
The allelopathic effect of winter oilseed rape residues treated with bio-preparations and organic fertiliser on *Sinapis arvensis*

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Abstract

Slurry can be used as organic fertiliser in agro-technologies. Lately large number preparations of biological origin are recommended to be used for increasing crop productivity, resistance to environmental stresses and sustaining agroecosystem stability. But still little is known how these organic treatments are influencing weeds. The aim of this research was to evaluate the allelopathic potential of volatiles from winter oilseed rape different morphological parts residues (threshing remains, stubble and roots) after harvest treated with bio-preparations and slurry on wild mustard germination. Treatments of the weed germination bioassays: 1) without crop residues (Control); 2) crop residues without treatment (CropRes); 3) crop residues with bio-preparation (Bio1); 4) crop residues with slurry (S); 5) crop residues with slurry and bio-preparation (SBio2). In the composition of Bio1 three carrier materials included: dolomite, molasses and magnesium sulphate; in the Bio2: calcium carbonate and molasses. Experiments were carried out in climate chamber using Petri dishes with two compartments: in one compartment weed seeds were germinated, in second – placed winter oilseed rape residues in different quantities (10 and 30 mg cm⁻³). Threshing remains and stubble of winter oilseed rape after harvesting at higher concentration stimulated the germination of *S. arvensis*. However, threshing remains treated with bio-preparations and slurry showed opposite results: the germination was suppressed. Stubble at higher concentration treated with SBio2 inhibited the germination of tested weed to compare with stubble without any treatments, but lower concentration showed opposite results: the germination in all treatments was stimulated. The roots of winter rape at lower concentration increased the germination of *S. arvensis*, but higher concentration the germination inhibited. Slurry and bio-preparations at higher concentration positively influenced germination of *S. arvensis* to compare with the roots without treatments. Acknowledgments: part of this research was funded by a grant (No. SIT-8/2015) from the Research Council of Lithuania.

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