5- SUMMARY

This investigation was carried out to study the changes in soil properties of some existing fish farms in Egypt.

Three fish farms that differ in their location and structure dates were selected, namely Al-Raswa (Port Said), El-Wahal (Kafr El-Shaikh), and El- Serow (Dakahlia)

Each farm was subject to various stages, that include leaching, flooding with water through a period of fish growth, the addition of fertilizers during the rearing of fish, and the last stage was after drainage of the ponds and harvesting the fish.

Soil samples were taken from the 0-25 cm, 25-50 cm, 50- 80 cm, and 80- 120 cm layers. These soil samples were physically and chemically analyzed.

Comparison was carried out with the soil samples taken from the soil before fish farming.

The effect of fish farming on soil physical and chemical properties could be summarised as follows :

1- The fine fractions (clay and silt) increased, while the sand fraction decreased in most layers of profile.

2- There was no marked change in pH during the growth season. However, pH values decreased with depth indicating the activity of anaerobic micro-organisms producing CO_2.

3- There was a decrease in soil salinity, however, the EC values increased with depth.

4- Soluble Na decreased rapidly first by leaching then by flooding; Na concentration increased with depth.

5- Soluble K also decreased by leaching and flooding but its decrease was generally lower than Na.

6- The concentration of Ca at the end of study was between one to nine tenth of the original levels. A marked decrease occurred in Mg concentration particularly in the upper layers.

7- Most of the chloride salts were removed soon after the leaching then by flooding, and Cl^- concentration increased with depth.

8- There was no measurable $CO_3^=$, and in the same time HCO_3^- decreased by leaching but increased with flooding particularly in the surface layer.

9- $SO_4^=$ decreased as a result of the waterlogging conditions in most soil layers, however, it increased with depth.

10- The exchangeable base content (CEC) increased upon utilization of the soil as fish ponds, in most layers of the soil profiles.

11- Although the initial leaching decreased exchangeable Na in the saline soils, there was an ultimate increases in exchangeable Na at the end of the growing fish season, particularly were the flooding water was saline.

12- Exchangeable K were slightly increased in some farms, and a slightly decrease was occurred in the other farms.

13- Exchangeable Ca increased in El- Wahal and the two surface layers of El- Serow farm, while it decreased in Al- Raswa and the deep layers of El-Serow farm. Exchangeable Mg increased nearly in all sites, the increase was more in the surface layers.

14- Sodium adsorption ratio (SAR) and exchangeable sodium percentage (ESP), were subject to decrease upon utilization of the soil as fish farms. The ESP was even higher at the end of study, this is a manifestation of the greater exchange capacity particularly in the deep layers.

15- Available phosphorus increased by flooding and fertilization.

16- Also, organic matter was increased in most fish farms specially when the farms received an fresh water.