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INFLUENCE OF NITROGEN AND MAGNESIUM FERTILIZATION OF OLIVE TREE 'PICUAL' ON YIELD AND OLIVE OIL QUALITY

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Abstract:

Ribatejo is a Portuguese region with a long tradition in the production of olive oil, being 'Picual' one of the major Spanish cultivar used in intensive olive groves. In this region, a field experiment was established in order to study the influence of nitrogen and magnesium fertilization on fruit yields, fruit characteristics and some quality parameters of olive oil. The olive grove was planted in 1987 on calcareous soils and was managed under dry conditions. Three levels of nitrogen (0, 60 and 120 kg ha⁻¹ N) and magnesium (0, 18 and 36 kg ha⁻¹ Mg) were used, arranged into a factorial experiment with three completely randomized blocks. Nitrogen and magnesium were applied to the soil annually since 1995, as ammonium sulphate and magnesium sulphate, respectively. Experimental results, obtained from 1995 to 2004, show that the fertilization influenced the fruit-yield, fruit-water content and fruit-fat content, with a significantly mean effect ($p \leq 0.05$) of the interaction N x Mg regarding the two first parameters. The higher fruit yield was obtained with 60 kg ha⁻¹ N and 36 kg ha⁻¹ Mg, whilst the fruit-fat content decreased with nitrogen application. The maturity index, the fruit-mean weight, the pulp/stone ratio and the evaluated quality parameters of olive oil (acidity, peroxide value, specific absorbance coefficients K_{232} and K_{270} and oxidative stability) were not significantly affected ($p > 0.05$) by the fertilization.