



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Responses of Irrigated Durum and Bread Wheat Cultivars to Boron Application in a Low Boron Calcareous Soil

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Abstract: Cereals are sensitive to micronutrient problems. Central Anatolian soils show great variation with respect to both deficiency and toxicity of boron (B). Hence, screening of major wheat cultivars grown in the region with respect to their sensitivity to B is of great importance for the area. Six durum (*Triticum durum* L. cvs. Kızıltan-91, Ç-1252, Selçuklu-97, Kunduru-1149, Yılmaz-98 and Çakmak-79) and 6 bread (*Triticum aestivum* L. cvs., Gün-91, Kınacı-97, Göksu-99, Türkmen, Bezostaja-1 and Sultan-95) wheat cultivars were studied in field experiments for their responses to B application when grown in soils low in extractable B (0.19 mg B kg⁻¹) during the 2000-2001 and 2001-2002 growing seasons. Agronomic characteristics such as grain yield, sterility, number of grains per spike, number of spikes per m², thousand kernel weight and flag leaf B concentration were investigated as affected by the application of 3 kg B ha⁻¹ as a spray of boric acid (H₃BO₃) to soil. Agronomic characteristics of bread and durum wheat cultivars varied remarkably with the application of B, its deficiency in the soil, and seasonal conditions. B application increased the grain yield by 9.6% on average in durum wheat and by 10.9% in bread wheat. Kızıltan-91 and Yılmaz-98 among durum wheat cultivars, and Gün-91 and Bezostaja-1 among bread wheat cultivars were the most sensitive to B deficiency having the highest grain yields when treated with B. On the other hand, Ç-1252 and Çakmak-79 (durum wheat), Kınacı-97 and Sultan-95 (bread wheat) showed tolerance to B deficiency since their high yield capacities were not affected by B deficiency. This study revealed that B deficiency can depress the yield in cereals to a great extent. Soil B analyses before the cultivation of cereals are, therefore, required to prevent yield losses. In addition, cultivars showing tolerance to B deficiency can be used in breeding programs aiming at the development of B-efficient cultivars.

Key Words: Boron deficiency, bread and durum wheat, interactions, yield attributes

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