EFFECT OF DIFFERENT LEVELS OF FOLIAR APPLICATION WITH MANGANESE AND IRON ON THE GROWTH, YIELD AND QUALITY OF THREE GENOTYPES OF SAFFLOWER (CARTHAMUS TINCTORIUS L.) UNDER SANDY SOIL CONDITIONS

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Abstract: Two field trials were conducted for 2020-2021 and 2021-2022 planting seasons in sandy soils. Both experiments were carried out in a Randomized complete block design with three replications in Sherekhan area, which is 30 km west of city of Mosul within Nineveh Governorate, Iraq. As a result of high pH value in sandy soil at research site for both seasons and increase its content of calcium carbonate and phosphorous and to avoid deficiency of microelements especially manganese and iron which rarely provided fertilization with these elements by adding them to soil and to obtain of tangible positive results and remove deficiency symptoms, three foliar spray concentrations of manganese and iron elements were added to safflower leaves (0, 0, 5, 6, 12, 10 mg L\(^{-1}\)) and three genotypes of safflower crop of resistant spiny type (Gifford, Remzibey, Dincer). Results showed that foliar spraying of manganese at a concentration of 12 mg L\(^{-1}\) significantly increased plant height, number of fruiting branches, total seed yield and percentage of oil in seeds for both growing seasons. Addition of iron element in spraying leaves plants at a concentration of 5 mg L\(^{-1}\) led to a significant increase in all growth, yield and quality traits except head diameter in both growing seasons, while increasing concentration of iron to 10 mg L\(^{-1}\) caused a significant decrease in all traits except percentage of protein in seeds for both seasons 2020-2021 and 2021-2022. Remzibey genotype surpassed in most traits of growth, yield and qualitative in two cultivation years 2020-2021 and 2021-2022.

Key words: Safflower genotypes, Manganese, Iron, Foliar application and sandy soil.

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