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# Growth, yield, yield components and quality oil of sunflower (flame) variety affected by organic, mineral nitrogen and raw spacing

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This study was concluded at experimental field – College of Agriculture, University of Salahaddin-Erbil, during spring season (2016) in order to determine the growth, yield, yield components and quality oil of sunflower (flame) variety affected by organic, mineral nitrogen and raw spacing. The experiment carried out in accordance with using split plot design within a complete Random Block Design (RCBD) with three replicates, as was the use of independent comparisons and trend analysis to test the traits in addition to the polynomial Duncan test. Where the distances agriculture workers occupied the main plots (50 and 70 cm) between the lines, while the included sub plots nitrogen fertilization factor which consisted of seven levels, a three organic fertilizer levels (10, 15 and 20 ton/ha) and three mineral fertilizer levels (60, 90 and 120 kg N/ha). In addition to the treatment comparison. The results can be summarized as follows: Significant effect of interaction between row spacing and nitrogen fertilizer occurred in same traits, the highest of seed yield (3.89 ton/ha), oil yield (1.67 ton/ha), straw yield (11.77 ton/ha) and biological yield (15.66 ton/ha), but oleic acid reached (44.07%) and was obtained from the interaction between the distance (50 cm) and rate of (20 ton/ha) organic fertilizer. The factorial treatment cultured in (70 cm) row spacing and the rate of (20 ton/ha) of organic fertilizer gave the highest plant height (171.23 cm), plant yield (88.17 gm/plant), 100 seed weight (6.51 gm), But the lowest palmatic acid (6.62%) was obtained from the same row spacing and nitrogen control treatment (0 kg N/ha). The highest harvest index (26.89%), oil content (45.0%) and lowest stearic acid (3.03%) were obtained from the interaction between (50 cm) and nitrogen control treatment (0 kg N/ha). The interaction effect occurred between row spacing (70 cm) and rate of (90 kg N/ha) mineral fertilizer gave the highest lenoleic acid (48.47%) and leaves number (32.33 leaf/plant). When orthogonal contrast conducting ,fertilizer treatment excelled on non-fertilized treatment in all traits except oil content and oleic acid. Organic fertilizer excelled on mineral fertilizer in some traits like plant height, head diameter, plant yield, seed yield, straw yield, biological yield, and oleic acid, but mineral fertilizer excelled in these traits (leave number, harvest index and lenoleic acid). The relationship between organic manure levels and traits: Plant height and plant yield, seed yield, palmatic and oleic acid is quadratic as well as the relationship between mineral fertilizer levels and trait linoleic acid is also quadratic, while the mineral fertilizer relationship with traits: the number of leaves and harvest index is linear.

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