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PHYSIOLOGICAL STUDIES ON SALT TOLERANCE OF SOME BANANA CULTIVARS

2- EFFECT OF CHLORIDE LEVEL IN IRRIGATION WATER AND FOLIAR SPRAY WITH SOME MINERALS ON GROWTH AND CHEMICAL CONSTITUENTS OF SALT STRESSED PLANTS.

BY

Abd El-Latef, F.M.*; Fatin, H.M. Ismail and Hala, I.Y. Sherif***

* Horticulture Department, Fac. of Agric., Benha Univ., Egypt.

** Botany Department, Fac. of Agric., Benha Univ., Egypt.

ABSTRACT

This study was conducted in 2006 and 2007 experimental seasons to throw some lights on possibility of minimizing the injuries resulted by saline irrigation water through investigating the effect of foliar spray with some nutrient elements in order to alleviate such disorders observed on growth and nutritional status of two banana cultivars suckers.

So, a factorial experiment was designed to study the specific and interaction effects of three factors (banana cultivar, $Cl:SO_4$ ratio of saline solutions used for irrigation and sprayed nutrient elements P, K, Zn).

Data obtained displayed that all evaluated growth measurements considerably responded to specific effects of 3 investigated factors. Since, saline stressed banana plants achieved some positive effects by P, K and Zn sprays, where an increase in most measurements of either growth (pseudostem height and circumference; leaves number & area and fresh & dry weights of plant organs) or chemical composition (leaf photosynthetic pigments, N, P, K, Mg, Fe, Mn and Zn contents) associated with a noticeable reduction in both leaves senescent rate and some chemical constituents content (leaf proline, Ca and Na) were detected. Moreover, raising $Cl:SO_4$ of saline solution used for irrigation exhibited an opposite trend to that found with P, K, Zn sprays. Meanwhile, the specific effect of cultivar pointed and that Grand Nain cv. had greater values of most vegetative growth and chemical constituents than Williams cv. except (leaves senescent rate, leaf proline, Ca and Na content). Consequently, the saline stressed banana plants (especially those of Grand Nain cv. irrigated with saline solution of lower $Cl:SO_4$ ratio) when sprayed with K or Zn exhibited the greatest values of most measurements for both vegetative growth and chemical constituents associated with the least values of (leaves senescent rate, leaf proline, Ca and Na contents). Accordingly, it could be concluded that saline solution of 3000 ppm, SAR 6 and lower $Cl:SO_4$ could be safely and when combined with K and/or Zn sprays.

INTRODUCTION

Banana (*Musa spp.*) is a tropical plant and considered as a one of the most popular fruit in Egypt for its high nutritive value and palatability for the Egyptian consumer. Also from the economical point of view, banana growers get relatively higher and fast net return from their orchard due to the rapid life cycle of banana plant. The over all average of banana in Egypt progressively developed through the former decade which reached about 28750 and 58607 Fed. in 1986 and 1999, respectively (Ministry of Agriculture, A.R.E., 1999). This average mainly concentrated in the delta and the Nile valley 32841 Fed. as there is an ample water supply, which is need to have good production. Nowadays,