

CROPS SPECIES REACTION TO SUNFLOWER ALLELOPATHICS

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One common way that allelopathy may be utilized in weed management systems is through the manipulation of allelopathic crop residues in annual and perennial cropping systems. Allelopathic inhibitory effect of sunflower (*Helianthus annuus* L.) on growth and development of weeds is documented, but its effect on following crops in crop rotations is not known very well yet. Aim of this study was to evaluate the response of common cereals, cultivated in Poland vegetable crops and mustard (model plant for dicotyledonous weeds in our studies) to allelopathics of sunflower origin. Allelopathic activity was determined by the effect of water extracts of leaves and stem(s) of sunflower cv. Oгородowy on seeds germinability of following cultivar crops: wheat (*Triticum aestivum* L.), rye (*Secale cereale* L.), barley (*Hordeum sativum* L.), oat (*Avena sativa* L.), mustard (*Sinapis alba* L.), cucumber (*Cucumis sativus* L.), tomato (*Lycopersicon esculentum* L.), lettuce (*Lactuca sativa* L.) and radish (*Raphanus sativa* L.). Fifty seeds (in 6 replicates) were germinated in Petri dishes on filter paper, moistened with 5ml of water extracts in concentrations: 1.25, 2.5, 5.0, 7.5, and 10.0 g DM 100 mL⁻¹, and with distilled water (control) in darkness at 20°C for 14 days. Germinating seeds were counted daily and removed.

Essential differences species were recorded in the germinability as influenced by sunflower allelocompounds with mustard and radish being most, while wheat and cucumber least affected. Leaves extracts, in average for all concentrations, reduced germination of mustard and radish by 3 and 34% (41 and 69% at the highest concentration) in comparison to germination in control. Respective values for wheat and cucumber were 5 and 6% (6 and 8% at the highest concentration). Stems extracts, in case of all tested species, affected by sunflower allelochemicals, showed evidently lower activity. Allelopathics contained both in leaves and stems also delayed seed germination but again most of them stem extracts was less effective. Similarly to germination, tested species differed in this response with all cereals and cucumber being much less than lettuce, tomato and mustard affected.