Bio-herbicidal effects of thyme essential oil and carvacrol on different weed and crop species

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In this laboratory study was conducted to determine bio-herbicidal potential of volatile oils thyme (Thymus vulgaris L.) and carvacrol which is the most important compound of thyme at five concentrations (0-control, 1, 2, 3 and 4 µl/petri dish) petri dishes against seeds germination of redroot amaranth (*Amaranthus retroflexus* L.), wild licorice (*Glycyrrhiza glabra* L.), curled dock (*Rumex crispus* L.), cutleaf ground-cherry (*Physalis angulata* L.). Besides, this volatile oils at same concentrations were tested seeds germination of various crops (wheat, maize and cotton). Volatile oils both thyme and carvacrol used in the experiments were completely phytotoxic on seed germination of tested weeds. When they were used for the agronomic crops, thyme showed the increasing bio-herbicidal effect with the increasing concentrations in wheat. Whereas, there was no effect of this compound in both concentrations in remaining two (maize and cotton) agronomic crops. On the other hand, while carvacrol inhibited the germinations of wheat in both concentrations, it reduced the germination rate with the increasing concentrations in corn. There was no effect of this compound (thyme and carvacrol) on cotton.