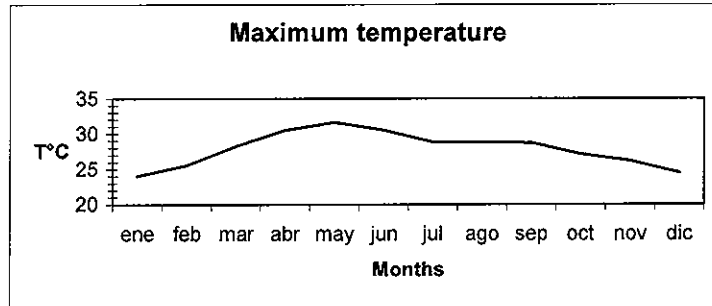


Maximum Temperature:

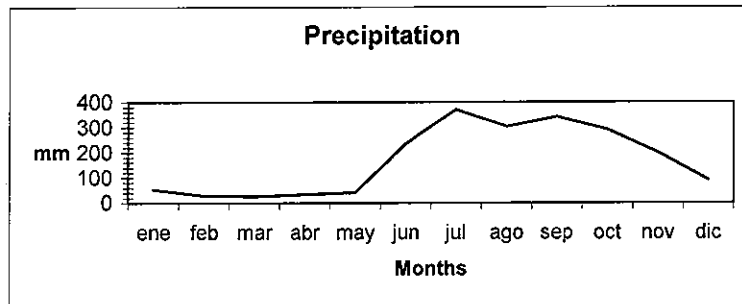
The high value of the Maximum temperature appears in the month of May with 31,65 °C and the minimum Maximum temperature appears in the month of January with 24,06 °C. Period from 1961 to 2002.



Precipitation:

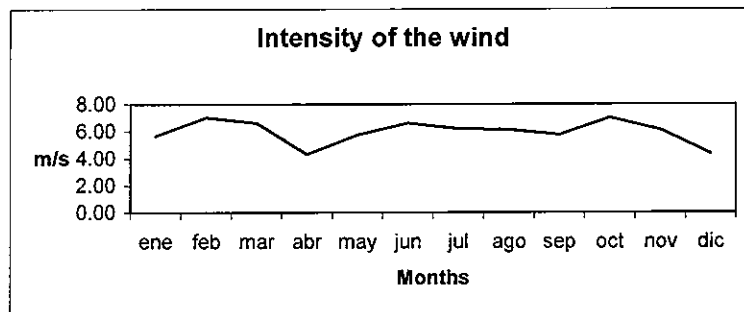
The months of July, August and September are those in which the greater precipitation of up to 371,23 mm in July appears, in the month of March with 26,89 mm the minimum precipitation appears. Period from 1961 to 2002.

This station displays in the rainy season a relative minimum in the month of August that is known as "canicula".



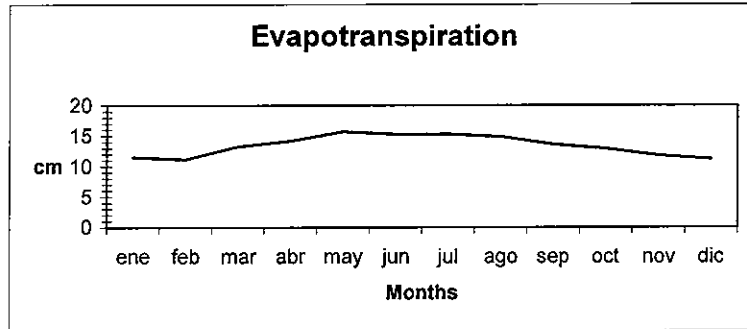
Intensity of the wind:

The maximum intensity of the wind is of 7,02 m/s for February and a minimum of 4,32 m/s in April. Period from 1992 to 2002.



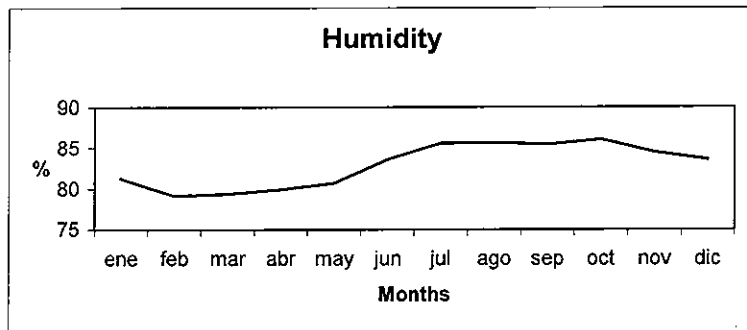
Evapotranspiration:

The maximum evapotranspiration appears in May with 15,71 cm and the minimum in February with 11,13 cm. Period from 1961 to 2002.



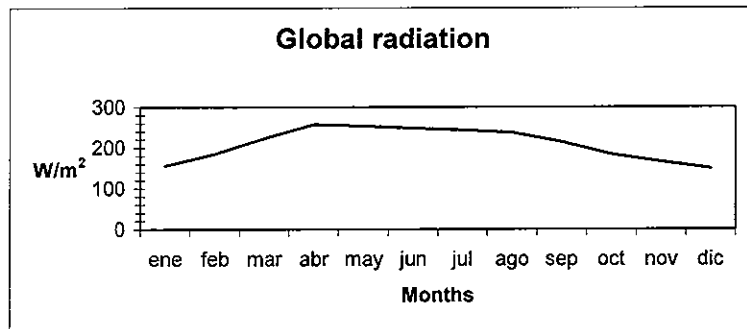
Humidity:

The greater humidity appears in July with 86 % the same as in August and October. In February with 79% the minimum appears. Period from 1961 to 2002.



Global Radiation (Santiago Tuxtla):

The greater humidity appears in July with 86 % the same as in August and October. In February with 79% the minimum appears. Period from 1961 to 2002.



For the description and classification of the soil inventories, the following norms were used as bases:

NOM-023-RECNAT-2001
NOM-060-SEMARNAT-1994
NOM-062-SEMARNAT-1994
NOM-083-SEMARNAT-1986
NOM-001-SEMARNAT-1996

For greater detail the annex of methodologies can be consulted, in disc 3.

C) GEOLOGY AND GEOMORPHOLOGY

Laguna Encantada Module

The irrigation module "Laguna Encantada" is located within the physiographic province of the Neovolcanic Axis, this region is characterized by displaying a waved relief dominated by slopes with elevations from 300 to 800 masl, formed by abundant volcanic cones.

The geology of the region is made up mainly of rocks of volcanic origin, where basalts dominate in more than 90% and some sedimentary and metamorphic.

Tlacojalpan-Ambrosio Module

Tlacojalpan I Submodule

The irrigation module of "Tlacojalpan I" is located within the physiographic province of the Coastal Plain of the Gulf, same that is characterized by displaying a generally flat relief, in which it is possible to find isolated slopes or chains of slopes with heights smaller than 50 ms.

The geology of the region is made up of sediments of the Quaternary, originating of the affluents of the Papaloapan River. On the other hand, it is also possible to find sedimentary rocks such as Lutites, Arenaceous and some conglomerates.

Tlacojalpan II Submodule

The irrigation module of "Tlacojalpan II" is located within the physiographic province of the Coastal Plain of the Gulf, same that is characterized by displaying a generally flat relief, in which it is possible to find isolated slopes or chains of slopes with heights smaller than 50 ms.

The geology of the region is made up of sediments of the Quaternary, originating of the affluents of the Papaloapan River. On the other hand, it is also possible to find sedimentary rocks such as Lutites, Arenaceous and some conglomerates.

San Marcos Submodule

The irrigation module of "San Marcos" is located within the physiographic province of the Coastal Plain of the Gulf, same that is characterized by displaying a generally flat relief, in which it is possible to find isolated slopes or chains of slopes with heights smaller than 50 ms.

The geology of the region is made up of sediments of the Quaternary, originating of the affluents of the Papaloapan River. On the other hand, it is also possible to find sedimentary rocks such as Lutites, Arenaceous and some conglomerates.

Ambrosio La Raya Submodule

The irrigation module of "Ambrosio La Raya" is located within the physiographic province of the Coastal Plain of the Gulf, same that is characterized by displaying a generally flat relief, in which it is possible to find isolated slopes or chains of slopes with heights smaller than 50 ms.

The geology of the region is made up of sediments of the Quaternary, originating of the affluents of the Papaloapan River. On the other hand, it is also possible to find sedimentary rocks such as Lutites, Arenaceous and some conglomerates.

Ambrosio Ejido Submodule

The irrigation module of "Ambrosio Ejido" is located within the physiographic province of the Coastal Plain of the Gulf, same that is characterized by displaying a generally flat relief, in which it is possible to find isolated slopes or chains of slopes with heights smaller than 50 ms.

The geology of the region is made up of sediments of the Quaternary, originating of the affluents of the Papaloapan River. On the other hand, it is also possible to find sedimentary rocks such as Lutites, Arenaceous and some conglomerates.

Tesechoacán-Curazao Module

Tesechoacán Submodule

The irrigation module of "Tesechoacan" is located within the physiographic province of the Coastal Plain of the Gulf, same that is characterized by displaying a generally flat relief, in which it is possible to find isolated slopes or chains of slopes with heights smaller than 50 ms.

The geology of the region is made up of sediments of the Quaternary, originating of the affluents of the Papaloapan River. On the other hand, it is also possible to find sedimentary rocks such as Lutites, Arenaceous and some conglomerates.

Curazao Submodule

The irrigation module of "Curazao" is located within the physiographic province of the Coastal Plain of the Gulf, same that is characterized by displaying a generally flat relief, in which it is possible to find isolated slopes or chains of slopes with heights smaller than 50 ms.

The geology of the region is made up of sediments of the Quaternary, originating of the affluents of the Papaloapan River. On the other hand, it is also possible to find sedimentary rocks such as Lutites, Arenaceous and some conglomerates.

Los Naranjos Module

Well 28 Submodule

The irrigation module of "Nuevo Ideal de Abajo" is located within the physiographic province of the Coastal Plain of the Gulf, same that is characterized by displaying a generally flat relief, in which it is possible to find isolated slopes or chains of slopes with heights smaller than 50 ms.

The geology of the region is made up of sediments of the Quaternary, originating of the affluents of the Papaloapan River. On the other hand, it is also possible to find sedimentary rocks such as Lutites, Arenaceous and some conglomerates.

Well 868 Submodule

The irrigation module of "Nuevo Pueblo Nuevo" is located within the physiographic province of the Coastal Plain of the Gulf, same that is characterized by displaying a generally flat relief, in which it is possible to find isolated slopes or chains of slopes with heights smaller than 50 ms.

The geology of the region is made up of sediments of the Quaternary, originating of the affluents of the Papaloapan River. On the other hand, it is also possible to find sedimentary rocks such as Lutites, Arenaceous and some conglomerates.

Well 5 Submodule

The irrigation module of "Nuevo Mondongo" is located within the physiographic province of the Coastal Plain of the Gulf, same that is characterized by displaying a generally flat relief, in which it is possible to find isolated slopes or chains of slopes with heights smaller than 50 ms.

The geology of the region is made up of sediments of the Quaternary, originating of the affluents of the Papaloapan River. On the other hand, it is also possible to find sedimentary rocks such as Lutites, Arenaceous and some conglomerates.

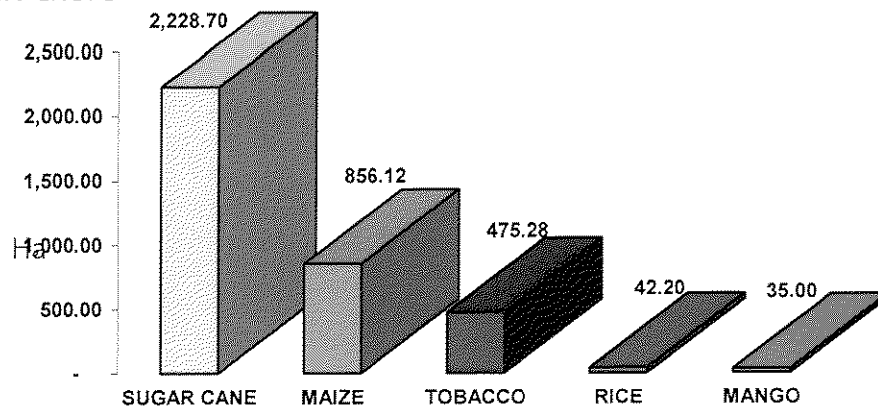
Well 34 and 36 Submodule

The irrigation module of "Laguna Escondida" is located within the physiographic province of the Coastal Plain of the Gulf, same that is characterized by displaying a generally flat relief, in which it is possible to find isolated slopes or chains of slopes with heights smaller than 50 ms.

The geology of the region is made up of sediments of the Quaternary, originating of the affluents of the Papaloapan River. On the other hand, it is also possible to find sedimentary rocks such as Lutites, Arenaceous and some conglomerates.

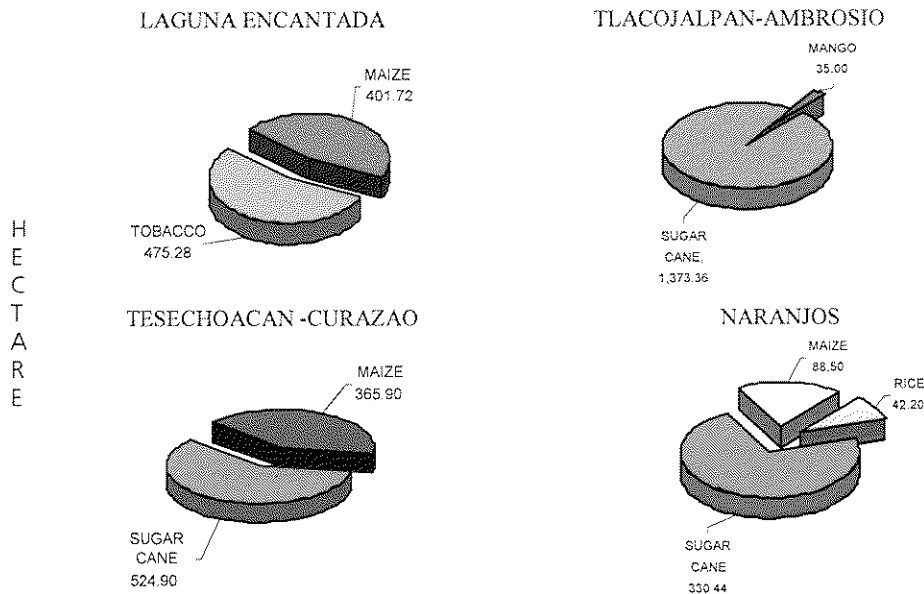
D) AGRICULTURE

MAIN CROPS

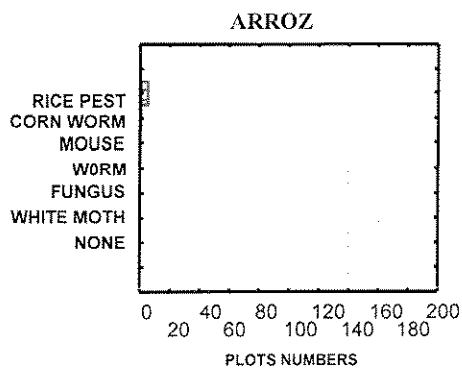
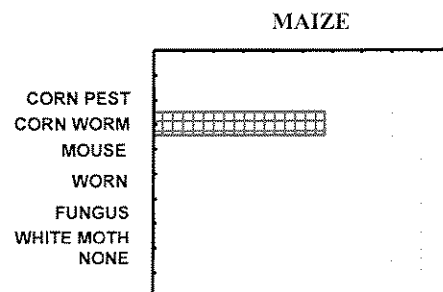
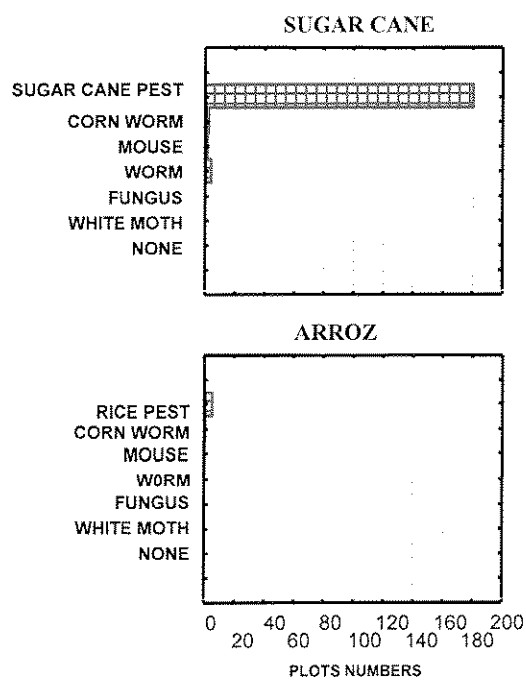


Crops

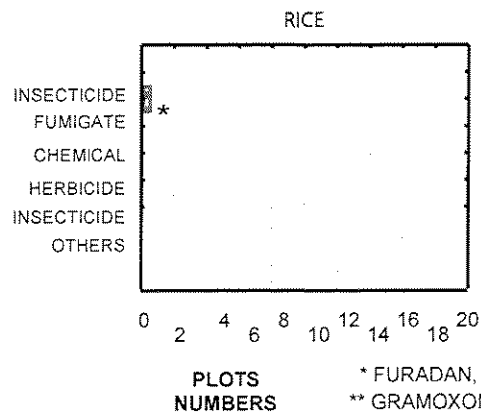
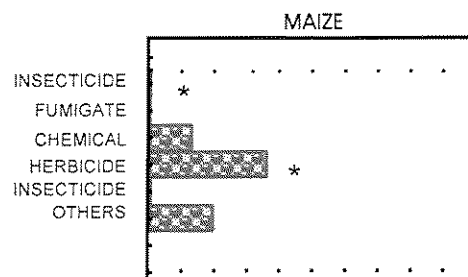
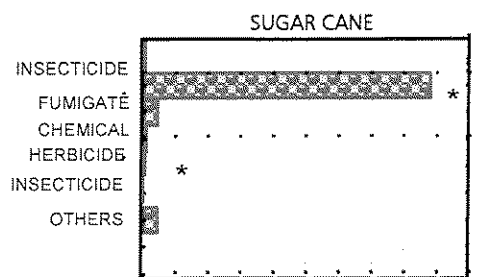
SURFACE PER CROP (Ha)



PLAGUES WHICH ATTACK THE CROPS

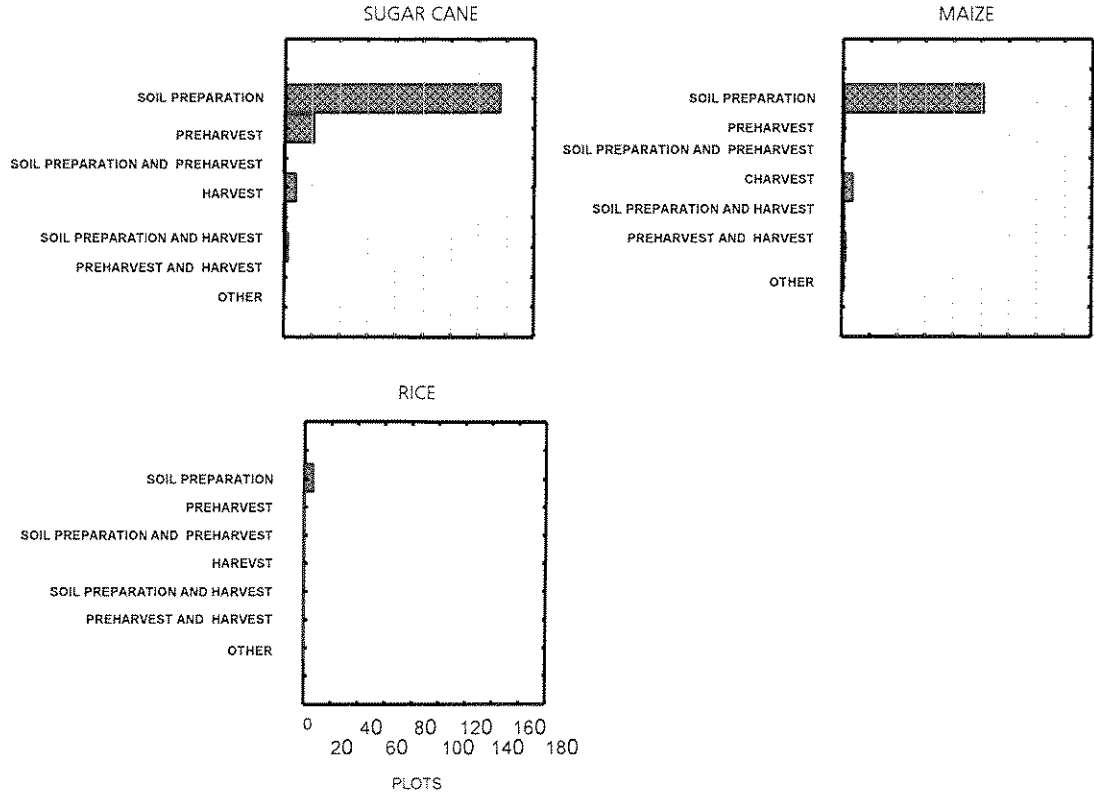


TYPE OF ANSWER TO FIGHT PLAGUES

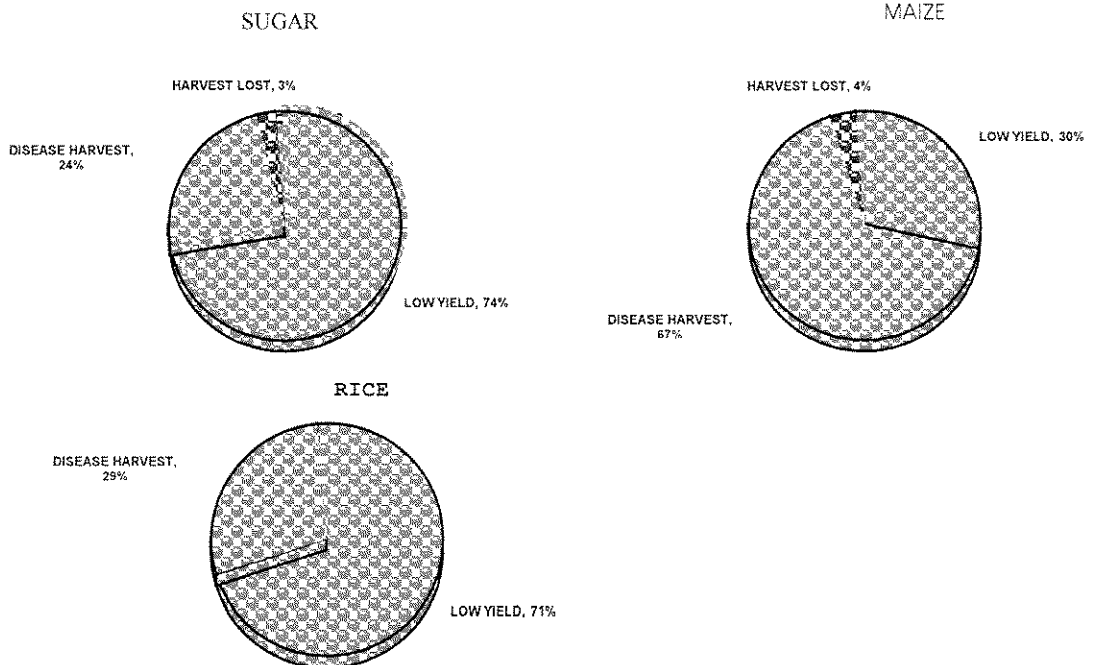


* FURADAN, TAMARON
** GRAMOXONE

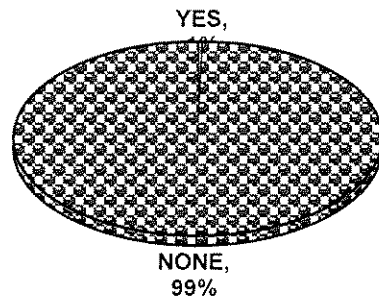
STAGE IN WHICH THEY AFFECT THE CROP



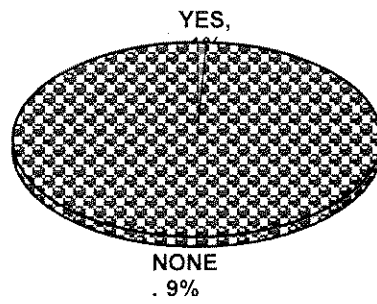
WAY IN WHICH THEY AFFECT THE CROP



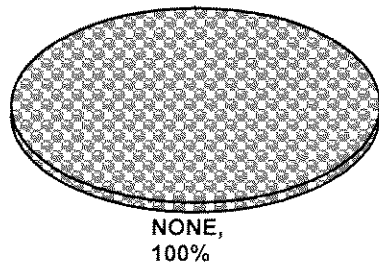
RECEIVED TECHNICAL ASSISTANCE
SUGAR CANE



MAIZE

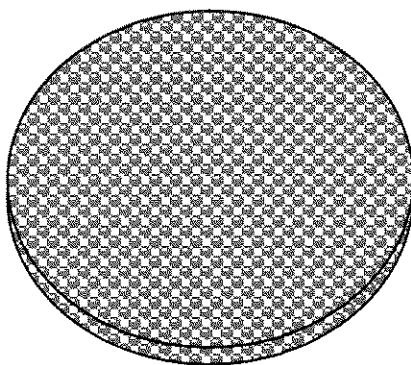


RICE

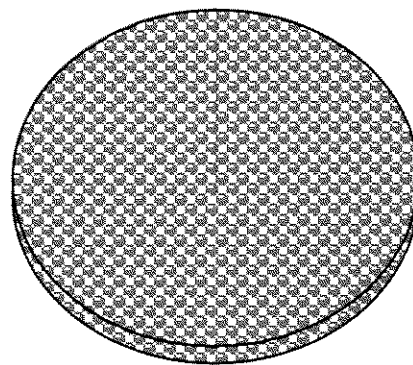


TYPE OF ASSISTANCE RECEIVED

SUGAR CANE



MAIZE



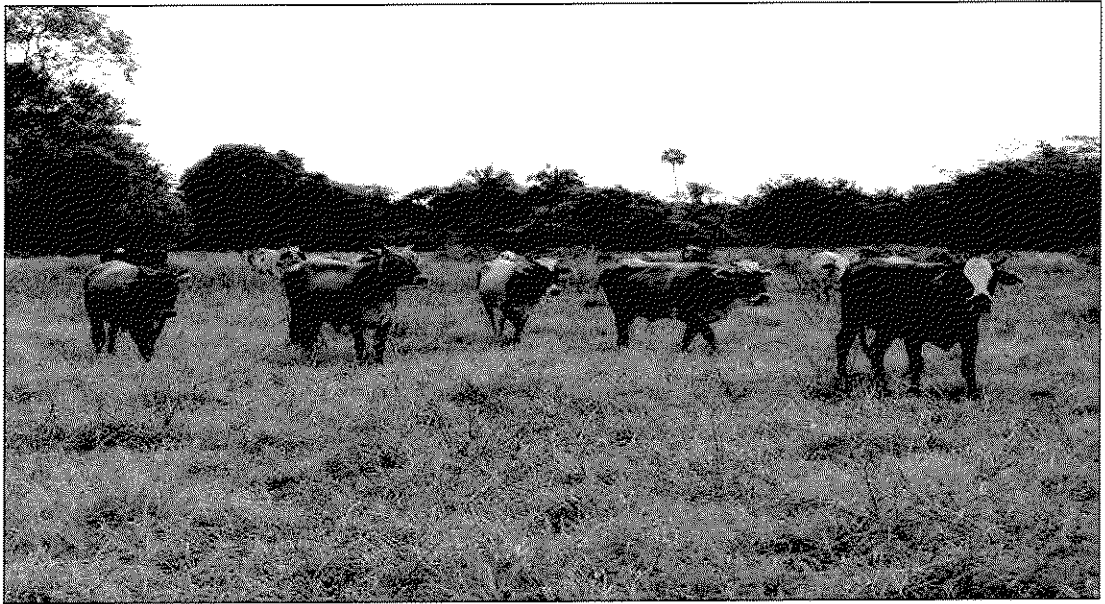
PEST CONTROL, 100%

BEST KNOW, 100%

3.2.3 DISCUSSION

In relation to the analysis of the results of some elements of natural conditions such as vegetation, climate, geology, geomorphology and agriculture, the following can be commented:

The use of satellite images and aerial photographs, in addition to the field information, allowed to define that most of the surface of the studied modules has sugar cane culture and in smaller proportion of areas with cultures of maize, rice, tobacco and mango exist; similarly also areas with grass for pasturing of cattle were identified.



Although the of terms reference indicates to the elaboration of digital maps for vegetation and agriculture but the 2 maps should become the same, since the present ground use of all the studied modules is farming, and areas with vegetation of tropical forest that is the original vegetation corresponding to the region do not exist. In some very particular cases, there were some adult individuals of guanacaste (*Enterolobium cyclocarpum*) and of ceiba (*Ceiba pentandra*) that correspond to a type of secondary vegetation derived from the tropical forest, the former was observed in the northeast side of the submodule of Tesechoacán.

In relation to the climate, the 4 studied modules correspond to the warm climate or group A, that it is characterized that its average annual temperature is between 22 and 26°C and the one of the cold month is greater than 18 °C. In order to know the variations the different components from the climate registries up to 40 years ago of the 4 installed climatologic stations in the region were analyzed where the 4 modules of irrigation are located. The climatological variables that do not have available registries were calculated by mathematical formulas used in investigation on the subject, an example of this is the radiation variable

It is safe to say that within the type of climate before explained other sub-groups exist.

When reviewing the precipitation data it can be observed that every month of the year it rains, although the module of Naranjos is the one that reports values with smaller precipitation during the three first months of the year, this is around 21 mm per month; on the other hand the station of Catemaco shows values for the same period of practically the double of the volume of rain in respect to the first. As for the months of June, July, August and September, the Ciudad Aleman and Tierra Blanca station present comparable values with numbers of 350-400 mm per month.

The average temperatures of the 4 climatologic stations do not display great variations between these and the monthly differences are only made evident in the last month of the year and in January and February, this is with less warm temperatures, none lower than 18°C.

As far as the geomorphology and geology, two perfectly clear regions can be distinguished, first with 76% of the area which corresponds to alluvial plains formed from sediments of the numerous rivers that conform the river basin of the Papaloapan, geologically correspond to deposits of the Quaternary. Second which represents 24% of the area conformed by pronounced slopes where the volcanic cones predominate and that are derived from the activity of the San Martín volcano with abundant basaltic material.

In general terms, it is possible to be affirmed that the natural conditions like vegetation, climate and geology and geomorfología, are not limitant factors for the development of a sustainable agriculture, but later it will be by the mention some works of conservation of the ground in the respective section.

3.3 WATER

3.3.1 Methodologies y Process

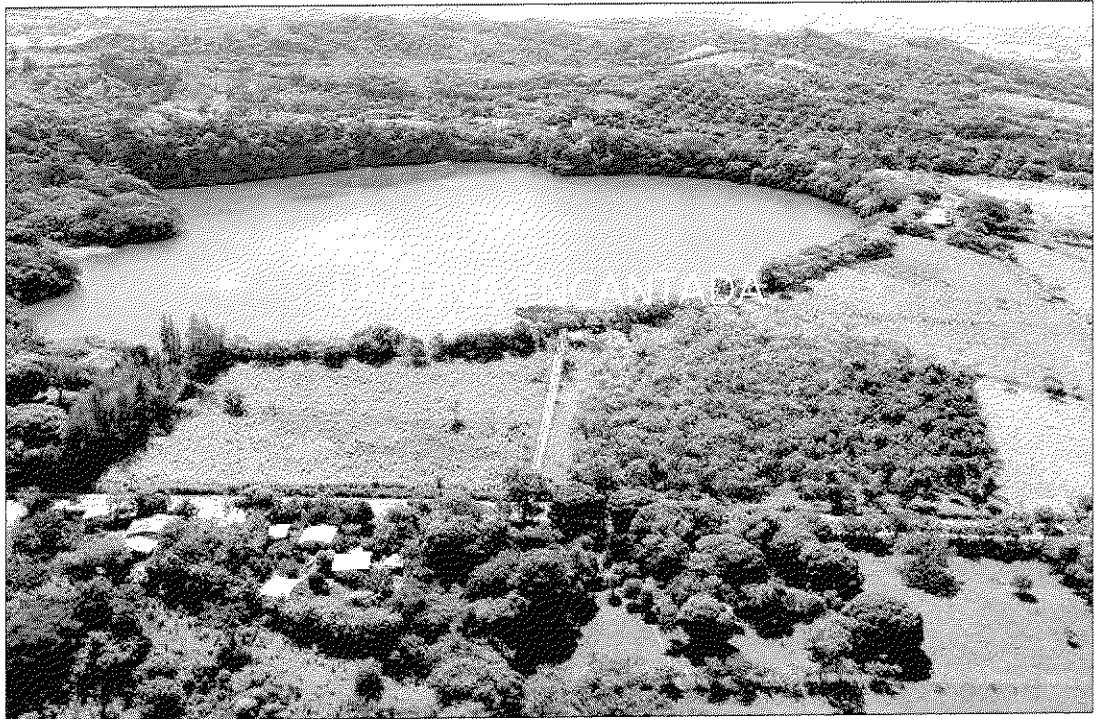
Water sampling and analysis. For the case of the sampling of water for irrigation, the Ley Federal de Derechos en Materia de Agua, was taken as a reference, specifically the water quality outline chart for its use in irrigation (Use 2). The methodology of the determinations is presented in the corresponding annex, of disc 3

Samples of water were taken in 13 points located where there are or will be irrigation systems (see the following chart of the location of sampling points). All the samples were sent to the laboratory to make the determinations outlined in the Lineamientos de Calidad de Agua, of the Ley Federal de Derechos en Materia de Agua.

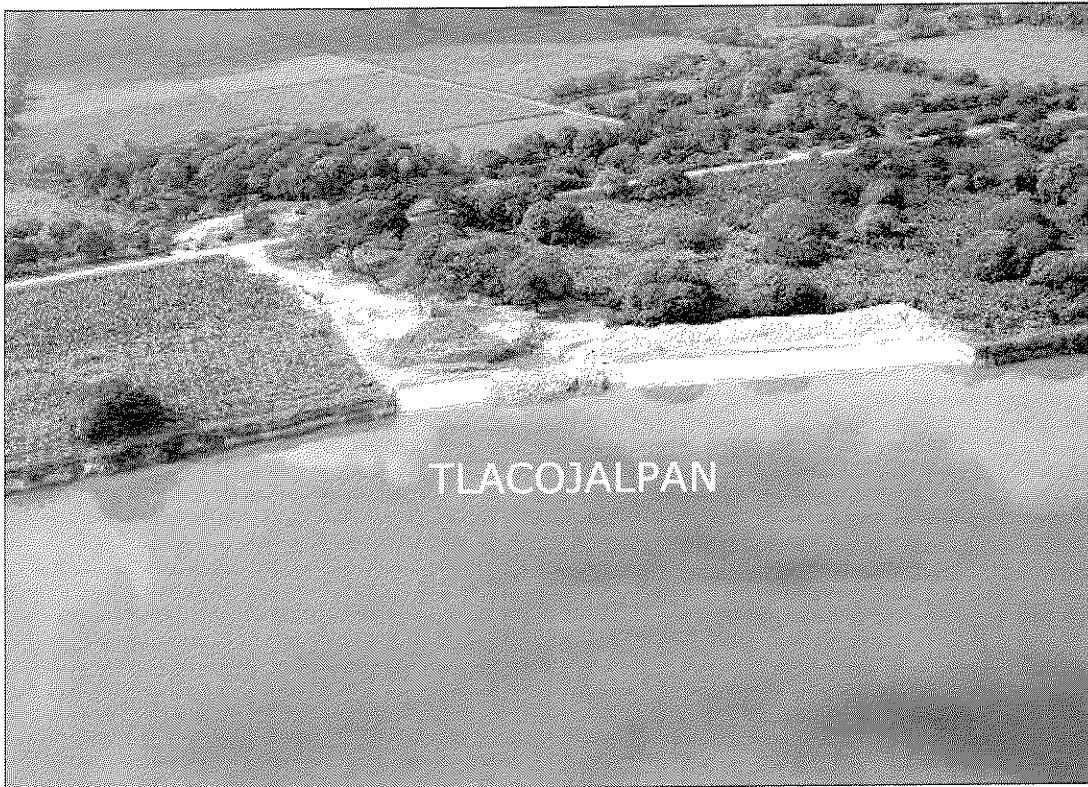
For more detail the methodology annex in disc 3 can be consulted.

IRRIGATION MODULE	SUBMODULE	SAMPLING SITES ACCORDING TO THE TERMS OF REFERENCE	SAMPLING SITES
LAGUNA ENCANTADA	Laguna Encantada	Water pump	Sampled in the water pump itself.
	Tlacojalpan 1 Tlacojalpan 2	Water pump Not determined	Sampled in the water pump itself. Laguna Ojichal
TLACOJALPAN	Ambrosio 1 (Ejido)	Not determined	Shore of the Papaloapan river
	Ambrosio 2 (La Raya)	Not determined	Shore of the Papaloapan river
VILLA AZUETA	San Marcos	Water pump	Sampled in the water pump itself.
	Tesechoacán	Water pump	Sampled in the water pump itself.
	Curazao	Well 34	Drinkable water well of the community of Laguna Escondida
	Nuevo Pueblo Nuevo (Pozo 868)	Well 36	Drinkable water well of the community of Laguna Escondida
NARANJOS	Nuevo Mondongo (Pozo 5)	Well 28	Urban well of the community of Nueva Esperanza
	Laguna Escondida (Pozo 34)	Well 5	Sampled in the well itself
	Laguna Escondida (Pozo 36)	Well 868	Urban well of the community of El Coyol
	Nuevo Ideal de Abajo (Pozo 28)	Water pump	Sampled in the water pump itself.

SITES OF SAMPLING OF WATER SOURCES FOR THE FOUR IRRIGATION MODULES OF THE
PAPALOAPAN RIVER BASIN



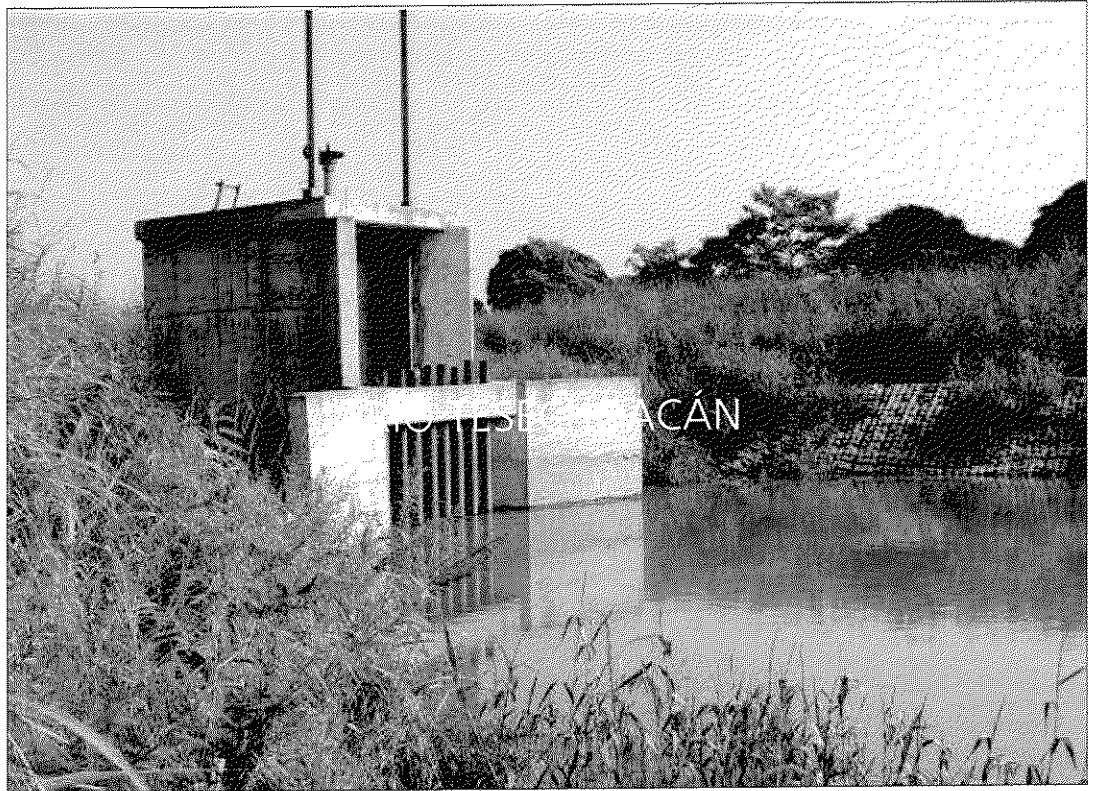
DAM AT THE BEGINNING OF THE SIHUAPAN RIVER



PUMPING STATION IN THE TLACOJALPAN I SUBMODULE



PUMPING STATION IN THE TLACOJALPAN II SUBMODULE



PUMP IN THE CURAZAO SUBMODULE



PUMPING STATION IN THE TESECHOACÁN SUBMODULE



PUMPING STATION IN THE WELL 28 SUBMODULE

3.3.2 RESULTS

On the 13th and 14th of September 2004, water samples were taken from the site corresponding to each one of 13 Irrigation submodules. The sample was packaged in a new plastic container of 4 liters of capacity with an air tight cover; the package was labeled with the name of the submodule, the georeference of the site; the temperature and pH of the water, as well as the date and the field card filled. Later the samples were placed successively on ice and they were sent to the Laboratorio Quimica Veracruzana S.C. that is certified by the Mexican Organization of Accreditation A.C. with the No. A-040-016-/03.

Next, a chart is presented with the mentioned results.

VARIABLES	LAGUNA ENCANTADA	TLACOJALPAN 1	TLACOJALPAN 2	AMBROSIO EJIDO	AMBROSIO LA RAYA	SAN MARCOS	TESECHOACAN	CURAZAO	POZO 868	POZO 28	POZO 34	POZO36	POZO 5	Maximum permissible limit
Aluminum (mg/L)	<0.00737	<0.17615	<0.00737	<0.00737	<0.00737	<0.00737	<0.00737	<0.00737	<0.00737	<0.00737	<0.00737	<0.00737	<0.00737	5
Arsenic (mg/L)	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	0.1
Boron(mg/L)	<0.03000	<0.03000	<0.03000	<0.03000	<0.03000	<0.03000	<0.03000	<0.03000	<0.03000	<0.03000	<0.03000	<0.03000	<0.03000	0.7
Cadmium (mg/L)	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	0.01
Cyanide (mg/L)	<0.03	<0.003	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.02
Chlorides (mg/L)	10.12	20.39	5.3	8.82	11.08	6.89	3.37	6.74	7.8	32.92	49.94	49.46	26.03	150
Copper (mg/L)	<0.09984	<0.09984	<0.09984	<0.09984	<0.09984	<0.09984	<0.09984	<0.09984	<0.09984	<0.09984	<0.09984	<0.09984	<0.09984	0.2
Chrome (mg/L)	<0.00890	<0.00890	<0.00890	<0.00890	<0.00890	<0.00890	<0.00890	<0.00890	<0.00890	<0.00890	<0.00890	<0.00890	<0.00890	0.1
Iron(mg/L)	<0.07170	<0.07170	<0.07170	<0.07170	<0.07170	<0.07170	<0.07170	<0.07170	<0.07170	<0.07170	<0.07170	<0.07170	<0.07170	5
Fluorides(mg/L)	<0.04	0.24	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	<0.04	0.18	0.04	0.25	0.15	1
Manganes(mg/L)	<0.05000	<0.05000	<0.05000	<0.05000	<0.05000	<0.005000	0.21277	0.15758	<0.05000	<0.05000	<0.05000	<0.05000	<0.05000	0.2
Nickel(mg/L)	<0.00318	<0.00318	<0.00318	<0.00318	<0.00318	<0.00318	<0.00318	<0.00318	<0.00318	<0.00318	<0.00318	<0.00318	<0.00318	0.2
Lead(mg/L)	<0.00381	<0.00381	<0.00381	<0.00381	<0.00381	<0.00381	<0.00381	<0.00381	<0.00381	<0.00381	<0.00381	<0.00381	<0.00381	0.5
Selenium(mg/L)	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519	0.02
Sulphates(mg/L)	5.65	9.77	9.58	4.43	9.24	9.48	<3.28	9.61	27.07	7.15	7.72	6.66	4.62	250
Zinc(mg/L)	<0.11812	<0.11812	<0.11812	<0.11812	<0.11812	<0.11812	<0.11812	<0.11812	<0.11812	<0.11812	<0.11812	<0.11812	<0.11812	2
Aldrin (ug/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Chlordanum(ug/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.003
Chlorfenite	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Dieldrin(ug/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Heptachloride(ug/L)	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	N/A
2,4-D(ug/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	N/A
DDT (Total of isomers) (ug/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	N/A
Gamma-HCH (Lindano) (ug/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	N/A
Hexachlorobenzene(ug/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	N/A
Metoxichlorine(ug/L)	7.84	7.71	7.81	7.42	7.74	7.75	7.31	7.2	7.94	7.9	7.92	7.89	7.55	6.0-9.0
pH	absent	Absent	absent	absent	absent	absent	absent	absent	absent	absent	absent	absent	absent	absent
Floating material	<1	34	13	4	11	12	359	225	1	1	4	3	4	50
Suspended solutions (mg/L)	0	2	4	16	18	15	6	6	14	3	2	8	0	1000
Fecal Coliforms (UFC/100 ml)	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si	
Aluminum (mg/L)	<0.00737	<0.17615	<0.00737	<0.00737	<0.00737	<0.00737	<0.00737	<0.00737	<0.00737	<0.00737	<0.00737	<0.00737	<0.00737	5
Arsenic (mg/L)	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	0.1
Boron(mg/L)	<0.03000	<0.03000	<0.03000	<0.03000	<0.03000	<0.03000	<0.03000	<0.03000	<0.03000	<0.03000	<0.03000	<0.03000	<0.03000	0.7
Cadmium (mg/L)	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	<0.00190	0.01
Cyanide (mg/L)	<0.03	<0.003	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.02
Chlorides (mg/L)	10.12	20.39	5.3	8.82	11.08	6.89	3.37	6.74	7.8	32.92	49.94	49.46	26.03	150
Copper (mg/L)	<0.09984	<0.09984	<0.09984	<0.09984	<0.09984	<0.09984	<0.09984	<0.09984	<0.09984	<0.09984	<0.09984	<0.09984	<0.09984	0.2
Chrome (mg/L)	<0.00890	<0.00890	<0.00890	<0.00890	<0.00890	<0.00890	<0.00890	<0.00890	<0.00890	<0.00890	<0.00890	<0.00890	<0.00890	0.1
Iron(mg/L)	<0.07170	<0.07170	<0.07170	<0.07170	<0.07170	<0.07170	<0.07170	<0.07170	<0.07170	<0.07170	<0.07170	<0.07170	<0.07170	5
Fluorides(mg/L)	<0.04	0.24	<0.04	<0.04	<0.04	0.07	<0.04	<0.04	<0.04	0.18	0.04	0.25	0.15	1
Manganes(mg/L)	<0.05000	<0.05000	<0.05000	<0.05000	<0.05000	<0.005000	0.21277	0.15758	<0.05000	<0.05000	<0.05000	<0.05000	<0.05000	0.2

VARIABLES	LAGUNA ENCANTADA	TLACOJALPAN 1	TLACOJALPAN 2	AMBROSIO EJIDO	AMBROSIO LA RAYA	SAN MARCOS	TESECHOACAN	CURAZAO	POZO 868	POZO 28	POZO 34	POZO36	POZO 5	Maximum permissible limit
Nickel(mg/L)	<0.00318	<0.00318	<0.00318	<0.00318	<0.00318	<0.00318	<0.00318	<0.00318	<0.00318	<0.00318	<0.00318	<0.00318	<0.00318	0.2
Lead(mg/L)	<0.00381	<0.00381	<0.00381	<0.00381	<0.00381	<0.00381	<0.00381	<0.00381	<0.00381	<0.00381	<0.00381	<0.00381	<0.00381	0.5
Selenium(mg/L)	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519	<0.00519	0.02
Sulphates(mg/L)	5.65	9.77	9.58	4.43	9.24	9.48	<3.28	9.61	27.07	7.15	7.72	6.66	4.62	250
Zinc(mg/L)	<0.11812	<0.11812	<0.11812	<0.11812	<0.11812	<0.11812	<0.11812	<0.11812	<0.11812	<0.11812	<0.11812	<0.11812	<0.11812	2
Aldrin (ug/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Chlordane(ug/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.003
Chlorfenvle	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Dieldrin(ug/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Heptachloride(ug/L)	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	N/A
2,4-D(ug/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	N/A
DDT (Total of isomers) (ug/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	N/A
Gamma-HCH (lindano) (ug/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	N/A
Hexachlorobenzene(ug/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	N/A
Metoxichlorine(ug/L)	7.84	7.71	7.81	7.42	7.74	7.75	7.31	7.2	7.94	7.9	7.92	7.89	7.55	6.0-9.0
pH	absent	Absent	absent	absent	absent	absent	absent	absent	absent	absent	absent	absent	absent	absent
Floating material	<1	34	13	4	11	12	359	225	1	1	4	3	4	50
Suspended solutions (mg/L)	0	2	4	16	18	15	6	6	14	3	2	8	0	1000
Fecal Coliforms (UFC/100 ml)	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si	Si	

3.3.3 DISCUSSION

The results for the different groups from the parameters indicated before, allow us to affirm that the samples of **thirteen Irrigation Sub modules are satisfactory and therefore, are suitable for irrigation**. Nevertheless it should be commented, that for the modules of Tesechoacán and Curazao the suspended solids level was significantly exceeded because during the dawn of the day of the sampling it rained torrentially in the upstream of the river basin of the Papaloapan, that is to say, in the state of Oaxaca; the suspended solids are colloidal clays mainly, which does not affect the quality of irrigation water.

In the bibliographical revision, in respect to the Index of Water Quality (ICA) individually for Papaloapan river, there were reports from 1995 to 2000 that indicate that this channel is contaminated by industrial water unloading, of municipal residual waters and agrochemical remainders.

The Secretary of Public Security of the Government of the State of Veracruz, through the Undersecretary's office of Civil defense in the State Atlas of Risks 1999-2000, reports for the two indexes of different Water Quality: the first, of 59.40% and indicates that it is contaminated, this to us in the municipalities of Alvarado, Tlacotalpan, Acula and Amatlán. The second index is of 50.57% and we found it in Carlos A. Carrillo, Cosamaloapan, Tlacojalpan, Chacaltianguis and Otatitlán, nevertheless in spite of these indexes according to the General Scale of Qualification of Water of the National Commission of Water, this channel to be used as irrigation water.

Where the groundwater is used for irrigation as it is the case of the Naranjos module the quality of water is good. For the case of Laguna Encantada whose source is the Sihupapan river, also the quality of water is good. In Naranjos the groundwater reserve is used as a water source for supply of urban use; in Laguna Encantada the rural community Cerro de las Iguanas takes advantage of it in a similar way.

In general, the quality of water in the thirteen irrigation sub modules is suitable for irrigation; nevertheless, the Tesechoacán and Papaloapan rivers have a serious obstacle for them to be used as an irrigation water source, that is to say, the Decree of Prohibition of the 2rd of July 1947, this document say the rivers can't be used for irrigation. This obstacle will have to be corrected as soon as possible, reason that much infrastructure for agricultural irrigation constructed recently in the region already exists.