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Response of Three Faba Bean (*Vicia faba* L.) Varieties to Different levels of Irrigation Water salinity

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ABSTRACT

KEY WORDS:

Faba bean, Varieties, Irrigation water salinity, Growth traits, yield component

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A field experiment was conducted during the 2022-2023 growing season at Al-Faris Agricultural Research Station, located in Al-Zubair district, southwestern Basrah, Iraq. This study aimed to investigate the effects of varying irrigation water salinity levels on the growth and yield of different faba bean (*Vicia faba* L.) Varieties. Two factors were examined: three faba bean Varieties Spanish (Londe otomo), Dutch (Hixtal), and a local Variety and three levels of irrigation water salinity: 1.5, 3.5, and 5.5 dS m⁻². The experiment followed a factorial experiment within a Randomized Complete Block Design (RCBD) with three replications. The results showed that both the Varieties (Londe otomo and Hixtal) and water salinity, as well as their interaction, had a significant impact on the studied traits. The Spanish Variety (Londe otomo) showed the highest values for plant height (87.76 cm), number of branches per plant (8.34 branch plant⁻¹), pods per plant (6.67 pod plant⁻¹), seeds per pod (5.30 seed), 100 seed weight (157.05 g), and seed yield per plant (475.60 g). the salinity levels, 3.5 dS m⁻² records highest plant height, number of branches, pod length, and yield per plant (89.28 cm, 5.92 branches plant⁻¹, 8.29 cm). On the other hand, the lowest salinity level (1.5 dS m⁻²) resulted in higher pod number, seeds per pod, and 100-seed weight (6.48 pods, 5.00 seeds, 152.44 g). Moreover, the interaction between the Spanish Variety and the two salinity levels (1.5 and 3.5 dS m⁻²) significantly improved all measured traits, including plant height, number of branches, pods per plant, 100-seed weight, and seed yield per plant (74.59 cm, 6.68 branches plant⁻¹, 7.90 pods, 164.28 g, and 510.10 g, respectively). Based on these results, Londe otomo can be considered a promising variety for cultivation in saline-prone areas of southern Iraq, offering both adaptability and productivity under moderately saline irrigation condition.