

5th INTERNATIONAL SYMPOSIUM ON OLIVE GROWING



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HOW SOIL BORON APPLICATION INFLUENCES THE B AND N CONCENTRATION ON FLOWER BUDS AND LEAVES

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There is a chronic shortage of B on NE Portugal soils. For successful crop growth we need regular applications of B. In this work we report on flower bud and leaf B and N concentrations after recent soil B application. For this study we selected ten pairs of olive trees, chosen from ten different olive orchards. One half being cv. Santulhana and the other cv. Madural. Each pair was composed by two neighbouring trees with similar canopies. On each pair, one tree was B-fertilized (B+) on 29 March 2003 with 75 g of Borax (11 % B) and the other pair kept as control without B (B-). Flower bud samples were taken on 24 May 2003 and leaf samples on 12 July 2003 and 31 January 2004. Boron and N concentrations on crop tissues were determined by Azomethine-H and Kjeldahl methods, respectively. Soil B applications increased B content on flower bud, although the means difference was not significant ($P > 0.05$). The values rose from 22.6 to 25.4 mg B kg⁻¹ on cv. Santulhana and from 21.9 to 23.7 on cv. Madural. In July, leaf B concentration on cv. Santulhana was significantly higher ($t < 0.05$) in B+ treatment, while for cv. Madural the t-test probability was 0.08. The mean difference was also significant when jointly analysing the ten pairs of trees. In July 2003, leaf B concentrations rose from 23.0 to 26.2 mg kg⁻¹ and 19.8 to 22.7 mg kg⁻¹ with B application on cv. Santulhana and Madural, respectively. In January 2004, leaf B concentrations were higher on B+ trees, though the mean difference was not statistically significant. Soil B applications did not influence the N content of tissues. Flower buds seem to have had access to some recently applied B, though the leaves had been the major sink for the nutrient. The range of variation on B concentration was lower on flower bud than on leaves, with the later accumulating B coming through the xylem in the course of water transpiration.