

## **Allelopathic Potential of Canola and Wheat to Control Weeds in Soybean (Glycine max)**

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**Abstract :** A field experiment was done to develop management practices to reduce the use of synthetic herbicides, in the arid and semi-arid agricultural ecosystems of north east of Iran. Five treatments including I: chopped residues of canola (*Brassica vulgaris*), II: chopped residues of wheat (*Triticum aestivum*) both were separately incorporated to 25 cm depth soil, 20 days before sowing, III: shoot aqueous extract of canola, IV: shoot aqueous extract of wheat which were separately sprayed at post emergence stage and V: without any residues and spraying as control. The weed control treatments reduced the total weed cover, weed density and biomass of weed. The reduction in weed density with canola and wheat residues incorporation were up to 67.5 and 62.2% respectively, at 40 days after sowing and 65.3% and 75.6%, respectively, at 90 days after sowing, compared to control. However, post emergence spraying of shoot aqueous extract of canola and wheat, suppressed weed density up to 41.8 and 36.6% at 40 days after sowing and 54.2% and 52.7% at 90 days after sowing respectively, compared to control. Weed control treatments reduced weed cover (%), weed biomass and weeds stem length. Incorporation of canola and wheat residues in soil reduced weed cover (%) by 62.5% and 63% respectively, while spraying of shoot water extract of canola and wheat suppressed weed cover (%) by 39.6% and 40.4% respectively at 90 days after sowing. Application of canola and wheat residues increased soybean yield by 45.4% and 69.5% respectively, compared to control while post emergence application of shoot aqueous extract of canola and wheat increased soybean yield by 22% and 29.8% respectively.

**Keywords :** allelopathy, Bio-herbicide, *Brassica oleracea*, plant residues, *Triticum aestivum*

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