

**EFFECTIVENESS OF DIFFERENT MULCHES IN WEED MANAGEMENT
IN ORGANIC WINTER WHEAT PRODUCTION****Bernat W., Gawrońska H., Gawroński S. W.***

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An alternative approach to weed control in crops, is to utilize allelopathic activity of the crop for weed management. Sunflower (*Helianthus annuus* L.), as very effective in reduction of weed germination and growth is considered to be used in organic wheat production (Gawronski *et al* 2002, Ciarka *et al* 2002, Gawronski, 2003).

The aim of this study was to determine the effect of sunflower and some other species on: a) weed density b) weed community and c) winter wheat stand.

Experiments were conducted in Experimental Farm of WAU at Chylice during 2002/03 and 2003/04 vegetation seasons. Seeds of sunflower, buckwheat, mixture of legumes (*Pisum arvense* L., *Pisum sativum* L. and *Vicia sativa* L.) alone or in mixture with sunflower were sown in July. After 90 or 75 days of cultivation plants were cut, shredded and layered on soil surface. Two days later winter wheat *cv.* Zyta was sown by discseeder. Throughout the vegetation weed density and community and crop density were evaluated. In laboratory, germination of mustard and wheat as influenced by aqueous extracts of *P. sativum* and *V. sativa* was also determined.

Sunflower mulch had evident inhibitory effect on weed germination and growth in both years. Promising results were obtained also for other mulches but only in the 2003/04- season. In 2002/03 empty spots (due to low wheat stand after winter) were infested by weeds. In the 2003/04-season sunflower alone, in mixture with legumes and buckwheat, were very effective in weed suppression while legumes alone evidently less. Crop stand was also reduced by mulches, more strongly in 2002/03. Mulches changed also weed community. Laboratory studies showed high allelopathic activity of *Pisum sativum* L. and *Vicia sativa* L. against mustard while wheat was almost not affected. Sunflower and legumes in mixture seems to be an attractive combination for mulch, as in addition to effective weed suppression legumes enrich soil in nitrogen.

REFERENCES

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