V. SUMMARY AND CONCLUSION

The present study was conducted during two successive seasons, 1994 and 1995 in a greenhouse belonging to the Faculty of Agriculture, Moshtohor, Zagazig University, to investigate the effect of different concentrations of salts, sodium adsorption and Cl:SO4 ratio in irrigation water on growth and leaf mineral content of two fruit species (apricot and mango seedlings).

Eight months and one year old, uniform and healthy seedlings of mango and apricot, respectively were the plant material used in this study. On March 1st during both seasons seedlings were transplanted individualy each in clay pot 30 cm in diamter that previously had filled with specific weight of media consisting of clay and sand at equal porportion (by volume). Then, irrigation was carried out twice weakly by 1/4 liter tap water per each pot until May 15th whereas irrigation with different investigated saline solution was started during both seasons of study Saline irrigation water was prepared by mixing chloride salts of Na^{+}, IC and Ca' and sulphate salts of Na^{t}, le and Mr, and disolved in tap water to give such investigated saline solutions were representative of the different 12 combinations between three levels of saline solutions (2000, 4000 and 6000 ppm), two sodium adsorption ratio (3 and 6) and two ratio of Cl:SO4, besides irrigation with tap water as a control.

Two factorial experiments were conducted each included the same treatments i.e., the abovementioned irrigation solution to study the response of both apricot and mango seedlings. Since, an individual experiment was devoted for seedlings for each species.

The complete randomized design was for arranging the 13 treatments within both experiment was replicated five times Every replicate represented by two plants.

During each seasons, irrigation with saline water was started in May 15th and extended for five months till the experimental season was terminated on October 15th. Irrigation with saline water was applied at the regime of adding' liter per plant "pot" twice weakly to rise the soil moisture content within each pot up to field capacity. To prevent the excessive accumulation of salts pots of all treatments were irrigated with tap water every three weeks, then fallowed by rewatering each with its corresponding saline solution on the next day. However, plants of control treatment was continuously supplied with tap water at the same rate.

Different growth measurements, namely; stem length, net increase in stem length, number of leaves/plant, net increase in leaf number, leaves, stem, roots and total plant dry weight as well as top/root ratio were determined at the end of both growth seasons (October). Also, samples were taken from leaves of seedlings of each treatments to determine some minerals in response to salinity treatments was also investigated. The obtained resAts could summarized in the following points.

I- Effect of salts concentration in irrigation water on vegetative growth of apricot mango seedlings:

1. The obtained results revealed that, stem length, net increase in stem length, number of leaves per plant and dry weight of plant organs (leaves, stem, roots and total plant dry weight) all being progressively depressed by all the used saltiny concentrations. In addition, its was significantly decreased with increasing salts concentration in the irrigation water in both apricot and mango seedlings.
2. Results also declear a significantly decrease in stem length, net increase in stem length, number of leaves/plant and, net increase in leaf number/plant and dry weights of plant organs (leaves, stem, roots and total plant dry weight) with increasing sodium adsorption ratio (SAR) from 3 to 6 in both apricot and mango seedling during two seasons of study.

3. Increasing chloride levels (Cl:SO4 ratio) in irrigation water resulted in an a reduction of stem length, net increase in stem length, number of leaves/plant, net increase in leaf number/plant and dry weight of plant organs (leaves, stem, roots and total plant dry weight) in both two fruit species under study.
4. The interaction effect between the investigated three factors i.e., salinity concentration, SAR and Cl: 50_4 ratio in the irrigation water caused the most depressive irrigation solution on stem length, net increase in stem length, number of leaves/plant and dry weights of plant organs (leaves, stem, roots and total planted dry weight) of both apricot and mango were the combination between the highest salinity concentration (6000 ppm) X SAR X higher Cl:Sat ratio whereas the lowest decrease was detected by those seedlings irrigated with 2000 ppm saline solution of SAR3 and lower Cl:SO4 ratio as compared with those continuously irrigated with tap water (control).
5. Increasing the salt concentrations at 6000 ppm in irrigation water significantly decreased top/root ratio in apricot seedlings rd caused slightly decrease in mango seedlings. In addition, top/root ratio in both two fruit species was not affected with increasing SAR from 3 to 6 higher C1:SO4 ratio.

2. Effect of salts concentration, SAR and CI:SO4 ratio in irrigation water leaf mineral content:

1. Results of the study in apricot seedlings showed that by using different salt concentration, the leaves-N, K, Mg, Zn, Fe and Mn contents were significantly decreased while it caused significantly increased leaf-P, Ca and Na contents. On the other hand, salinity treatments significantly decreased leaf N, P, K, Mg, Z, Fe and Mn contents in mango seedlings while leaf-Ca and Na significantly increased.
2. Increasing either sodium adsorption ratio (SAR) or chloride level ($Cl:SO_4$ ratio) in irrigation water caused significantly increased leaf-P, Ca and Na for apricot seedlings while decreased leaf-N, K, Mg, Zn, Fe and Mn contents in apricot seedlings. On the other hand, by

using the higher ratio from either SAR or Cl:SO4 ratio in irrigation water was significantly decreased leaf-N, P and K on mango seedlings, in the same time leaf-Mg content was not affected.

3. The interaction between salinity levels, sodium adsorption rates and chloride level (Cl:SO4 ratio) was significantly decreased leaf N, P, K, Mg, Zn, Fe and Mn in apricot seedlings while it was significantly increased leaf-P, Ca and Na contents. On the other hand, the interaction between the three of factors was significantly decreased leaf N, P, K, Zn, Fe and Mn contents while increased leaf Ca and Na content in mango seedlings.

From the above mentioned results, it could be concluded that seedlings of the two could be concluded that seedlings of the two investigated fruit species appeared to be injured by increasing salt concentration, sodium adsorption ratio (SAR) and Cl:SO_4 ratio in irrigation water when compared with non-salinized seedlings. The two fruit species seemed to be varied in their behaviour in response to salve conditions particularly these for growth and leaf mineral content. Regarding the effect of the salts concentration in the irrigation water on the behaviour of two fruit species, it followed about similar trend for SAR and chloride (Cl:SO4 ratio) and where saline conditions (salt stress) decreased growth and dry weight of different part of seedlings. However, the degree of injury occurred on seedlings varied in its severity depending upon species.

As a result of this investigation, man can recommend for nursery and orchard apricot and mango men under similar condition, to use 2000 ppm saline solution of SAR3 and lower Cl:SO4 ratio in irrigation water in case of lack of normal water. Moreover, it could be noticed obviously that mango seedlings may be were relatively more tolerant to saline solutions at 4000 ppm than apricot especially as those solutions (combinations) of the higher SAR and a SO4 ratio were concerned to be compared.