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# Evaluation of the allelopathic potential of some crops against *Hypericum* spp.

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## Abstract

With the growing awareness of the problems associated with the excessive use of herbicides which include surface and ground water contamination and evolution of herbicide resistance in several weed species, interest in developing effective biocontrol methods as alternatives for weed control is increasing. Allelopathic crops may offer a promising approach to efficiently control weeds. Among weeds species associated to cereals in Tunisia, St. John's wort (*Hypericum* spp.), a perennial weed, is becoming a serious weed due to its toxicity to livestock and its ability to cause important losses in crop yields.

The present study is aimed to map St. John's wort infections and to evaluate the allelopathic potential of some crops on weed growth.

Field surveys carried out in the main cereal growing regions in the northern of Tunisia showed that Infestation varied among regions and are particularly related to the cultural practices used by farmers in each region.

The allelopathic potential of selected crops was evaluated by assessing the effect of water extracts on root growth of weed seedlings in laboratory bioassays. Tested crops included alfalfa, sorghum, sunflower, rapeseed, mustard, rye, and barley. Allelopathic crop species with the highest phototoxic activity on St. John's wort root development have been tested in field experiment and their effects on the weed dry matter were determined at crop harvesting.

Water extracts of tested crops resulted in significant reductions in weed root growth. The highest phytotoxic activity was observed using barley extract (up to 73%) followed by rape extract (70%). Similar results have been observed in field plots where the dry matter of St. John's wort was reduced by 85% and 37% in rape and barley crops respectively.

These results suggest that allelopathic crops grown in rotation may be a promising method for the management of this perennial weed in cereals crops.

**Keywords:** Key words: *Hypericum* spp. weed management, cereals, allelopathic crops.

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