

## RESPONSE OF TWO VARIETIES OF SUN FLOWERS CULTIVATED IN TWO DESERT SOIL TO FERTILIZATION WITH ZINC.

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### ABSTRACT

Tow field experiments were conducted during the spring season of 2010 in two different sites in the west desert part of AL-Anbar Governorate - Haditha city to study the effect of different sources, rate and method of application zinc on two varieties of sun flower yield . Zinc has been added from two sources / namely;  $ZnSO_4 \cdot 7H_2O$  (23% Zn) and Zn - EDTA (13 %Zn) . Each source was applied in two methods to soil and foliar application , with two levels 1.0 and 1.5 kg Zn ha<sup>-1</sup> for foliar and 4.0 & 8.0 kg Zn ha<sup>-1</sup> for soil application , in addition to the control treatment (without adding zinc) . Foliar application were added in two splits 25 days after germination and at flowering stage . Using randomized complete block design (RCBD) with three replicates for each treatment .

At the first site , the results showed a high response of sunflower for all zinc fertilization treatments. There was a significant increase in seed yield , oil , number of seeds in disk , weight of 1000 seeds and concentration of zinc in the seeds of sunflower Genotype -5 . The highest value was reached when adding 1.5 kg.ha<sup>-1</sup> zinc sprayed on the vegetative part . Seeds yield was 5903 kg . ha<sup>-1</sup> , oil yield was 2792 kg .ha<sup>-1</sup> ,1519 seeds . disk<sup>-1</sup> , 251.1 g / 1000 seeds and 35.23 mg Zn kg<sup>-1</sup> , respectively . It was not significantly different from the treatment with the addition of zinc at 1.5 kg .Zn .ha<sup>-1</sup> sprayed on the vegetative part or addition of Zn - EDTA of 8 kg Zn .ha<sup>-1</sup> to the soil .

In the second site ,on the other hand , fertilization treatment with zinc were significant in all studied characteristics . The highest plant height was 150 cm when treated with T8 ( adding 8.0 kg Zn ha<sup>-1</sup> of EDTA to the soil) . As for the rest of characteristics .the highest leaf area could be achieved was 6564 cm<sup>2</sup> , the highest number of seeds was 1353/ dick & 75.25 g / 1000 seeds<sup>-1</sup> , the highest yield was 6320 kg seeds ha<sup>-1</sup> and 3233 kg oil .h<sup>-1</sup> and the highest zinc concentration in seeds was 41.23 mg .kg<sup>-1</sup> when treated with T4 (adding 1.5 kg .Zn .ha<sup>-1</sup> of EDTA sprayed on the vegetative part ) . The least results that could be achieved when treating the control group without adding zinc were as follows ;

Flamme variety grown in the second site exceeded the yield of Geotype-5 grown in the first site in all studied characteristics . Also , results have shown that adding Zn- EDTA of 1.5 kg .Zn .ha<sup>-1</sup> sprayed on the vegetative part was the best

in almost all cases in comparison with other treatments for both varieties and in both sites .

**Keywords :** Response , Zinc fertilizers , Sunflower yield , Desert soil .