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Marginal abatement costs for reducing leaching of nitrates in
Croatian agriculture

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Abstract

The aim of this paper is to estimate marginal abatement costs (MAC) of N-fertiliser tax policies which aim to prevent NO₃ levels from rising. Estimates of MAC provide information on how large reductions in Nfertilisation rates should be before other measures are considered. Based on N-response experiments from Croatian field trials with maize, N-response curves were estimated and profit maximising N-doses were derived. Values of NO₃-N concentration in lysimeter water from the same treatments were used to estimate an NO₃-leaching function. A sample of 20 Croatian family farms was used to obtain records of producer and input prices as well as actual N-doses. Abatement costs and MAC for an N-tax, a product tax and an Nquota were estimated. The MAC for all the instruments are non-constant and increase at an accelerating rate. The MAC for N-taxes are positive for N-taxes lower than 60%, indicating a net return to society. Reduction rates in fertilisation up to this level should be achieved before considering governmental support for other measures. The N-tax has the lowest abatement cost and the lowest MAC for a particular level of reduction while the N-quota has a lower MAC than the product tax when total reduction levels are below 20 mg NO₃ l⁻¹.

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