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## 5. SUMMARY

Two pot experiments were undertaken in the greenhouse within two successive winter seasons to study the effect of organic matter addition and the irrigation with different water salinities in salt-affected soils on the dry weights and uptake of some nutrients by wheat plants (Sakha, 8) at different stages of growth till maturity. Three soil salinity levels of the natural saline soil were used having  $EC_e$  of 1.30, 8.09 and 12.40 mmhos/cm/at 25°C. Two sources of irrigation water were used; firstly tap water and secondly saline water (drain water) having salt concentrations of 280 and 2848 ppm, respectively. Organic matter sources were : control, farmyard manure, poudrette, wheat straw and berseem straw. In the first experiment, the organic matter was added on the basis of equivalent amounts of nitrogen, but in the second one the C/N ratio of organic matter sources was kept constant using ammonium nitrate. The soil salinity levels and irrigation water sources were the same in both experiments.

Four plant samples were taken after 45, 75, 105 and 130 days (maturity) from planting for the two experiments. Dry weights of those samples were recorded and then analyzed to determine their total N, P, Fe and Mn contents (nutrient uptake).

The obtained results of the two experiments were similar indicating that there was no difference between the organic matter sources when added either on the equivalent amounts of total N content or on the constant C/N ratio basis. Results could be summarized in the following :

1. Dry weights of wheat plants were decreased as the level of soil salinity was increased at all stages of plant growth.

2. Increasing the salinity of irrigation water resulted in a reduction in plants dry weights at all stages of growth.

3. Results of the different organic matter effects on wheat dry weights showed that FYM was the best where it gave the highest dry weight values at all stages of growth, while the lowest ones were obtained for plants of the wheat straw treatment at the first and second stages of growth, and the control (no organic matter) at the third and fourth stages of plant growth.

4. Data of the triple interaction effect between soil salinity, irrigation water salinity and organic matter sources revealed that FYM addition to the soil of the lowest salinity which was irrigated with tap water gave the highest dry weight values at all stages of plant growth, while the lowest

ones were recorded either when wheat straw was added to the soil of the highest salinity and irrigated with saline water at the first and second stages of plant growth, or for the plants of the third and fourth stages of growth under the control of no organic matter treatment of soils having the highest salinity when irrigated with saline water.

5. There was a trend towards a decline in the N, P, Fe and Mn uptake by wheat plants at all stages of growth as the soil salinity or the salinity of irrigation water were increased.

6. Organic matter sources affected nutrients uptake, where the highest values were obtained in case of FYM addition at all stages of plant growth, whereas the lowest values were recorded for plants under wheat straw treatment at both the first and second stages of growth, and the control (without organic matter) at the third and fourth stages of growth.

7. The triple interaction between various treatments of soil salinity, irrigation water salinity and organic matter was of great influence on N, P, Fe and Mn uptake by wheat plants, where the best results were obtained when FYM was added to the soil of the lowest salinity and irrigated with

tap water at all stages of growth, whilst the lowest uptake values were found in case of wheat straw addition to the soil having the highest salinity which was irrigated with saline water at the first and second stages of growth, as well as in the case of the control where no organic matter was added to the soil of the highest salinity and irrigated with saline water at the third and fourth stages of plant growth.