Abstract

Proper and proper use of chemical and organic fertilizers is the most important and essential way to maintain and improve soil fertility conditions and increase crop yield. This study was conducted to evaluate the effect of chemical, organic and synthetic fertilizers on some quantitative and qualitative characteristics of sunflower cultivars in Zakak Agricultural Research Station field in a split plot in a randomized complete block design with 3 replications. The main factors in this experiment were different levels of fertilizer including control (no fertilizer application), compost (40 ton / ha), humic acid (5 liters per hectare), chemical fertilizer (150 kg urea, 100 kg phosphorus and 100 kg potash). Compost and humic acid (20 ton / ha compost + 2.5 liters / ha) and combination of humic acid and chemical fertilizer (2.5 liters / ha + 75 kg urea, 50 kg phosphorus and 50 kg potash) and sub-factor including three The sunflower varieties were Shams, Qassim and HYSUN25 (hybrid). The studied traits included plant height, head and stem diameter, number of seeds per pod, 1000 seed weight, oil percent, biological yield, seed and oil, pigments (chlorophyll a, chlorophyll b, total chlorophyll and carotenoids), chlorophyll index, carbohydrate percentage, The percentage of elements (N, P, K, Ca and Zn) is leaf area index (LAI). The results showed that the highest plant height (1000 seed weight biological yield), chlorophyll index (SPAD), chlorophyll a, chlorophyll b and zinc were obtained from humic acid + chemical fertilizer and Shams cultivar. Therefore, taking into account the results, it is suggested to use organic fertilizers (humic acid and compost) in combination with fertilizer to develop sunflower cultivation in Sistan area.

Keywords: Humic acid, HYSUN25, Biological yield, Compost.

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Title

The effect of organic, chemical and composite fertilizers on quantitative and qualitative characteristics of three sunflower cultivars (*Heliantus annuus* L.) in Sistan and Baluchestan province

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