

# Result-oriented versus input-oriented instruments: the case of pest resistance to pesticides.

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## Abstract

Pest resistance to pesticides is a phenomenon that is becoming more and more worrying. The excessive use of chemicals in the agricultural sector is the fundamental cause of this problem. In this paper, we first analyse the effect of integrated pest management on pest management strategies, when one farmer's choices affect those of his neighbour, thus causing an externality in the form of pest resistance to chemicals. We find that in the face of the intertemporal externality of production, integrated pest management can reduce the overall level of pesticide use and is therefore effective in limiting the development of pesticide resistance. Second, we compare the strategy of two pest management models, private and socially optimal. We show that the application of pesticides is always higher in the private management than in the socially optimal management. In order to get farmers change their management strategy, we study the possibility of setting up an incentive mechanism. We analyse two tax systems where one is polluting input-oriented and the other is result-oriented. We find that both tax systems lead to socially optimal outcomes, but the least costly policy is the result-oriented one.

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