ABSTRACT

Mohamed Emam Abd El-Reheim Ziedan. The use of slow release fertilizers for citrus fertilization program under desert condition, Unpublished Ph. D. Dissertation. Department of Horticulture, Faculty of Agriculture, Ain Shams University, 2006.

Three experiments were conducted on Valencia orange trees during 2004-2005 seasons to assess the efficacy of different application of nitrogenous fertilizers on tree yield, fruit characteristics, Leaf mineral content, nitrate content of fruit juice and residual nitrogen in soil.

As for the first experiment, each of ammonium sulphate, calcium nitrate, urea, ammonium nitrate and Enciabein were applied at 1000gN/tree/year. Tree yield, fruit size, fruit juice volume were significantly affected by the applied nitrogen sources in both studied seasons. Likewise, T.S.S and ascorbic acid contents were significantly affected by such application whereas acidity and T.S.S/acid ratio were not. Enciabein application envisaged to achieve the highest leaf N content in both seasons, while urea fulfilled the highest values with P, K , Fe ,Zn and Mn. The highest nitrate content in fruit juice was obtained by calcium nitrate compared to other sources. The highest value of residual nitrogen in soil was obtained by Enciabein , conversely , calcium nitrate resulted in the least value.

Regarding the second experiment , Enciabein , as a slow release N fertilizer , was applied at 400,600,800 and 1000 g N/tree/year at one or two batches inclined to

significantly increase tree yield, fruit size and peel thickness in both studied seasons .Yet , significant increase took place with fruit height, diameter and with juice percentage in the first and second seasons , respectively. T.S.S and ascorbic acid contents were significantly affected, while acidity and T.S.S/acid ratio were not. The highest leaf contents of N, P, K, Fe and Zn were obtained by adding 1000 g N/tree/year at two batches. The highest nitrate content in fruit juice was obtained by ammonium sulphate compared with Enciabein . The highest value of residual nitrogen in soil was attained by Enciabein at 1000 g N/tree/year. On the contrary, the lowest one was scored by ammonium sulphute (control).

Concerning the third experiment, Multicote-4 (slow release fertilizer 24-8-16) was added at 1,6 ,2.5 , 3.3 and 4kg/tree/year at one or two batches. The application with the latter dose resulted in significant increases in yield and fruit size in both seasons. Similarly, T.S.S and ascorbic acid contents were significantly affected but acidity and T.S.S/acid ratio were not affected. Adding Multicote-4 at 4 kg at two batches resulted in the highest leaf contents of N ,P ,K and Fe. All treatments inclined to result in fruit juice free from nitrate ion . Multicote-4 at its highest dose was accentuated by the highest value of nitrogen percentage in soil ,whereas the lowest one was achieved by ammonium sulphate (control).

Key words: Fertilization, Valencia orange, yield, nitrate in fruit juice, residual nitrogen in soil.

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