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SUB-IRRIGATION IN THE ZAPOTITAN PORJECT

A REPORT BY

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SUB-IRRIGATION IN THE ZAPOTITAN PROJECT

INTRODUCTION

At the request of the Depto. of Irrigation and Drainage studies were made to determine the feasability of Sub-irrigation in the lower portions of the Zapotitan Valley.

The tahal report * suggests sub-irrigation as a possibility for some of the areas within. The valley. Department of Irrigation and Drainage Officials suggested studies be made in the lower area when the soils are of a finer texture.

OBJECTIVE

In the porposed areas, open drainage channels are constructed on a parallel spacing of about 260 meters.

The objective was to construct dams in the drainage channels and force the water horizontally underground, hopefully at a one meter depth, from one channel to the next. The slope between channels is about 1/2%.

PROCEDURE

At the beginning of the dry season, in November 1970, earth dams were constructed on many of the drains throughout the project.

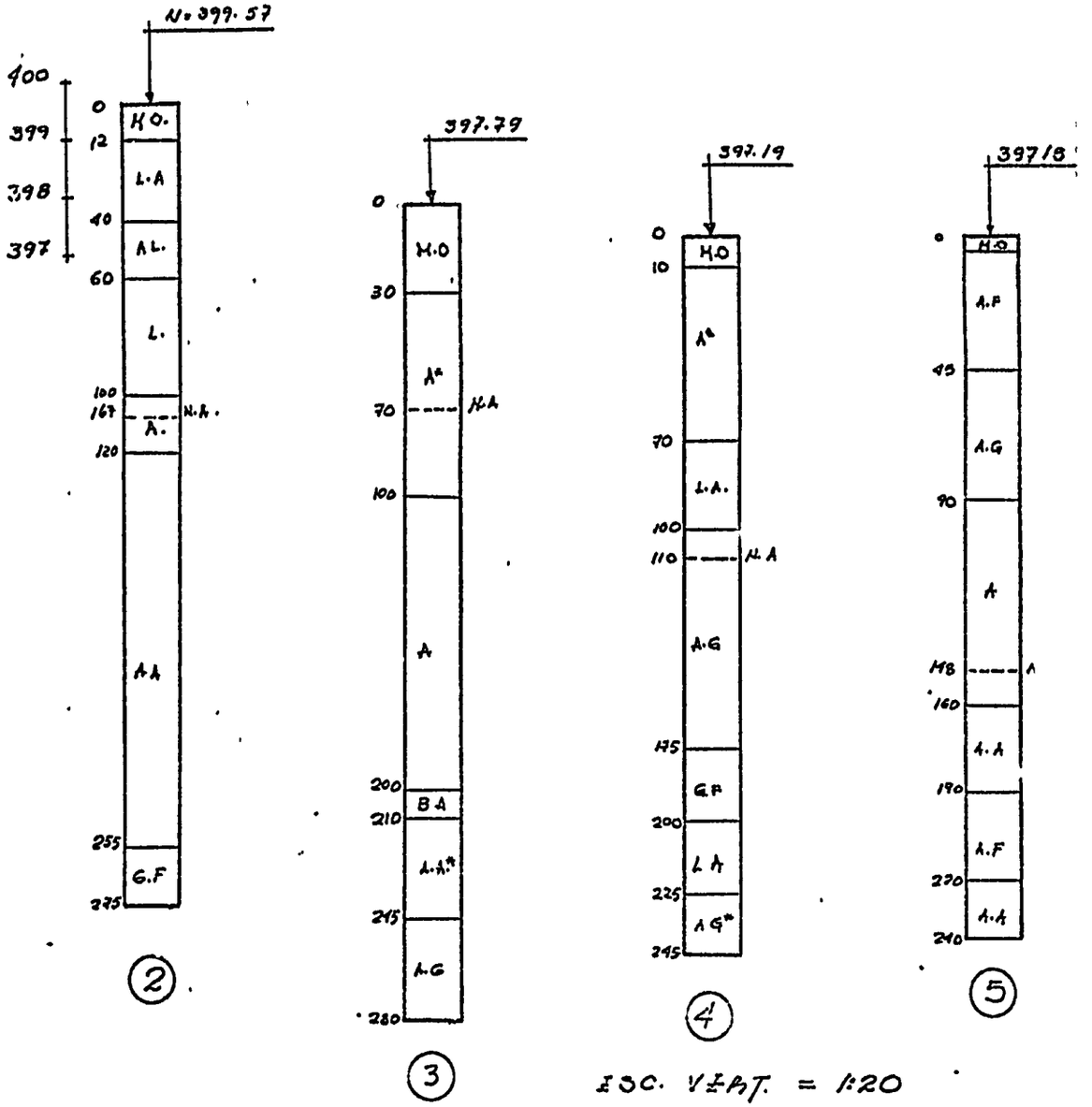
Six observations wells were dug, four were between las canes D-1 and D-2 and two were just below D-2. The soil profiles for wells 2 thru 5 are shown in Fig. 1.

Readings were taken periodically of the depth to water table in the wells. The general condition and growth of crops was also noted.

RESULTS

There was no consisfency in the depth to water table in the observation wells as shown in Table 2 given time the depth to water table varied in the 6 wells. Water was not kept in the drainage channel continually and this also affected the depth.

* Tahal Consulting Engineers Ltd Proyecto de Desarrollo Agricola del Valle de Zapotitan 1970.



S I M B O L O S

M.O.	Materia Orgánica	G.F.	Grava fina.
L.A	Limo Arenoso	A^*	Arena Pomítica
A.L	Arena Limosa	G.A.	Grava arcillosa
L.	Limo	$A.G.^A$	Arcilla Gravosa
A.	Arena	A.F.	Arena fina
A.A.	Arcilla Arenosa	$A.A^*$	Arena Arcillosa
		A.G.	Arena Gruesa

Fig. 1 Soil Profiles, between Canas D-1 and D-2, Zapotitan.

Table 1 Depth in cm. to water table in the six observation wells in Zapotitan Valley.

DATE	WELL					
1970	1	2	3	4	5	6
Oct 13	30	40	50	90	120	30
Oct 27	-	30	40	80	30	40
Nov 3	-	20	78	80	100	40
Nov 17	-	40	50	80	20	40
Dec 15	-	30	60	70	100	50

Fig 2 best describes the situation as found in the areas where sub-irrigation is practiced. This picture is typical with wet and dry spots throughout the entire area. This wet and dry spots correspond to the variation in water depth, and also the variation in the soil profiles.

An over riding factor was that some farmers would observe dry spots, such as in Fig 2 from the drainage channel and flood the entire area.

The growth of crops (Beans, tomatoes, potatoes, cucambers and corn) reflected some what the depth to water table. Areas where the water table was about 50 or 60 cm had the most vigirous growth.

Average agricultural production in the Zapotitan valley during this period was:

Corn	783	lbs/acre
Tomatoes	5.6	tons/acre
Potatoes	5.96	tons/acre
Cucumber	5.05	tons/acre

CONCLUSIONS AND RECOMMENDATIONS

There appears to be three factors which contributed to low production in the Zapotitan Valley. They are: 1) poor seeds (un-certified) 2) Disease and 3) Un even depths to water table. The intera action of these factors makes it difficult to evaluate production as a result of sub-irrigation.

Sub-irrigation in Zapotitan is not feasible nor practicable for maximum agricultural production. The soil structure and profile does not allow for even distribution of water in the crop root zone. The uneven distribution of water supports this.

It is recommended that better means of water control, including adequate and complete drainage be carefully considered. Without this good agricultural production cannot be expected.