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Abstract

Portugal is characterised by hot and dry summers followed by cold and humid winters. Irrigated agriculture presents itself as a straightforward way to overcome this intra-annual weather variability. Although the need for irrigated agriculture is recognised, it is also recognised that it can be associated with a set of negative environmental impacts. The goal of the present work is to analyse the environmental impacts associated with the Portuguese irrigated agriculture. Bearing in mind the analysed system, the environmental impact categories and the assumptions made, the results indicate that, in comparison with the alternative scenarios of production, the Portuguese irrigated agriculture is a favourable option.

Abstract

Olive oil extraction is one of the most traditional industries of Mediterranean countries which produce huge amounts of effluents. One alternative solution for the problem of these residues is land application based on the high biodegradative capacity of soils. Land application serves two objectives: i) waste disposal; ii) recycling of waste components. To contribute to a better knowledge of the effects of olive mill wastewater (OMWW) land application, on fruit yield and some soil chemical parameters indicators of its fertility condition, a field experiment was conducted during three years at an irrigated olive orchard (*Olea europaea* L. 'Cobrançosa' and 'Picual') installed on a Leptic Cambisol (Calcaric), in the Portuguese Region of Ribatejo. The experiment was arranged into completely randomized blocks with three replications. The experimental treatments were: 0, 80, 160 and 240 m³/ha of OMWW spreading each year. Tree productivity and soil extractable and exchangeable potassium, were quantified (at three soil layers: 0 - 10, 10 - 20 and 20 - 50 cm depth).

In general, the OMWW application significantly ($p \leq 0.05$) increased the extractable and exchangeable forms of soil potassium. Results suggest that 80 or 160 m³ ha⁻¹ can promote highest fruit yield.

Keywords: *agronomic valorisation, fruit yield, olive mill wastewater, olive grove, soil*