

**EFFECT OF PLANT DENSITY AND FERTILIZATION LEVELS ON  
YIELD AND YIELD COMPONENTS OF SOME VARIETIES OF  
SUNFLOWER (*Helianthus annuus* L.) .**

Najm A. Jumaah AL-Zubaidi\*

Mohammad S. Kareem AL-Zubaidi\*\*

\*Dept. Of Biology - Collage of Education/ Pure Science- Diyala University.

najm\_alzubaidy@yahoo.com

\*\*Directorate General of Education in Diyala Governorate.

mo\_sa6560@yahoo.com

**ABSTRACT**

This experiment was carried out in the experiments station of the agriculture college/ university of Diyala in the spring season of 2014 in 23/2/2014 . using a silty loam soil. Experiment have achieved on sunflower with a factorial experiment ، a split split plot randomized complete block design with three replications . This study included three factors ، first the NPK fertilizer with three levels (0، 150 ، 300) Kg/h<sup>-1</sup> which are divided into two times first after 30 days when seeds germinated and the second after 35 days after the first . The second factor was the plants density with three levels ( 66666، 80000، 100000) plant/h<sup>-1</sup> and the third factor three varieties of sunflower (shemoos ، Akmar and Euroflower ) ، and here it was the important results obtained:

The highest density level (100000) plant/h<sup>-1</sup> gave the highest results the characters studied which were ، head diameter ، yield ( ton / h<sup>-1</sup>) . Level of 150 Kg/ h<sup>-1</sup> of NPK fertilizer was the best for head diameter and yield ( ton / h<sup>-1</sup>) . Shemoos variety exceeded other varieties in head diameter ، 1000 seed weight ، yield ( ton / h<sup>-1</sup>) and (seeds number in head<sup>-1</sup>) . The interaction ( Akmar variety X 150 Kg NPK / h<sup>-1</sup> ) gave the highest values in head diameter. The interaction (Shemoos variety X 66666 plants per hecter) gave significant differences in seeds number per head ، 1000 seeds weight ، yield ( ton / h<sup>-1</sup>) .The interaction (Shemoos variety X150 Kg NPK / h<sup>-1</sup> X 100000 plants/ h<sup>-1</sup> ) gave the highest significant results in seeds yield.

**Key words:** plant density، Fertilization levels، varieties، sunflower