

ABSTRACT

Two field experiments were conducted in the Experimental Farm of El-Arish Agriculture Research Station, Agriculture Research Center, North Sinai Governorate, during two successive summer seasons of 2003 and 2004. The aim of this work is to study the effect of plant spacing and nitrogen fertilization on growth, yield, yield components and seed oil content of two Sunflower (*Helianthus annuus* L.) hybrids “Euroflour” and “Fedouk”. Each experiment included 18 treatments which are the combination of two hybrids (“Euroflour” and “Fedouk”), three distances between plants (20, 25 and 30cm apart) and three nitrogen levels (30, 45 and 60 kg N/fed). Salinity of water ranged from 4500 to 5500 ppm. The experimental was split-split plot design with four replications. The soil texture was sandy. The data were statistically analyzed using MSTAT computer program.

Our aims of this study are to find out the suitable package for hybrids, spacing between plants, and nitrogen fertilization levels to provide the end-users (farmers) the best combination of our results in order to maximize seed and oil yields of sunflower crop under the newly reclaimed soils and the environmental conditions of North Sinai.

* “Fedouk” hybrid gave superiority in leaf area, leaf area index, plant length, no. of leaves/plant and stem diameter. But, gave earlier of days to 50 % flowering as compared with “Euroflour” hybrid.

* Increasing plant spacing and N-fertilizer levels gave superiority in leaf area, plant length, number of leaves/plant and stem diameter.

* The best combination gave superiority in most vegetative characters was the interaction of (“Fedouk” hybrid x 30 cm x 60 kg N/fed). But, the interaction of (“Euroflour” hybrid x 20 cm x 30 kg N/fed) gave the lowest values in most vegetative characters.

* “Fedouk” hybrid gave superiority in head diameter, seed weight/head, 100-seed weight, seed yield/plot, seed yield/fed and oil yield as compared with “Euroflour”.

- * Increasing plant spacing and N-fertilizer levels gave superiority in head diameter, seed weight/head, 100-seed weight, seed yield/fed and oil yield.
- * Oil content is inversely proportion with increased nitrogen levels.
- * We had obtained the highest yield of Sunflower hybrids under North Sinai conditions by the interaction of (“Fedouk” hybrid x 30 cm x 45 or 60 kg N/fed) but we should prefer the least level of nitrogen fertilizer (45 kg N/fed) to reduce the environmental pollution by chemical fertilizer. But, the highest seed oil percentage obtained with the interaction of (“Euroflour” hybrid x 25 cm x 30 kg N/fed).

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