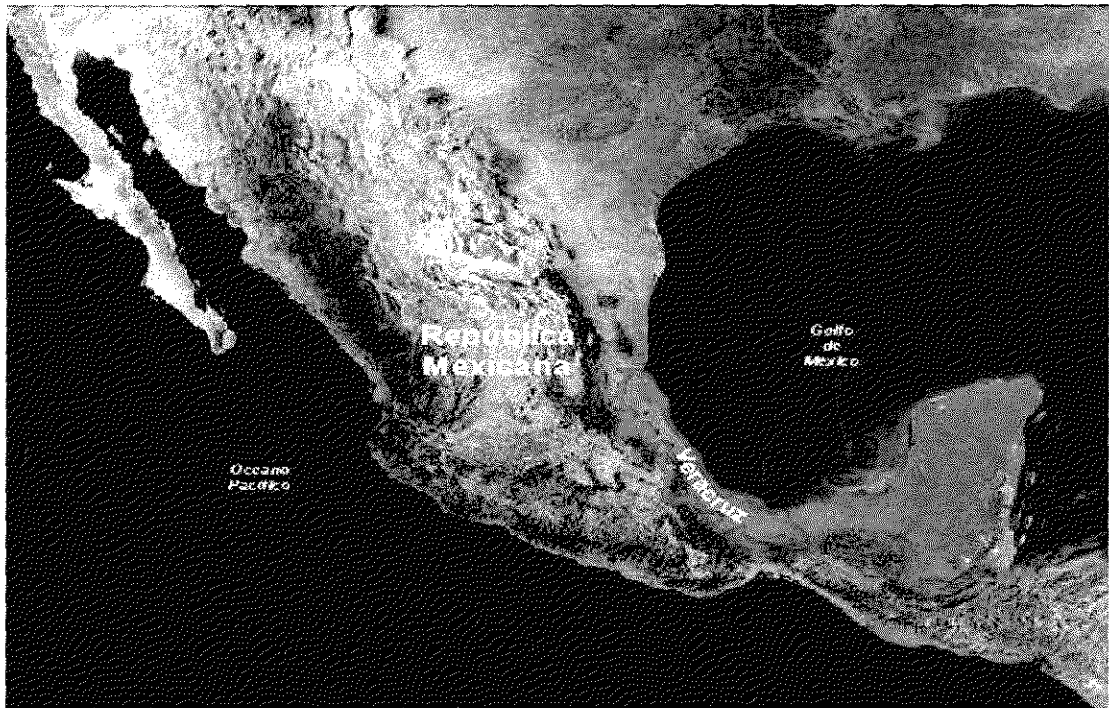


2. AREA OF STUDY

This study covered 4 irrigation units located in 5 of the 43 municipalities included in the Papaloapan River Basin Project. These municipalities are: José Azueta, San Andrés Tuxtla, Tierra Blanca, Tlacojalpan and Tres Valles.

These irrigation units are representative of the poverty situation of the producers of the area and are representative of the different agroecological areas existent in it: the non floodable low areas which use their lands under the seasonal humidity regime, located in the deep well area; the floodable areas represented by Tesechoacán and Curazao, respectively and the high lands represented by Laguna Encantada.

The scope of study was formed by 595 producers and their families, of the initially contemplated 619 and a total of 3,637 ha.



LOCATION OF THE STATE OF VERACRUZ WITHIN THE REPUBLIC OF MEXICO

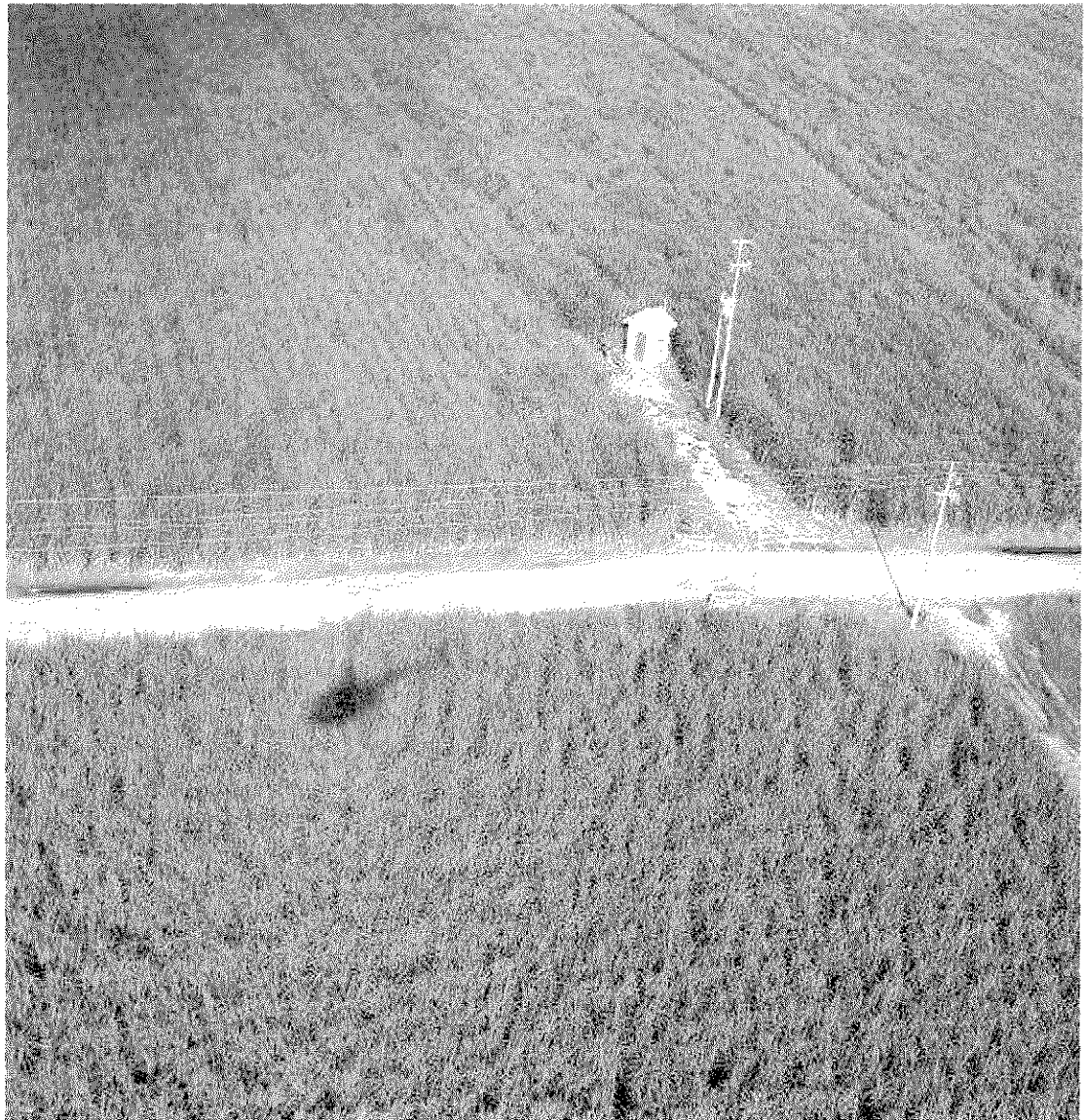
2.1 LOCATION OF THE 4 IRRIGATION MODULES WITH THEIR 13 UNITS.

The primary location of the irrigation units, was carried out through their approximate limitation of maps from INEGI. Afterwards field trips were made and the boundaries of each one of the 13 submodules were georeferenced. Later on the satellite images from Ikonos (given by CODEPAP) and Landsat were analyzed. Aerial photographs taken from a helicopter at low altitude were also analyzed. All the information was complemented with the interviews of the producers. Once the aforementioned activities were carried out, we proceeded to the limitation and

parcelling of each one of the modules and submodules, relating them to the owner producers.

Complementarily, plans provided by the land holder and municipal authorities of each municipality and by the National Agrarian Registry were used.

It is convenient to mention that the parcelling shown in the irrigation unit is not an agrarian catastre, but divisions of parcels given by the agronomic management. The parcellary information was obtained from documents provided by the producers and/or the identification of them on the satellite images or in the field.

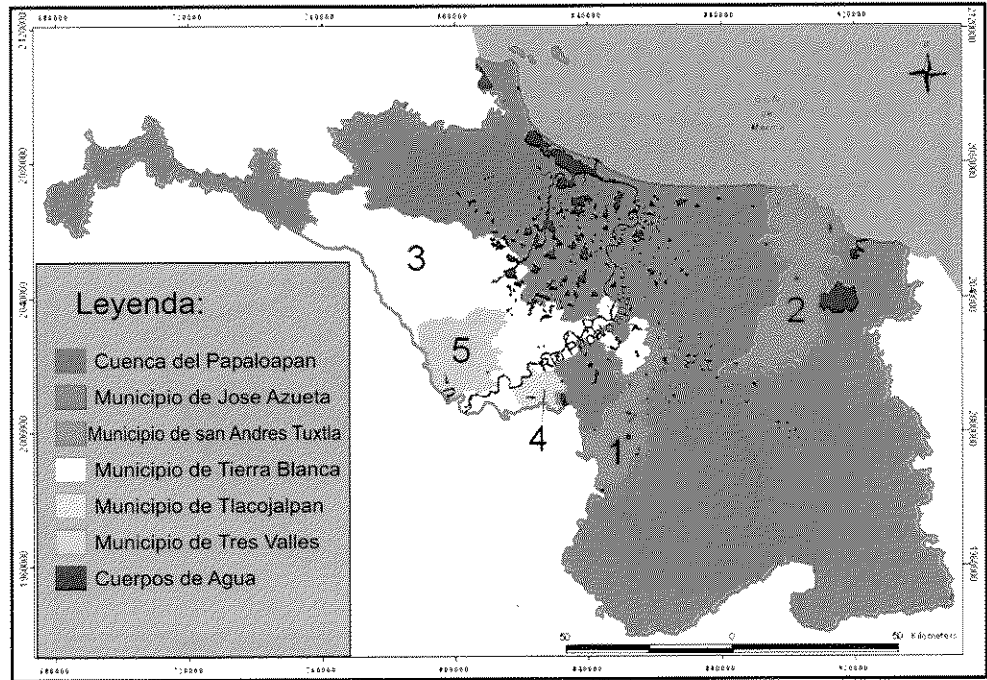


AERIAL VIEW OF IRRIGATION WELL

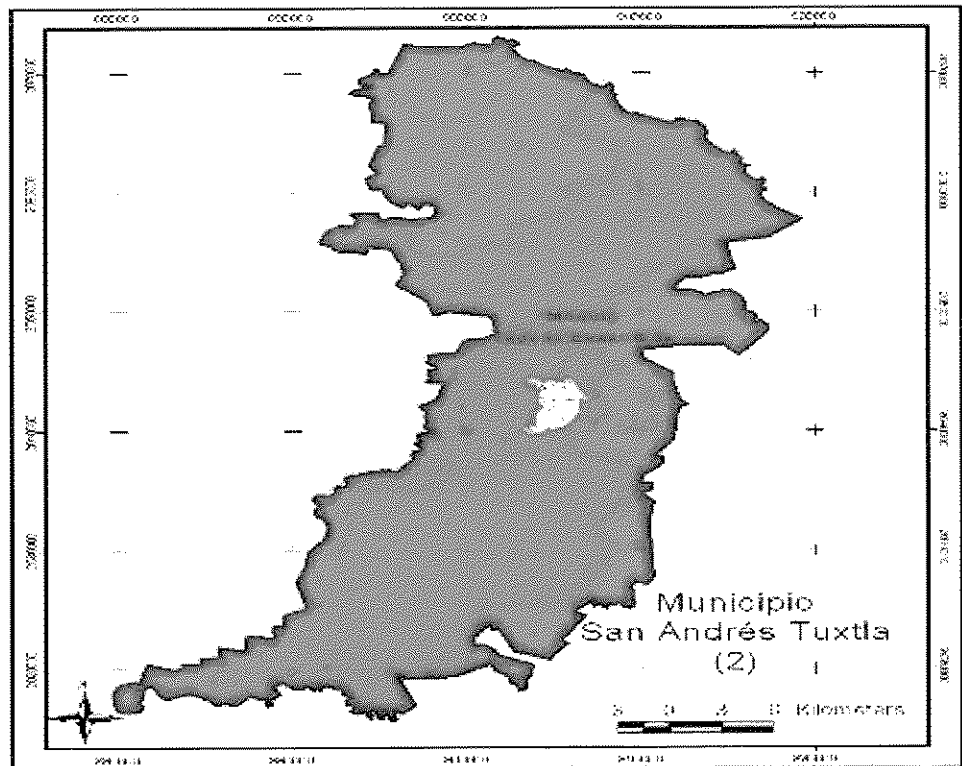
RELATIONS OF THE 13 STUDIED SUBMODULES

NUM	NAME OF THE MODULE	MUNICIPALITIES	NUM. SUBMODULES	SUBMODULE	SURFACE / HA	PRODUCERS
1	Laguna Encantada	1 San Andrés	1	Laguna Encantada	877	196
2	Tlacojalpan	2 Tlacojalpan	2	Tlacojalpan 1	475.3	62
			3	Tlacojalpan 2	383.3	53
			4	Ambrosio 1 (Ejido)	199	39
			5	Ambrosio 2 (La Raya)	185.86	26
			6	San Marcos	164.9	18
3	Tesechoacán-Curazao	3 Villa José Azueta	7	Tesechoacán	524.9	64
			8	Curazao	365.9	76
4	Naranjos	4 Tres Valles	9	Nuevo Pueblo Nuevo (Pozo 868)	89.25	16
			10	Nuevo Mondongo (Pozo 5)	95.6	18
		5 Tierra Blanca	11	Laguna Escondida (Pozo 34)	78.5	7
			12	Laguna Escondida (Pozo 36)	88.99	10
			13	Nuevo Ideal de Abajo (Pozo 28)	108.8	10
Total					3637.3	595

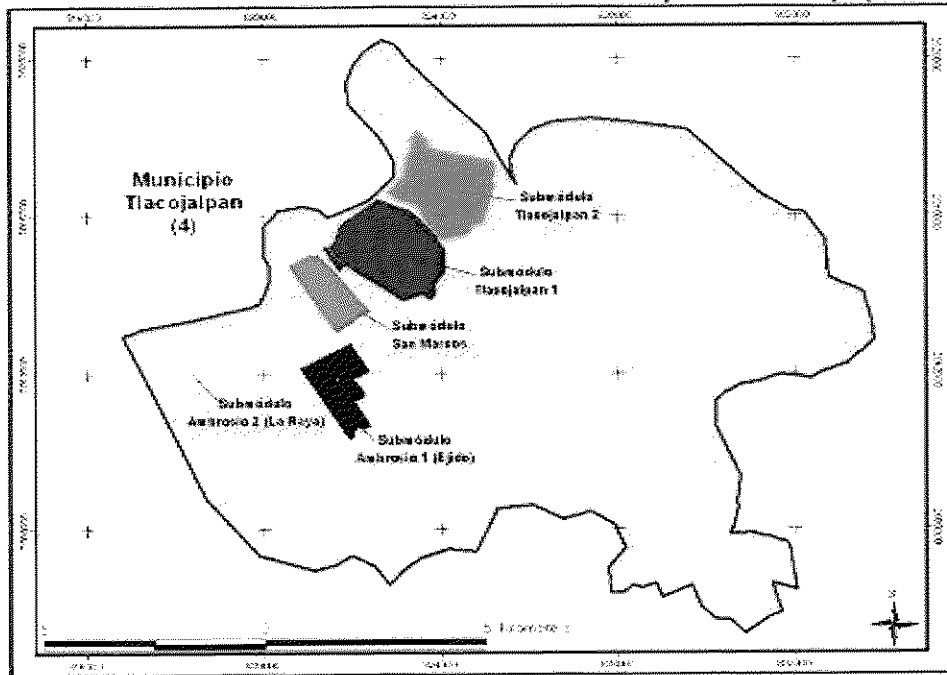
LOCATION OF THE STUDIED MUNICIPALITIES IN THE PAPALOAPAN RIVER BASIN



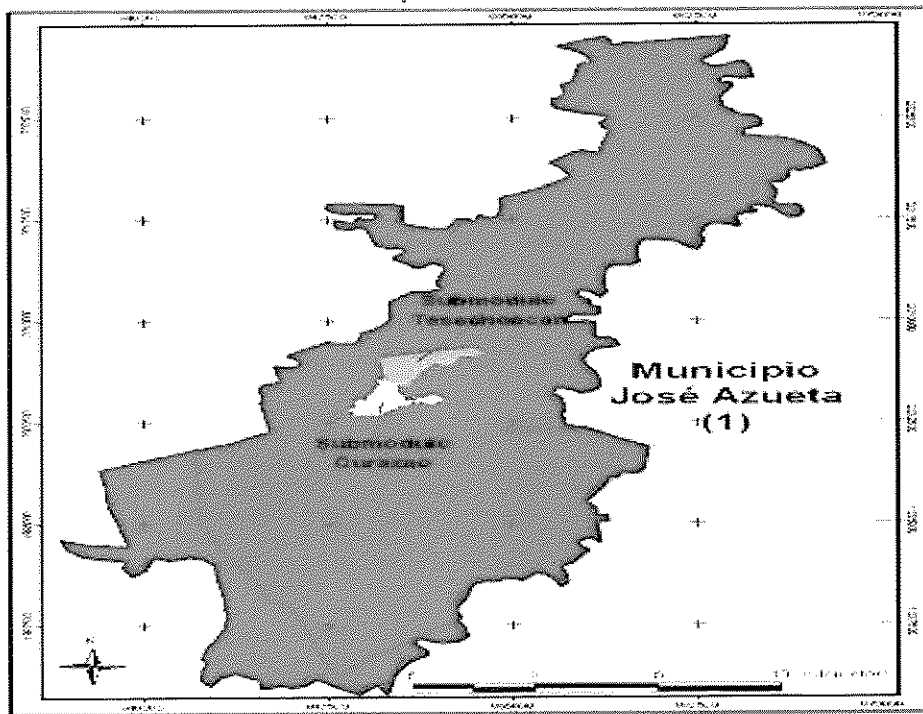
LAGUNA ENCANTADA MODULE



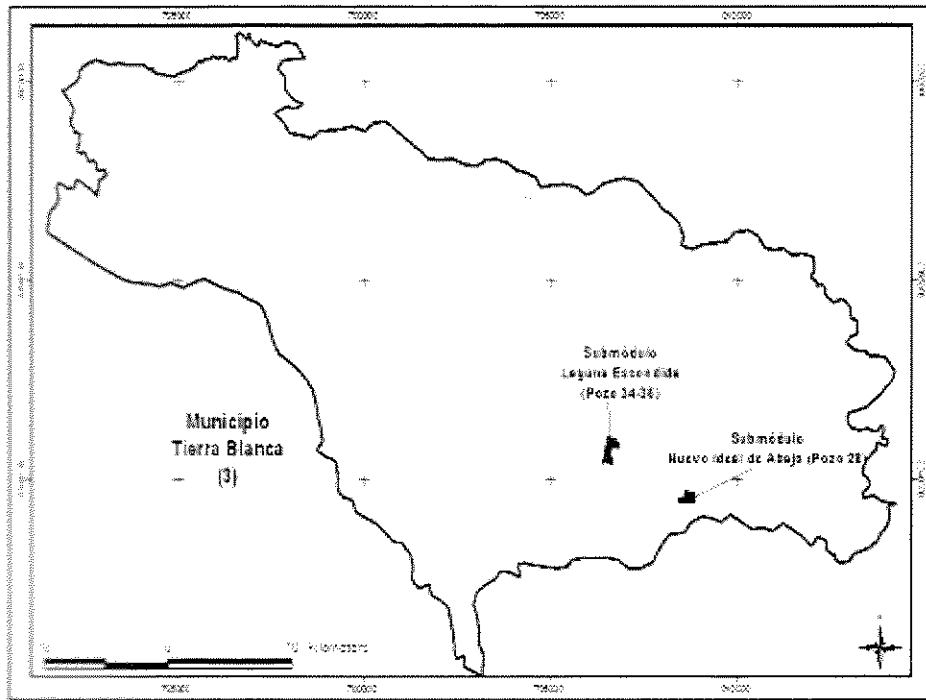
TLACOJALPAN-AMBROSIO MODULE



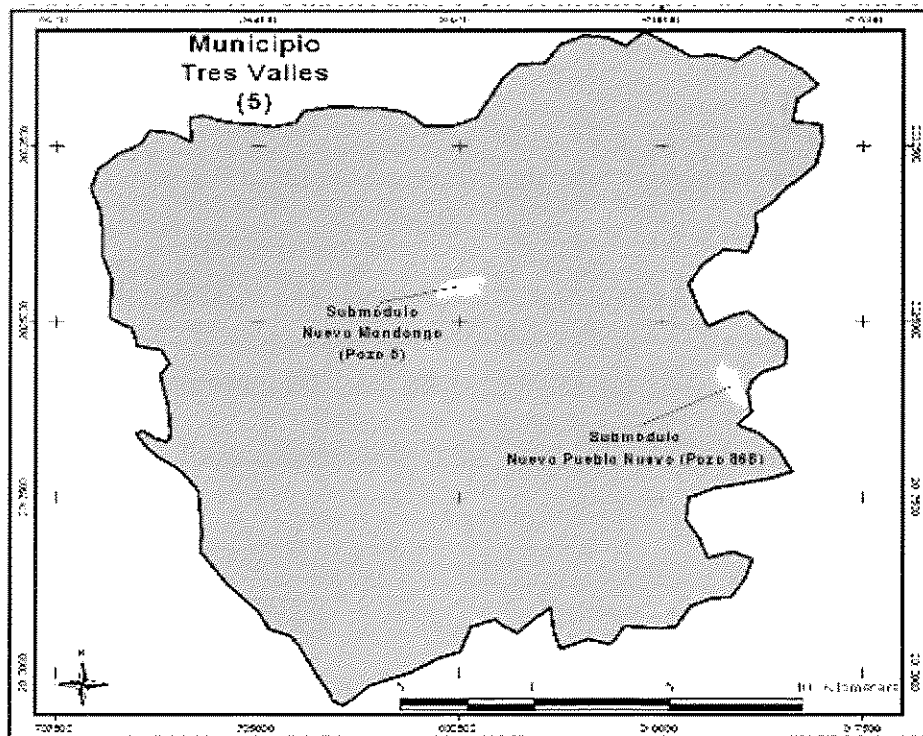
TESECHOACÁN-CURAZAO MODULE



LOS NARANJOS MODULE



LOS NARANJOS MODULE



2.1.1 LOCATION, LIMITATION AND PARCELLING OF THE IRRIGATION UNITS THROUGH THE LANDSAT SATELLITE IMAGES IKONOS, DIGITAL LANDSAT AND AERIAL PHOTOGRAPHS.

2.1.2 METHODOLOGY

The satellite images used in the study were IKONOS and LANDSAT, the first with 1 meter of resolution and the second with 30 meters of resolution. For the boundary and parcelling of the irrigation units IKONOS image for its high accuracy was used to make the digital maps.

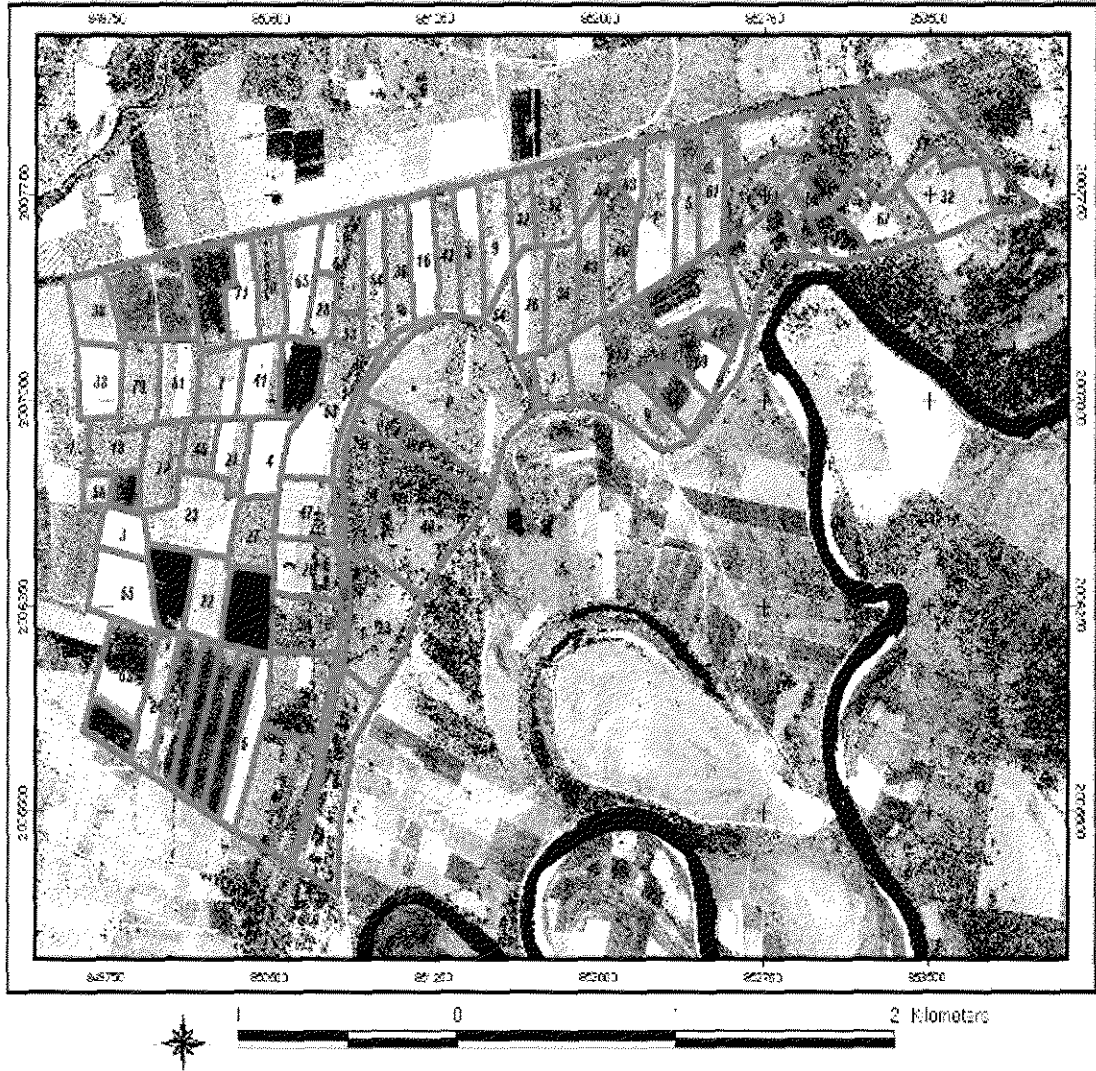
The vegetation or cultivations identification refers to LANDSAT multispectral images that have 7 bands of color.. In addition the infrared were used, which allows to make precise studies of vegetal covers. By the deflection and the radiation of the different types of vegetation, it allows to obtain images of the vegetation, that jointly with the field data allowed to corroborate the different irrigation modules.

In addition for greater precision of the interpretation of the LANDSAT images, the field data and the digital aerial photograph at low height from a helicopter.

It is worth the comment that the multispectral analysis of LANDSAT images, is a methodological tool widely known and used in Mexico, whereas the spot images are not a common tool in our country, because it only has 3 bands of color plus the infrared, although with a 15 meters of resolution.

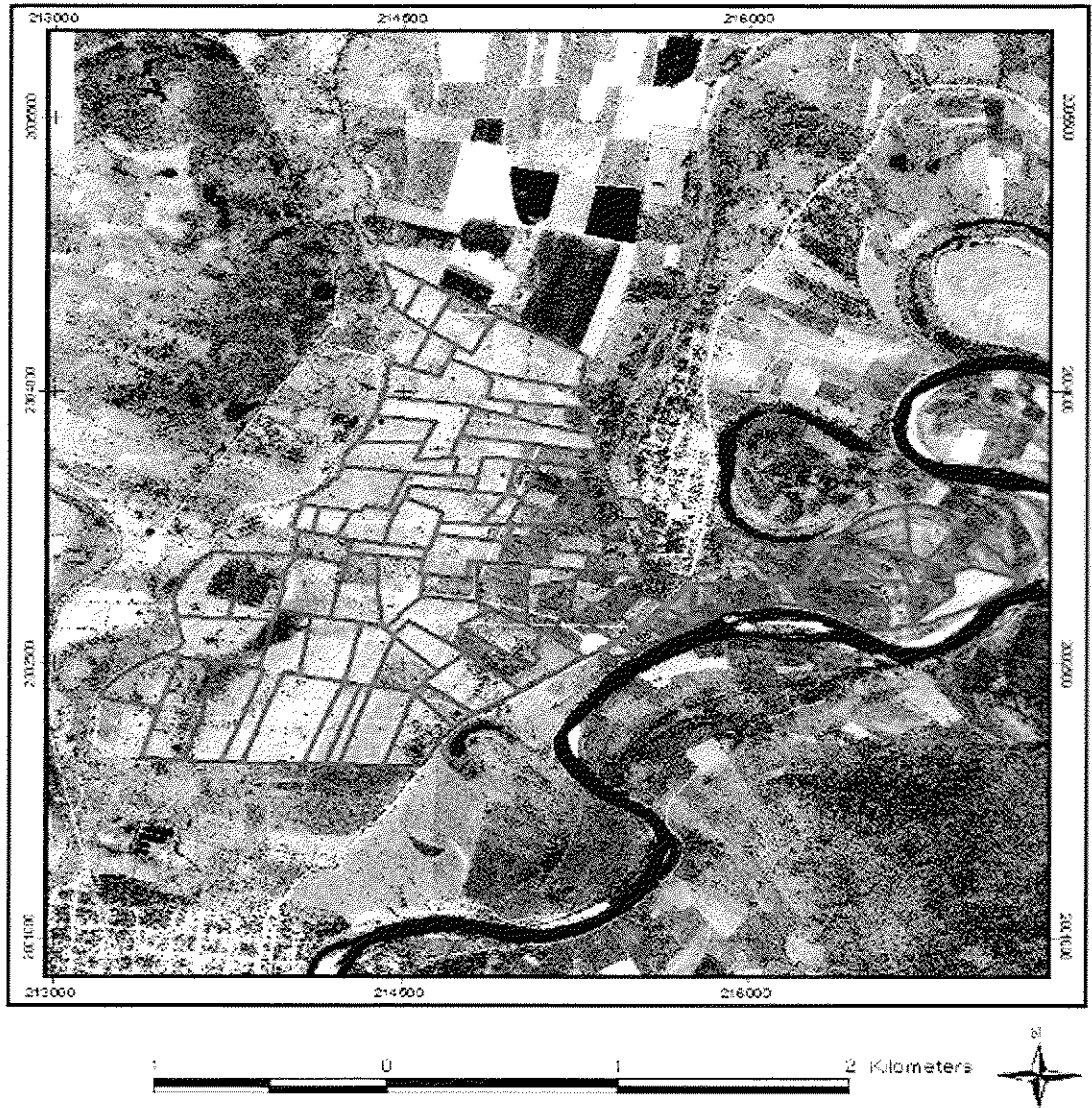
Since the objectives of identification of vegetal species through satellite images were ample and sufficiently covered as explained in the previous paragraph, it was considered unnecessary reiteration to make the interpretation of the spot satellite images..

LOCATION, LIMITATION AND PARCELLING OF THE
TESECHOACÁN SUBMODULE



IKONOS SATELLITE IMAGE

LOCATION, LIMITATION AND PARCELLING OF THE SUBMODULES OF THE MUNICIPALITY OF CURAZAO



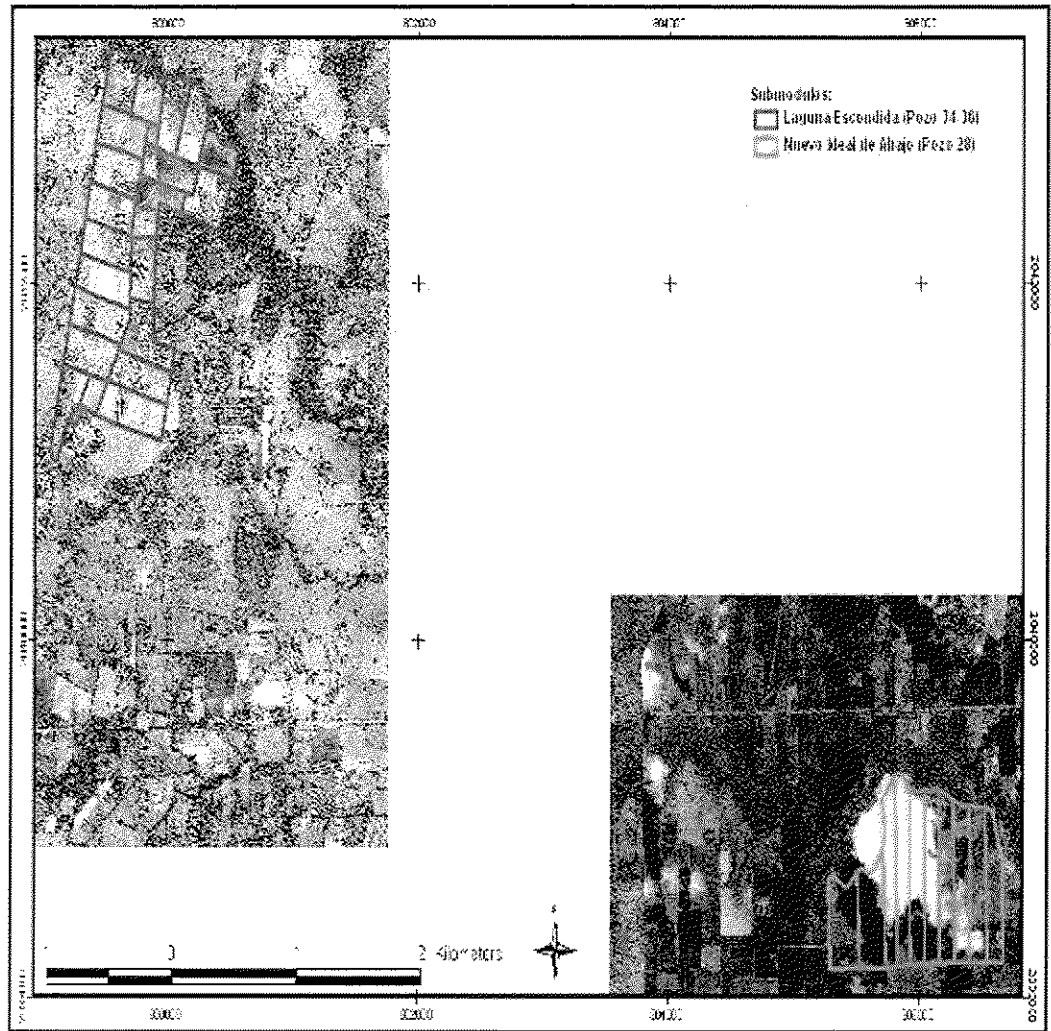
IKONOS SATELLITE IMAGE

LOCATION, LIMITATION AND PARCELLING OF THE LAGUNA ENCANTADA MODULE



IKONOS SATELLITE IMAGE

LOCATION, LIMITATION AND PARCELLING OF THE SUBMODULES OF THE MUNICIPALITY OF TIERRA BLANCA



IKONOS SATELLITE IMAGE