



University of Kufa
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**Effects of Gibberellic Acid , Naphthalene Acetic
Acid and Ferrous Sulphate Foliar Sprays on
Growth of Sour Orange Seedlings.
(Citrus aurantium L.)**

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Abstract

This experiment was conducted in lath house in private nursery at Babylon governorate in the 25/3 during 2006-2007 on 6 months old local “variety” Sour Orange seedlings to study the effect of foliar spraying two plant growth regulators (GA_3 at 100 and 150 mg/L and NAA at 100 mg/L) and $FeSO_4$ (100 and 150 mg/L) separately and mixture three time (25/5/2006,25/8/2006,25/3/2007) on root and vegetative growth and leaf content of substances like gibberellins and auxins. Results were as follow:

1. Spray plants with GA_3 , NAA and $FeSO_4$ separately or together caused increase shoot length and diameter and fresh and dry weight comparative with control treatment which has the lowest. Treating with (GA_3 150 mg/L+NAA 100 mg/L+ $FeSO_4$ 150 mg/L) achieved highest values for one and large average of number that reached (98.48 , 1.60)cm and (170.08 ,54.68)gm respectively .
2. The study revealed that spraying of sour orange plants with research treatment singular or together had no effected in the number of leaves and number of the plants branches while reaching the effect reached significance in increasing the length when treating with GA_3 and $FeSO_4$ except the treatment with NAA which decreasing branches length comparative with control and other treatment and taking part all these treatment using together had been increased length of branches and number (52.43)cm in treatment (GA_3 150 mg/L+ NAA 100 mg/L + $FeSO_4$ 150 mg/L) .

3. Leaf area of seedling and leaves contents of carbohydrates and iron element has increased significantly as a result of spraying it with study treatments compared with other treatments and the treatment (GA₃ 150 mg/L + Fe 150 mg/L + NAA 100 mg/L) of all treatment gave the highest averages where it reached (2465.82 cm², 22.09 % , 85.77 mg/kg) respectively .
4. The study treatments gained an increase in leaves contains of chlorophyll (a , b and total) with significant difference from control treatments until it reached it's highest averages (173.79 , 116.64 , 291.17)mg/100gm fresh weight respectively in the treatment (GA₃ 150 mg/L + NAA 100 mg/L+ FeSO₄ 150 mg/L) .
5. Substances like GA₃ and Auxins increased contained in leaves after each spraying by comparative with control treatment . As well as these materials become concentrated highly specially in this treatment by reaching as possible from like Gibberellins such as (134.39 , 136.39 , 136.72) mg/kg fresh weight also Auxins such as (59.37 , 60.65 , 67.11) mg/kg fresh weight respectively after first , second , third spraying .
6. Spray by GA₃ alone cause decrease in root length and its number by comparative with other research treatments , but when had taken part with Fe , NAA treatments were increase high rates such as (23.34 , 32.34)cm by using treatment(GA₃ 150 mg/L + NAA 100 mg/L+FeSO₄150 mg/L) for each length and number of roots , on the other hand there were significant increased in fresh and dry weight of roots by using a combination of treatments with FeSO₄ , GA₃ and NAA gave a high rates for fresh and dry weight of roots by reaching to (49.94 , 29.71) gm respectively ,and the shoots/roots ratio increase as a dry weight compared with control.