

Yield, yield components and seed quality of two rapeseed cultivars as affected by different levels of phosphorus and boron under greenhouse conditions

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Abstract

In order to evaluate the effects of different levels of phosphorus (P) and boron (B) on yield, yield components, seed quality (protein and oil content) and P and B content of rapeseed (*Brassica napus* L.), a greenhouse experiment (aimed at removal of other environmental factors affecting growth parameters, which are not manageable in the field) was conducted. Treatments consisted of two cultivars of rapeseed (Talaye and Zarfam), three levels of P (0, 25 and 50 mg/kg) and three levels of B (0, 2 and 4 mg/kg) with three replications. Results revealed that significant differences were observed between the rapeseed cultivars in seed yield, plant height, number of siliques per plant, 1000-seed weight, and seed nitrogen (N), P and B content and oil concentration. Increasing the P level significantly increased dry weight of seeds, straw and roots yield, biological yield, plant height, number of siliques per plant, 1000-seed weight, protein yield, seed oil yield and seed oil content (p 0.05). However, N concentration of seeds decreased by P application. Soil-applied B significantly increased B concentration and total uptake, and seed oil concentration in both rapeseed cultivars. There was a positive and significant correlation between seed yield and protein yield, number of siliques per plant and 1000-seed weight. Application of P and B fertilizers increased concentration and total uptake of P and B in the seeds of both rapeseed cultivars. There was synergistic interaction between P and B on most of the studied traits; but its significance was different in the two cultivars. It is advised to do the same research in the field with more P and B treatments and diverse rapeseed cultivars.

Keywords: Oil-seed plants, Growth parameters, Protein.

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