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Abstract

Despite the soil could contain high amount of phosphorus (P), salinity reduces its availability for crop plants. Hence, farmers should practice several tactics to ameliorate P deficiency in soil. The current study aimed to assess the importance of zinc (Zn) supply for mitigating the deficiency of P for canola grown in saline soil. The effects of three Zn rates (0, 150 and 300 mg L⁻¹, Zn₀, Zn₁₅₀ and Zn₃₀₀, respectively) under three P rates (0, 36 and 72 kg P₂O₅ ha⁻¹, P₀, P₃₆, and P₇₂, respectively) on physiological status, yield and quality of canola were measured. Treatments were arranged in the strip plot design based on completely randomized blocks with three replicates. Findings exhibited that P₃₆ recorded the highest values of membrane stability index in the 2nd season, while statistically leveled P₇₂ for relative water content and chlorophyll fluorescence in both seasons. Zn₃₀₀ exhibited potent effect on all canola physiological traits in both seasons. In both seasons, P₃₆ × Zn₃₀₀, P₇₂ × Zn₁₅₀ and P₇₂ × Zn₃₀₀ showed the maximum chlorophyll fluorescence and performance index values. Plots treated with P₇₂ achieved 70.0% increase in canola seed yield, greater than the untreated ones. Seed yield obtained with Zn₃₀₀ were higher than Zn₀ and Zn₁₅₀ by 1.30 and 1.10 times in 2019/20 season and 1.23 and 1.05 times in 2020/21 season. The highest oil % was recorded with P₀ × Zn₁₅₀ and P₇₂ × Zn₀ in the 1st season and with P₇₂ × Zn₁₅₀ in the 2nd season.