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CHAPTER 5

SUMMARY AND CONCLUSION

The aim of the present studies the effect of irrigation water salinity, nitrogen fertilization rates and nitrogen sources on the growth and chemical composition of damsisa plants.

The study was carried out at the pot experimental in greenhouse at soil salinity laboratory near Elsabhia Research Station near Alexandria City. Four irrigation water salinity levels were applied, at rates (0.49, 7, 11 and 14 dS/m). Nitrogen sources (ammonium nitrate 33.5% N, Urea 46% N) was added at rates 0, 50, 100 and 150 kg N/fed.

The results obtained may be summarized as follows:

a. Nitrogen source:

1. Dry weight of whole plant and oil percentage significantly increased as a result of ammonium nitrate.
2. It is important to note that the fertilizer of ammonium nitrate increased dry weight of whole damsisa plant reached 11.42% compared to the fertilizer of urea, while increased in oil percentage reached 4.42%.
3. The concentration of (N, P and Mn) highly significant increased as a result of fertilizer with ammonium nitrate, while the concentration of (Ca, Na, Fe, Zn and Cu) highly significant increased as result of fertilizer with urea.

4. Soil soluble of (Ca, Mg, Na, K, $SO^{=}_4$ and Mn) and (EC, pH, SAR) significantly increased as a result of fertilizer with ammonium nitrate while the highest values of P, HCO^{-}_3, Cl^{-}, Fe and Cu were attained from urea.

b. Nitrogen fertilization:

1. Dry weight of whole plant and oil percentage were highly significant increased with increasing the rate applied nitrogen up to 150 kg N/fed.
2. Resulted in marked increase in dry weight of whole plant in damsisa plants by 150 kg N/fed. reached 19.19% of the control.
3. The concentration of macroelements (N, P, K, Ca, Mg and Na) and micronutrients (Zn and Cu) significantly increased with increasing the rate of nitrogenous, while the concentration of micro-elements (Fe and Mn) significantly decreased with increasing the rate of nitrogen applied.
4. EC, pH, Cl^{-}, SO^{-}_4, Ca^{2+}, Mg^{2+} and Mn^{2+} significantly increased with increasing the rate of nitrogen up to 150 kg N/fed, while the P, HCO^{-}_3, and Fe significantly increased with the rate of nitrogen fertilizer increased up to 100 kg N/fed. However, Na and SAR decreased significantly with increasing N fertilization rates.

C. Irrigation water salinity:

1. Dry weight of the whole plant and oil percentage significantly decreased with increasing the irrigation water salinity up to 14 dS/m.
2. Increasing the salinity level of irrigation water up to 14 dS/m to resulted in a marked decrease in dry matter to 50.57% of the yield.
3. The concentration of macronutrient (N, P, K, Ca and Mg) and

micronutrient (Fe, Mn, Zn and Cu) contents of damsisa leaves were significantly decreased as salinity rates increased from 0.49 to 14 dS/m, while Na was significantly increased as salinity rates increased from 0.49 to 14 dS/m.

4. EC, pH, Cl^-, SO^-_4, Ca, Mg, Na, SAR, Fe and Cu increased significantly with increasing of irrigation water salinity up to 14 dS/m , while P and HCO^-_3 increased significantly with increasing of irrigation water salinity up to 11 dS/m. Moreover, K in soil significantly decreased with increasing irrigation water salinity up to 14 dS/m.
5. The maximum dry weight of damsisa plants (130.8 g) were obtained through 0.49 dS/m irrigation water salinity and ammonium nitrate at rate 150 kg N/fed. While the minimum dry weights of plants (45 g) were recorded for 14 dS/m irrigation water salinity and urea at rate 150 kg N/fed.
6. The maximum oil percentage of damsisa plants (2.36%) were obtained through 0.49 dS/m irrigation water salinity and ammonium nitrate at role 100 kg N/fed. But the minimum oil percentage of plants (0.95%) were recorded for 14 dS/m irrigation water salinity and without nitrogen.

In general, the previous results related only to the experimental conditions and suggest that:

- Adequate supply of N is important especially to the oil percentage of damsisa plant.
- Proper soil the lower salinity of irrigation water is an important factor for the effect on growth and oil percentage and efficiency of N fertilizer.

- We can recommend the lowest of irrigation water salinity rate, 100 kg N/fed. nitrogen fertilization and the nitrogen source of ammonium nitrate for improving the production under similar experimental conditions.