and tubers	18.70
SUBTOTAL		7,418.93	732		10.14
SAN JUAN					
Guanito	San Juan	1,309.25	400	Rice and tubers	3.27
Vallejuelo	Vallejuelo	777.04	284	Onion and tubers	2.74
Mogollon	San Juan	553.52	149	Rice	3.71
Pedro Corto	San Juan	1,711.38	548	Rice, citrus, coconut	3.12
Magueyal	San Juan	525.97	261	Rice	2.02
San Juan Bautista	San Juan	50.31	34	Roots and tubers	1.48
Los Bancos	San Juan	56.60	29	Roots and tubers	1.95
Santome	San Juan	628.93	330	Rice and tubers	1.91
Corral de los indios	San Juan	471.70	200	Roots and tubers	2.36
Mogollon II	San Juan	597.48	380	Rice and tubers	1.57
Carreras de Yegua	Matas de Farfan	220.13	115	Roots and tubers	1.91
El Progreso	San Juan	256.98	163	Roots and tubers	1.58
San Fco de Asis	San Juan	202.14	143	Roots and tubers	1.41
San Isidro	San Juan	169.94	106	Rice and tubers	1.60
San M. de Porres	San Juan	45.97	33	Roots and tubers	1.39
La Altagracia	San Juan	111.76	88	Roots and tubers	1.27
Las Mercedes	san Juan	72.26	47	Roots and tubers	1.54
Anacaona	san Juan	157.23	129	Roots and tubers	1.22
Canoa	San Juan	103.14	58	Roots and tubers	1.78
El Pinal	El Cercado	790.31	226	Coffee and tubers	3.50
Matayaya	San Juan	433.52	123	Roots and tubers	3.52
Santa Lucia	Las Matas de Farfan	75.66	41	Roots and tubers	1.85
SUBTOTAL		9,321.26	3,887		2.40

Table 3.7.6 Land Reform Settlement in the Study area (2/2)

LAND SETTLEMENT	MUNICIPAL DISTRICTS	LAND DISTRIBUTED (ha)	NUMBER OF BENIFICIARIES	MAIN PURPOSE	AVERAGE FARM SIZE (ha)
AZUA					
012 A	Azua	731.32	171	Roots and tubers	4.28
012 B	El Rosario	684.28	160	Roots and tubers	4.28
012C	El Rosario	684.28	160	Roots and tubers	4.28
012 C-2	El Rosario	564.97	180	Roots and tubers	3.14
012 A-4	El Rosario	356.29	90	Roots and tubers	3.96
012 A 1/2	El Rosario	356.29	100	Roots and tubers	3.56
012 D-G	El Rosario	460.94	123	Roots and tubers	3.75
012 A-3	El Rosario	487.55	132	Roots and tubers	3.69
012 D-2	El Rosario	723.27	230	Roots and tubers	3.14
Cuota Parte	El Rosario	314.47	100	Roots and tubers	3.14
Piscicola	El Rosario	37.74	22	Fishering	1.72
D-1 Agricola	El Rosario	276.73	103	Roots and tubers	2.69
D-3	El Rosario	405.03	125	Roots and tubers	3.24
D-1 Ganadero	El Rosario	176.10	60	Livestock	2.94
Sabana Yegua	Sabana Yegua	210.69	99	Roots and tubers	2.13
La Clavellinas	Azua	157.23	76	Roots and tubers	2.07
El Higuerito	Pueblo Viejo	689.25	431	Roots and tubers	1.60
YSURA	Pueblo Viejo	1,291.64	778	Roots and Tubers	1.66
Bosque Seco I	Azua	23,270.44	1,539	Agroforestry and Roots an tubers	15.12
Bosque Seco II	Azua	32,100.63	1,560	Agroforestry	20.58
Bosque Seco III	Azua	52,295.60	1,610	Agroforestry	32.48
Guayabal	Padre Las Casas	2,567.86	545	Roots and tubers	4.71
SUBTOTAL		113,478.93	6,948		16.33

Table 3.9.1 Registered Water Users of INDRHI (1/4)

Code	Name of Canal	Registration of INDRHI (1997/1998)				Remarks
		Users (nos.)	Area (ha)	Unit Charge (RD$/ha)	Total Charge (RD$)	
SAN JUAN ZONE						
4301	Guanito - San Juan	538	885.42	102.04	90,348	
4302	Mijo	647	1,968.54	102.04	200,870	
4303	Yabano	58	119.74	102.04	12,218	
4304	Ex - Rusos	20	50.12	102.04	5,114	
4305	San Juan	736	1,558.22	102.04	159,001	
4306	El Donado	66	296.75	102.04	30,280	
4307	Vallejuelo No.1	145	216.19	102.04	22,060	
4308	Vallejuelo No.2	190	193.73	102.04	19,768	
4309	Rio La Maguana	71	138.31	102.04	14,113	
4310	Arroyo Mogollon	62	143.03	102.04	14,595	
4311	Los Burros	101	155.31	102.04	15,848	
4312	Los Santiles	291	345.41	102.04	35,246	
4314	Rio Mijo	128	363.81	102.04	37,123	
4315	Rio Jinova	525	1,155.72	102.04	117,930	
4316	Rio San Juan	688	1,868.32	102.04	190,643	
4317	Arroyo Dajay	56	109.14	102.04	11,137	
4318	Rio Yaque del Sur	109	137.61	102.04	14,042	
4319	Arroyo La Cana	14	13.09	102.04	1,336	
4320	Arroyo Guanarey	5	4.93	102.04	503	
4321	Arroyo Da. Maria	32	49.72	102.04	5,073	
4322	Arroyo Limon			102.04		
4323	Arroyo Bagui	7	7.61	102.04	777	
4324	Arroyo Pasatiempo	7	7.83	102.04	799	
4325	Arroyo Fondillo	15	39.29	102.04	4,009	
4326	Arroyo Alonzo	8	37.75	102.04	3,852	
4327	Arroyo Tenguerengue	18	84.73	102.04	8,646	
4328	Arryo Mondongo	4	8.52	102.04	869	
4329	Arroyo Socorro	5	6.54	102.04	667	
4330	Rio Bao Canafis	45	71.78	102.04	7,324	
4331	Canada Yarey	1	13.25	102.04	1,352	
4332	Arroyo Vallejuelo	7	5.42	102.04	553	
4333	Arroyo Carpintero	2	1.43	102.04	146	
4334	Canad. Juan Alv.	1	1.27	102.04	130	
4335	Arroyo Majagual	3	2.24	102.04	229	
4337	Rio la Jagua	1	0.87	102.04	89	
4338	Arroyo Quemado	2	3.13	102.04	319	
4339	Arroyo Loro	3	12.69	102.04	1,295	
4340	Arroyo Sanate	2	14.18	102.04	1,447	
4341	Arroyo Saltadero	18	79.29	102.04	8,091	
4348	Arroyo Campintero	3	3.52	102.04	359	
Sub-total		4,634	10,174.45		1,038,201	

Source: "Listado de Usuarios por Canales con Valor por Taria", Centro de Procesamiento Electronico de Datos, INDRHI, 1998

Table 3.9.1 Registered Water Users of INDRHI (2/4)

Code	Name of Canal	Registration of INDRHI (1997/1998)				Remarks
		Users (nos.)	Area (ha)	Unit Charge (RD$/ha)	Total Charg (RD$)	
AZUA ZONE						
4101	Azua	558	1,176.69	201.97	237,656	
4102	Irabon y Estebania	191	411.89	201.97	83,189	
4107	Hernan Cortes	757	1,413.19	201.97	285,422	
4109	Tabara Arriba	271	628.51	201.97	126,940	
4110	Harcos L. Toros	52	76.45	201.97	15,441	
4112	Bastidas	211	176.76	201.97	35,700	
4114	Las Charcas	3	4.16	201.97	840	
4115	Villarpando	134	104.99	201.97	21,205	
4117	Cachon Rosario			201.97		
4120	La Ceibita	50	92.97	201.97	18,777	
4121	Monte Grande	72	124.10	201.97	25,064	
4122	Oregano Grande	89	95.92	201.97	19,373	
4123	Periquito	252	278.64	201.97	56,277	
4124	El Corozo	48	55.76	201.97	11,262	
4125	Oregano Chiquito	114	184.11	201.97	37,185	
4129	El Muey	134	160.48	201.97	32,412	
4130	Concordia	118	168.47	201.97	34,026	
4132	Los Bancos P.	102	69.03	201.97	13,942	
4134	Rio Yaque del Sur	23	44.87	201.97	9,062	
4136	Yaque del Sur	5,011	12,144.09	201.97	2,452,742	
4137	Canal Azua	5	7.84	201.97	1,583	
4139	Canal Azua	20	28.23	201.97	5,702	
4140	Canal Azua	16	29.41	201.97	5,940	
4141	Canal Azua	1	1.25	201.97	252	
Sub-total		8,232	17,477.81		3,529,993	
BARAHONA ZONE (1/2)						
4201	Quita Corasa 1	57	104.85	159.62	16,736	
4202	Quita Corasa	73	91.44	159.62	14,596	
4207	El Montazo	32	46.14	159.62	7,365	
4208	Arroyo Grande	118	108.42	159.62	17,306	
4209	Arroyo Grande Vivente	2	4.39	159.62	701	
4210	Vicente Noble	1,065	1,663.20	159.62	265,480	
4211	La Guineera 161	181	187.47	159.62	29,924	
4214	Tacica	49	65.18	159.62	10,404	
4232	Los Saladillos	138	395.99	159.62	63,208	
4234	Cristobal	299	541.43	159.62	86,423	
4255	Olivares	1	1.57	159.62	251	
4256	Fondo Negro	196	213.68	159.62	34,108	
4257	Salina	204	181.54	159.62	28,977	
4258	Lavila Mella	1,663	560.26	159.62	89,429	
4262	Los Habitantes	316	596.70	159.62	95,245	
4263	Cachones Cabral	355	307.37	159.62	49,062	

Source: "Listado de Usuarios por Canales con Valor por Tarifa", Centro de Procesamiento Electronico de Datos, INDRHI, 1998

Table 3.9.1 Registered Water Users of INDRHI (3/4)

Code	Name of Canal	Registration of INDRHI (1997/1998)				Remarks
		Users (nos.)	Area (ha)	Unit Charge (RD$/ha)	Total Charge (RD$)	
BARAHONA ZONE (2/2)						
4264	Palo Alto	183	286.42	159.62	45,718	
4265	Santana	83	162.54	159.62	25,945	
4266	Hondura Tamay V	102	276.49	159.62	44,133	
4267	Cabeza Toro	23	32.86	159.62	5,245	
4268	Charco El Blanc	99	178.63	159.62	28,513	
4269	El Jobo	176	381.79	159.62	60,941	
4270	San Ramon	104	152.06	159.62	24,272	
4271	Los Conuquitos	101	222.90	159.62	35,579	
4272	La Chorrera	33	19.63	159.62	3,133	
4273	Rio Barbesi	38	120.61	159.62	19,252	
4274	B F94, Cabral	503	409.53	159.62	65,369	
4275	B. F95, Penon	277	348.95	159.62	55,699	
4276	B. F96, Fundac. 2	207	257.52	159.62	41,105	
4277	56464	147	173.08	159.62	27,627	
4278	56F162, Cachon	149	137.64	159.62	21,970	
4279	56F163, Penon	243	283.57	159.62	45,263	
4280	Pescaderia	75	103.01	159.62	16,442	
4281	Bomba Jaquimeye	291	420.77	159.62	67,163	
4282	Bombita	19	38.55	159.62	6,153	
4283	Los Tomates Mena	35	68.40	159.62	10,918	
4284	Los Tomates	6	14.38	159.62	2,295	
4285	Guaba de Mean (CIA. M	75	120.84	159.62	19,288	
4286	Colector Cabral Los List	66	70.37	159.62	11,232	
4287	Salina Zavila	36	85.54	159.62	13,654	
4288	Vuelta Grande	50	97.39	159.62	15,545	
4289	El Naranjo 10	25	20.61	159.62	3,290	
4290	50 Tiene Nombre	2	4.07	159.62	650	
4291	Canal Yaque del Sur	6	152.48	159.62	24,339	
4292	Proyecto A - C			159.62		
4293	Habanero	54	145.75	159.62	23,265	
4294	Los Callejones	30	31.86	159.62	5,085	
4295	54RRNCA	48	120.38	159.62	19,215	
4296	El Bao	31	80.20	159.62	12,802	
4296	Uvero Cabral	274	352.48	159.62	56,263	
Sub-total		8,340	10,440.93		1,666,581	

Source: "Listado de Usuarios por Canales con Valor por Taria", Centro de Procesamiento Electronico de Datos, INDRHI, 1998

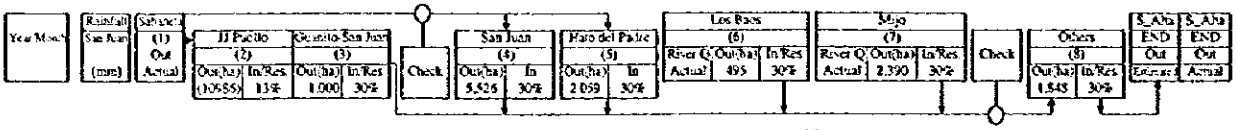
Table 3.9.1 Registered Water Users of INDRHI (4/4)

Code	Name of Canal	Registration of INDRHI (1997/1998)				Remarks
		Users (nos.)	Area (ha)	Unit Charge (RD$/ha)	Total Charg (RD$)	
NEIBA ZONE						
4401	Panzo	670	913.63	109.75	100,271	
4402	Cambronal	1,284	1,431.66	109.75	157,125	
4403	Vengan A Ver	82	90.58	109.75	9,941	
4404	Palma Dulce	180	216.67	109.75	23,780	
4405	Mella	82	143.52	109.75	15,751	
4406	Las Barias			109.75		
4407	Canal Cristobal	158	467.72	109.75	51,332	
4408	Las Lajitas	351	412.97	109.75	45,323	
4409	Plaza Cacique	388	570.89	109.75	62,655	
4413	Porveni - Canitas	144	345.36	109.75	37,903	
4414	Piedra Gorda	84	92.90	109.75	10,196	
4415	Las Clavellinas	551	772.84	109.75	84,819	
4416	Guaragua	37	76.41	109.75	8,386	
4417	Cachon Meregilo	136	252.67	109.75	27,731	
4418	Bomba Don Juan	33	26.48	109.75	2,906	
4420	Canal Guaraguao	454	1,397.68	109.75	153,395	
4421	Bomba L. Marias	149	268.35	109.75	29,451	
4422	Fuente El Mamon	137	167.25	109.75	18,356	
4423	Cachon Pocilga	218	403.71	109.75	44,307	
4425	Roman Alita	19	30.12	109.75	3,306	
4427	Cachon Mamey	209	351.78	109.75	38,608	
4432	Cachon L. Cocos	3	3.50	109.75	384	
4433	Canal Princ. B. Las Mar	16	20.19	109.75	2,216	
4434	Canal C 11			109.75		
4435	Desag Ing Barah	69	205.72	109.75	22,578	
4436	Cachon el Tanq	6	10.15	109.75	1,114	
4437	Cambronal			109.75		
4438	Canal Principal	2	1.88	109.75	206	
4439	Alcantarilla	11	19.72	109.75	2,164	
4440	Canal Los Rios	13	15.39	109.75	1,689	
4441	Fuente La Funda	4	6.42	109.75	705	
4443	Lat Talle El M	9	49.23	109.75	5,403	
4444	Canal Principal	1	2.50	109.75	274	
4445	Canal Principal	2	5.45	109.75	598	
4446	5-18 Z-19 Z-20	13	19.76	109.75	2,169	
4447	1 Y 2 El Estero	6	9.88	109.75	1,084	
4448	Canal Principal	1	1.90	109.75	209	
4451	Indesur	59	48.94	109.75	5,371	
4452	Bomba Z-89	4	12.64	109.75	1,387	
Sub-total		5,585	8,866.46		973,094	
Grand Total		26,791	46,959.65		7,207,869	

Source: "Listado de Usuarios por Canales con Valor por Taria", Centro de Procesamiento Electronico de Datos, INDRHI, 1998

Table 3.9.2 Water Balance Simulation by Irrigation Block --- San Juan Block

Present condition (without project)

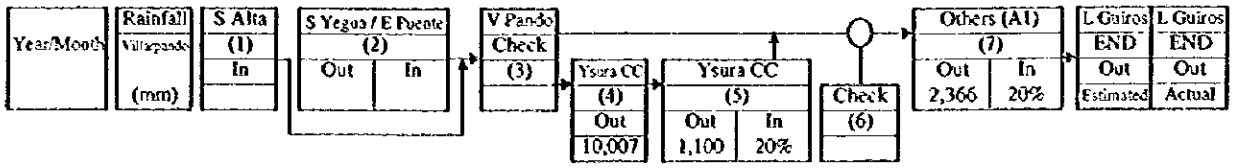


	(mm)	(mm)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)
1981	1269.8	341.3	105.5	74.3	27.8	54.8	208.7	94.1	28.2	32.7	9.8	27.6	10.7	17.8	214.7	65.1	169.1	733.2	42.1	203.7	703.7	758.8
1982	733.2	313.2	104.3	70.6	28.1	51.0	241.4	90.7	27.2	31.2	9.3	18.4	13.1	10.7	150.9	65.3	115.3	478.8	42.1	449.3	449.3	457.1
1983	1010.3	234.6	92.7	63.3	28.0	43.7	182.6	74.7	22.4	27.0	8.1	11.9	8.0	5.4	108.7	63.0	64.6	415.4	42.1	389.0	389.8	284.2
1984	903.8	260.4	97.2	66.9	28.1	47.3	206.7	83.2	24.1	29.8	8.9	14.3	9.2	7.9	118.3	64.8	73.0	446.0	42.1	416.6	416.6	-
1985	788.5	225.9	100.8	52.5	27.8	33.1	152.9	70.8	21.2	25.0	7.5	12.7	8.3	5.8	125.9	63.0	81.8	330.6	42.1	301.1	306.7	-
1986	883.9	274.5	102.3	58.8	28.0	39.2	212.7	89.2	26.7	31.2	9.4	13.7	11.1	8.5	112.7	62.3	69.1	426.1	42.1	395.6	396.6	385.9
1987	1125.7	266.3	93.6	80.9	28.1	61.3	233.6	84.1	25.2	29.6	8.9	11.7	9.0	5.4	131.9	54.6	71.6	547.1	42.1	517.6	518.3	584.6
1988	1015.9	271.6	92.0	71.0	27.5	51.8	225.1	79.0	23.7	27.1	8.1	14.6	10.4	7.3	133.3	64.9	87.9	501.2	42.1	471.7	471.7	497.4
1989	1030.2	246.7	94.8	74.3	27.6	55.0	201.6	73.2	21.9	26.0	7.8	17.1	10.4	9.8	159.9	63.7	115.3	534.3	42.1	504.8	506.3	463.2
1990	905.0	244.8	85.8	64.8	25.7	45.8	201.4	64.7	19.4	23.2	7.0	24.9	8.5	18.9	114.3	47.1	62.3	457.5	42.1	428.9	445.0	410.3
1991	512.3	238.5	102.8	49.7	28.0	30.1	153.8	77.6	23.3	28.1	8.4	10.0	8.4	4.1	128.0	64.9	82.6	277.7	42.1	245.2	250.7	250.2
1992	1261.9	264.6	131.0	72.0	28.1	52.3	223.4	93.3	28.0	32.1	9.6	4.7	3.6	1.8	133.4	59.5	94.7	548.9	42.1	519.5	520.2	625.3
1993	968.5	284.6	105.8	80.0	28.1	60.3	224.5	94.3	28.3	32.7	9.8	21.8	10.1	14.8	138.2	64.3	93.2	508.5	42.1	479.0	479.0	-
1994	664.6	211.3	106.1	53.7	27.9	32.1	130.9	75.4	22.6	26.9	8.1	28.6	11.3	20.7	118.1	63.9	73.4	300.8	42.1	271.4	276.2	-
Mean	934.1	262.5	98.6	66.3	27.8	46.9	206.3	81.7	24.5	28.8	8.6	15.8	9.3	9.9	135.6	61.9	89.3	464.9	42.1	435.5	437.9	-

Note: MCM: Million cubic meter
Out: Water extraction from the source (irrigation area in hectare in the above)
In: Return flow to the source (return flow rate in percent in the above)
In/Res.: Return flow, inflow from the residual catchment and the remaining flow to the downstream
Actual: Actual discharge in the records
Estimated: Estimated discharge by the simulation

Table 3.9.3 Water Balance Simulation by Irrigation Block --- Azua Block

Present condition (without project)

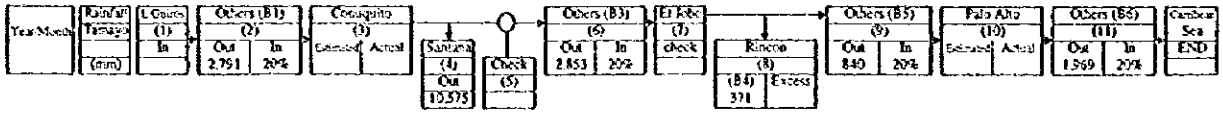


	(unit)	(mm)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)
1981		584.3	758.8	729.6	980.1	1739.0	278.5	21.2	4.2	1483.2	45.7	9.1	1446.6	-
1982		415.2	467.1	769.4	867.1	1334.3	278.5	21.2	4.2	1077.8	45.7	9.1	1041.2	-
1983		665.6	284.2	629.6	-	909.0	278.5	21.2	4.2	657.3	45.7	9.1	620.7	-
1984		409.1	412.2	404.9	-	838.7	272.8	21.2	4.2	591.4	45.7	9.1	554.8	-
1985		444.6	366.7	555.9	-	854.4	278.5	21.2	4.2	598.3	45.7	9.1	561.7	-
1986		475.2	385.9	588.8	-	1027.2	278.5	21.2	4.2	771.9	45.7	9.1	735.3	718.0
1987		584.4	384.6	502.1	-	818.4	278.5	21.2	4.2	564.0	45.7	9.1	527.4	633.0
1988		551.2	497.4	515.8	-	1119.3	278.5	21.2	4.2	866.7	45.7	9.1	830.1	867.1
1989		746.5	463.2	813.4	-	1205.3	278.5	21.2	4.2	955.6	45.7	9.1	919.1	920.7
1990		514.9	410.3	421.8	-	832.1	266.8	21.2	4.2	594.7	45.7	9.1	558.2	647.0
1991		447.1	280.2	705.0	-	996.2	278.5	21.2	4.2	751.1	45.7	9.1	714.5	-
1992		313.1	625.3	575.2	-	1164.8	277.5	21.2	4.2	915.3	45.7	9.1	878.8	-
1993		617.3	440.5	832.8	-	1173.2	278.5	21.2	4.2	921.6	45.7	9.1	885.0	-
1994		670.6	255.5	473.4	468.7	724.2	278.5	21.2	4.2	474.4	45.7	9.1	437.8	-
Mean		531.4	430.9	608.4	-	1052.6	277.2	21.2	4.2	801.7	45.7	9.1	765.1	-

Note: MCM; Million cubic meter
Out; Water extraction from the source (irrigation area in hectare in the above)
In; Return flow to the source (return flow rate in percent in the above)
In/Res.; Return flow, inflow from the residual catchment and the remaining flow to the downstream
Actual; Actual discharge in the records
Estimated; Estimated discharge by the simulation

Table 3.9.4 Water Balance Simulation by Irrigation Block --- Barahona Block

Present condition (without project)



	(unit)	(mm)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)	(MCM)
1981		451.7	1145.6	109.4	21.9	1514.9	-	381.9	1133.0	111.8	22.4	1400.5	13.7	-	48.7	9.7	1011.6	924.4	79.4	15.9	947.5
1982		271.5	1041.2	109.4	21.9	1034.3	-	397.3	637.1	111.8	22.4	547.6	13.7	-	49.4	9.9	534.5	381.8	85.0	17.0	436.5
1983		341.8	620.7	109.4	21.9	572.4	-	280.9	291.6	111.8	22.4	202.1	13.7	-	49.4	9.9	154.5	-	73.9	14.8	95.3
1984		248.7	554.8	109.4	21.9	503.9	543.6	251.9	251.9	105.8	21.2	167.3	13.3	-	44.5	8.9	122.9	181.7	59.3	11.9	75.5
1985		655.3	561.7	109.4	21.9	558.6	412.8	276.1	282.5	111.8	22.4	193.1	13.7	-	48.1	9.6	148.9	218.1	68.7	13.7	93.9
1986		348.8	718.0	109.4	21.9	791.0	-	348.6	442.2	111.8	22.4	352.8	13.7	-	49.4	9.9	313.8	422.0	85.0	17.0	245.8
1987		476.9	633.0	109.4	21.9	618.3	583.6	289.8	328.5	111.8	22.4	239.0	13.7	-	45.2	9.0	197.3	-	60.6	12.1	184.8
1988		254.4	867.1	109.4	21.9	878.1	867.4	370.4	500.7	111.8	22.4	431.2	13.7	-	49.4	9.9	367.2	-	85.0	17.0	299.2
1989		303.6	920.7	109.4	21.9	884.4	-	383.2	498.2	111.8	22.4	408.7	13.7	-	49.4	9.9	361.6	-	85.0	17.0	293.6
1990		354.1	647.0	109.4	21.9	622.2	-	251.8	370.5	101.0	20.2	289.7	13.6	-	32.3	6.5	257.3	-	51.5	10.3	216.1
1991		157.8	703.8	109.4	21.9	658.0	666.9	320.1	337.9	111.8	22.4	248.5	13.7	-	49.4	9.9	199.8	-	80.5	16.1	135.3
1992		497.2	970.4	109.4	21.9	932.9	-	344.9	588.0	105.7	21.1	503.5	13.3	-	43.7	8.7	451.7	-	66.9	13.4	408.2
1993		449.6	885.0	109.4	21.9	870.1	-	351.0	539.1	111.8	22.4	449.7	13.7	-	49.4	9.9	405.8	-	82.2	16.4	340.0
1994		557.4	437.8	109.4	21.9	454.2	-	227.1	227.1	111.8	22.4	137.7	13.7	-	45.2	9.2	96.8	-	63.3	12.7	46.2
Mean		385.6	786.3	109.4	21.9	778.8	-	319.7	459.1	110.2	22.0	371.0	13.6	-	46.8	9.4	328.8	-	73.3	14.7	270.1

Note: MCM; Million cubic meter
Out; Water extraction from the source (irrigation area in hectare in the above)
In; Return flow to the source (return flow rate in percent in the above)
In/Res.; Return flow, inflow from the residual catchment and the remaining flow to the downstream
Actual; Actual discharge in the records
Estimated; Estimated discharge by the simulation

Table 3.9.5 Simulated Irrigation Water Supply and Sufficiency

San Juan (without project condition)

Year		J.J.Puello		San Juan		Hato de Padr		Guanito San Jua		Mijo		Vallejuelo	
Drought/Wet		MCM	(%)	MCM	(%)	MCM	(%)	MCM	(%)	MCM	(%)	MCM	(%)
1981	+	57.9	98%	64.5	91%	22.2	96%	18.5	99%	43.3	99%	7.3	93%
1981/82		50.6	100%	32.4	98%	11.3	100%	9.5	100%	22.0	100%	3.5	45%
1982	-	58.1	98%	61.8	87%	20.6	89%	18.7	100%	43.3	99%	7.6	97%
1982/83		43.9	87%	27.3	83%	9.9	87%	9.5	100%	21.8	99%	3.1	40%
1983	+	49.5	84%	47.7	67%	17.1	74%	18.6	99%	41.3	95%	4.9	63%
1983/84		43.6	86%	28.7	87%	10.5	92%	9.5	100%	21.9	100%	3.5	45%
1984	-	48.9	83%	51.5	72%	18.6	80%	18.7	100%	43.0	98%	5.7	73%
1984/85		49.4	98%	30.1	91%	11.0	97%	9.5	100%	21.5	98%	3.2	41%
1985	-	51.2	86%	39.7	56%	14.2	61%	18.4	98%	41.6	95%	5.4	70%
1985/86		50.6	100%	33.0	100%	11.3	100%	9.5	100%	22.0	100%	2.9	38%
1986	-	55.0	93%	58.9	83%	20.4	88%	18.6	99%	40.4	92%	7.8	100%
1986/87		43.8	86%	27.4	83%	10.0	88%	9.5	100%	20.1	92%	3.3	42%
1987	+	45.4	77%	56.8	80%	19.6	85%	18.7	100%	43.3	99%	5.7	73%
1987/88		45.8	91%	28.4	86%	10.3	91%	9.5	100%	13.3	60%	3.4	44%
1988	+	46.3	78%	50.9	71%	16.9	73%	18.1	97%	43.3	99%	7.0	90%
1988/89		43.2	85%	26.5	80%	9.8	87%	9.5	100%	22.0	100%	3.5	45%
1989	+	50.3	85%	45.7	64%	15.8	69%	18.2	97%	41.9	96%	7.0	89%
1989/90		46.0	91%	28.9	88%	10.5	93%	9.5	100%	22.0	100%	3.0	39%
1990	?	37.9	64%	35.0	49%	12.4	54%	16.2	87%	30.0	69%	5.5	71%
1990/91		49.4	98%	30.5	93%	11.1	98%	9.5	100%	16.9	77%	3.5	45%
1991	-	55.3	93%	48.8	69%	17.6	76%	18.6	99%	43.3	99%	5.0	64%
1991/92		43.6	86%	27.2	82%	10.1	89%	9.5	100%	21.0	96%	2.3	29%
1992	+	55.5	94%	64.2	90%	21.8	95%	18.7	100%	38.7	88%	2.2	28%
1992/93		50.5	100%	33.0	100%	11.3	100%	9.5	100%	22.0	100%	1.7	22%
1993	+	55.3	93%	61.5	86%	21.4	93%	18.7	100%	42.4	97%	7.4	95%
1993/94		50.6	100%	33.0	100%	11.3	100%	9.5	100%	21.4	97%	3.5	45%
1994	-	55.6	94%	42.5	60%	15.6	68%	18.5	99%	42.7	98%	7.8	100%
Mean (1st)		47.0	93%	29.7	90%	10.7	94%	9.5	100%	20.6	94%	3.1	40%
Mean (2nd)		51.1	86%	51.1	72%	17.9	77%	18.4	98%	41.2	94%	6.1	78%

Note: "+"; wet year (according to probability analysis)
"-"; dry year (according to probability analysis)
"?"; data not available
1st; The first cropping (November to April)
2nd; The secone cropping (May to October)

Table 3.9.6 Simulated Irrigation Water Supply and Sufficiency

Azua (without project condition)

Year		Ysura HRC		Ysura		Area A1	
Drought/Wet		(MCM)	(%)	(MCM)	(%)	(MCM)	(%)
1981	+	9.2	100%	102.4	100%	19.8	100%
1981/82		12.0	100%	154.4	100%	25.8	100%
1982	-	9.2	100%	102.4	100%	19.8	100%
1982/83		12.0	100%	154.4	100%	25.8	100%
1983	-	9.2	100%	102.4	100%	19.8	100%
1983/84		12.0	100%	148.7	96%	25.8	100%
1984	-	9.2	100%	102.4	100%	19.8	100%
1984/85		12.0	100%	154.4	100%	25.8	100%
1985	+	9.2	100%	102.4	100%	19.8	100%
1985/86		12.0	100%	154.4	100%	25.8	100%
1986	+	9.2	100%	102.4	100%	19.8	100%
1986/87		12.0	100%	154.4	100%	25.8	100%
1987	+	9.2	100%	102.4	100%	19.8	100%
1987/88		12.0	100%	154.4	100%	25.8	100%
1988	+	9.2	100%	102.4	100%	19.8	100%
1988/89		12.0	100%	154.4	100%	25.8	100%
1989	-	9.2	100%	102.4	100%	19.8	100%
1989/90		12.0	100%	154.4	100%	25.8	100%
1990	+	9.2	100%	102.4	100%	19.8	100%
1990/91		12.0	100%	154.4	100%	25.8	100%
1991	-	9.2	100%	90.7	89%	19.8	100%
1991/92		12.0	100%	154.4	100%	25.8	100%
1992	+	9.2	100%	102.4	100%	19.8	100%
1992/93		12.0	100%	153.3	99%	25.8	100%
1993	+	9.2	100%	102.4	100%	19.8	100%
1993/94		12.0	100%	154.4	100%	25.8	100%
1994	+	9.2	100%	102.4	100%	19.8	100%
Mean (1st)		12.0	100%	153.8	100%	25.8	100%
Mean (2nd)		9.2	100%	101.5	99%	19.8	100%

Note: "+"; wet year (according to probability analysis)
"-"; dry year (according to probability analysis)
"?"; data not available
1st; The first cropping (November to April)
2nd; The seconc cropping (May to October)
A1; Irrigation area between Villarpando and Los Guiros

Table 3.9.7 Simulated Irrigation Water Supply and Sufficiency

Barahona (without project condition)

Year		Area B1		Area B2		Area B3		Area B4		Area B5		Area B6	
Drought/Wet		MCM	(%)	MCM	(%)	MCM	(%)	MCM	(%)	MCM	(%)	MCM	(%)
1981	+	54.5	100%	227.6	100%	55.4	100%	6.8	100%	24.8	100%	42.7	92%
1981/82		54.9	100%	193.5	87%	56.4	100%	6.9	100%	24.6	100%	42.3	90%
1982	-	54.5	100%	215.9	95%	55.4	100%	6.8	100%	24.8	100%	42.7	92%
1982/83		54.9	100%	134.7	60%	56.4	100%	6.9	100%	24.6	100%	37.6	80%
1983		54.5	100%	151.8	67%	55.4	100%	6.8	100%	24.8	100%	36.3	78%
1983/84		54.9	100%	106.9	48%	50.5	90%	6.5	95%	20.2	82%	26.1	56%
1984	-	54.5	100%	140.4	62%	55.4	100%	6.8	100%	24.3	98%	33.2	71%
1984/85		54.9	100%	135.0	61%	56.4	100%	6.9	100%	24.6	100%	37.3	80%
1985	+	54.5	100%	124.0	54%	55.4	100%	6.8	100%	23.5	95%	31.4	67%
1985/86		54.9	100%	189.8	85%	56.4	100%	6.9	100%	24.6	100%	42.3	90%
1986		54.5	100%	184.8	81%	55.4	100%	6.8	100%	24.8	100%	42.7	92%
1986/87		54.9	100%	106.7	48%	56.4	100%	6.9	100%	22.3	91%	26.0	55%
1987	+	54.5	100%	157.7	69%	55.4	100%	6.8	100%	22.9	92%	34.7	74%
1987/88		54.9	100%	172.0	77%	56.4	100%	6.9	100%	24.6	100%	42.3	90%
1988	-	54.5	100%	204.7	90%	55.4	100%	6.8	100%	24.8	100%	42.7	92%
1988/89		54.9	100%	174.3	78%	56.4	100%	6.9	100%	24.6	100%	42.3	90%
1989	-	54.5	100%	216.6	95%	55.4	100%	6.8	100%	24.8	100%	42.7	92%
1989/90		54.9	100%	129.6	58%	56.4	100%	6.9	100%	19.8	81%	28.8	62%
1990		54.5	100%	117.4	52%	44.5	80%	6.7	99%	12.4	50%	22.6	49%
1990/91		54.9	100%	149.2	67%	56.4	100%	6.9	100%	24.6	100%	38.0	81%
1991	-	54.5	100%	181.3	80%	55.4	100%	6.8	100%	24.8	100%	42.7	92%
1991/92		54.9	100%	106.5	48%	50.3	89%	6.5	95%	18.9	77%	24.4	52%
1992	+	54.5	100%	227.6	100%	55.4	100%	6.8	100%	24.8	100%	42.7	92%
1992/93		54.9	100%	158.1	71%	56.4	100%	6.9	100%	24.6	100%	39.5	84%
1993	+	54.5	100%	208.0	91%	55.4	100%	6.8	100%	24.8	100%	42.7	92%
1993/94		54.9	100%	119.7	54%	56.4	100%	6.9	100%	24.3	99%	32.2	69%
1994	+	54.5	100%	119.1	52%	55.4	100%	6.8	100%	21.9	88%	31.1	67%
Mean (1st)		54.9	100%	144.3	65%	55.5	98%	6.8	99%	23.3	95%	35.3	75%
Mean (2nd)		54.5	100%	173.0	76%	54.6	98%	6.8	100%	23.4	94%	37.5	81%

Note: "+"; wet year (according to probability analysis)
"-"; dry year (according to probability analysis)
"?"; data not available
1st; The first cropping (November to April)
2nd; The secone cropping (May to October)
B1; Irrigation area between Los Guiros and Santana Headworks
B2; Irrigation area of Santana
B3; Irrigation area between Santana Headworks and Tomate-Mena Drain
B4; Irrigation area of Tomate-Mena
B5; Irrigation area between Tomate-Mena Drain and Palo Alto
B6; Irrigation area between Palo Alto and Carribean Sea