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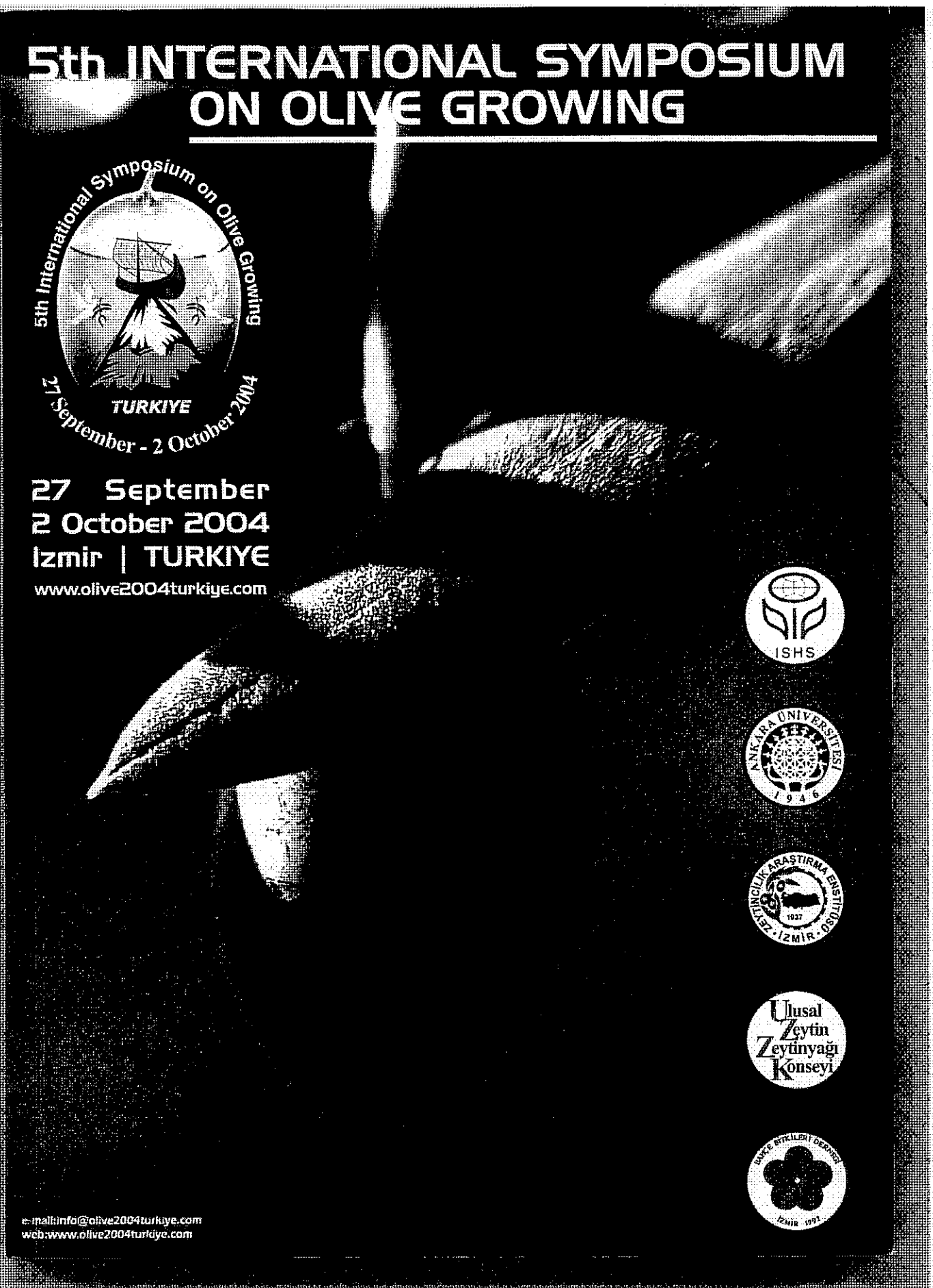

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LEAF ANALYSIS AS AN AID TO UNDERSTAND SOIL MANAGEMENT EFFECTS ON OLIVE ORCHARDS

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Several field studies have reported on the effect of diverse soil surface management systems on olive yield. However, these studies seldom include leaf analysis to support results. In this work, leaf N and B concentrations were used for that purpose. Two field experiments with cv. *Cobrançosa* were carried out in NE Portugal since January 2002. In experiment 1, the field treatments were: conventional tillage (T1); weed control in February (WCF1) with the herbicide MASCOT 600 SC (diuron + terbutilazine + glyphosate); and weed control in April (WCA1) with BUGGY (glyphosate). The treatments included in experiment 2 were: conventional tillage (T2); weed control in April (WCA2) with BUGGY; and sheep pasturing (Sheep-P). The experiment 1 was established in an olive orchard previously tilled and the experiment 2 in an orchard previously used for pasturing. Leaf B and N contents were determined by Azomethine-H and Kjeldahl methods, respectively, from samples taken every January. In experiment 1, olive yields in January 04 were 6.2 kg/tree in T1, 7.0 in WCF1 and 8.8 in WCA1. Leaf B and N contents were, respectively, 15.4, 16.5, 16.4 mg B kg^{-1} and 17.7, 20.4, 19.8 g N kg^{-1}. In experiment 2, olive yields were 3.1 kg/tree in T2, 7.1 in WCA2 and 1.7 in Sheep-P. Leaf B and N contents were, respectively, 8.1, 9.2, 8.2 mg B kg^{-1} and 20.2, 21.0, 20.3 g N kg^{-1}. The tillage damages the shallow roots and consequently limited nutrient uptake and significantly reduced olive yield in both experiments. The poor sheep weed control in spring/summer period, allowing for the weeds and trees to compete for water and nutrients also significantly reduced nutrient uptake and olive yield. Thus, despite the many factors that could influence plant nutritional status and olive yields, there was a general good correlation between the two variables in both experiments.
Financial support: PO AGRO, DE&D, project 296.