Evaluation of NH_4HCO_3 – DTPA extractable boron as index of B availability in a pot experiment with wheat using ten soils of Northern Greece

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ABSTRACT

Hot water (B_{HW}), NH_4HCO_3-DTPA (B_{SS}), extractable boron and boron in the saturation extract (B_{SE}) were tested as boron availability indices in ten soils of northern Greece. The soils, which differed in texture and pH, received three rates of boron, namely 0, 3 and 5 mg B/kg soil (thirty treatments) and cultivated in pots with wheat. Boron uptake and boron concentration in biomass were measured and served as biological indices for soil boron tests. The three indices correlated satisfactorily with each other and with B uptake and B concentration in the plants, in all treatments ($p<0.05$). In the first case the best correlation was found between B_{HW} and B_{SS} ($r=0.68$) and the worst between B_{SS} and B_{SE} ($r=0.35$). In the second case the correlation coefficients between B_{SS} and B uptake or B concentration in the plants were the lowest ($r=0.47$ and $r=0.40$ respectively). The results showed that NH_4HCO_3-DTPA extractable boron can be used as a boron availability index, but is not as effective as hot water extractable boron.