# Effect of solarization and some fungi on control of seed of some Leguminosae weeds

**By**

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## Summary

The current study dealt with effect of solarization and some fungi on the seed germination of some weeds belonging to the family Leguminosae under different exposure periods of solarization. The study was divided into two sections laboratory and field experiments.

Many weed species grown in cultivated and non-cultivated fields were also collected from different places in Basrah and Dhi-Qar governorates, most of them belong to the families Asteraceae, Chenopodiaceae, Fabaceae and Poaceae, as well as other families, which are represented by few plant species.

Lab. experiment was conducted in the laboratories of Department of Plant Protection, College of Agriculture, University of Basrah, and the field segment was achieved in the field of medicinal plants College of Agriculture, University of Basrah, during the summer of 2017.

Some fungi were isolated and identified from the roots and leaves of different weed species (*Melilotus indica, Medicago laciniata, Alhagi graecorum* and *Scorpiurus muricatus*) growing in fields and greenhouses. These fungi belong to different taxa namely *Alternaria* sp., *Aspergillus niger* and *Fusarium* sp., *A. niger* was the most frequent in the samples, while fungi *Chaetomium globosum* was isolated from a graduate student in the Department of Plant Protection – College of Agriculture - University of Basrah.

The study showed that *A. niger* had the most significant effect in reducing the percentage of seed germination of *Medicago laciniata* reached to 4%.

Results showed that with application of two types of mulching for 40 days, percentage of seed germination of *M. indica* in soil was reduced. So white sheets reduced it to 28.6% in comparison with 52.3% in the non- mulched soil. The lowest percentage of germination was recorded at the depth of 10 cm in the soil with the yellow cover in the case of the use of fungi tested together or individually with the lowest percentage of germination, which was 0% compared to the same depth in the soil with a white cover and control treatment of 14.3% and 31.6% respectively.

Results showed that the treatment with *A. niger* and *C. globosum* together reduced the percentage of seed germination of *M.indica* at all depths and showed the lowest percentage of germination in both covered and uncovered soil reaching 0%.

Results also demonstrated that application with *A.niger* affected seed germination percentage with using of solarization where the best effect was at depth of 10 cm in the soil covered by the yellow cover, percentage of germination was 0% while percentage of germination in the soil covered with white cover was 11%, compared to uncovered soil, the percentage of germination was 32%.

Study revealed that solarization significant effected on the seed germination percentage of cowpea which was cultivated at the end of the experiment which increased from 9.7% in the non solarized soil (control) to
35.3% in the solarized soil, It reached 47.3% in the soil formerly mulched with yellow sheets in comparison with 23.3% in the soil covered with white sheets, Solarization also effected on the wet and dry weights of the shoot and root systems of the cowpea plants.

The study dealt with exposure of seeds of *Melilotus indica, Prosopis fracta, and Alhagi graecorum* to two different periods of solarization which were 4 and 6 weeks under two types of mulching. The results showed that the lowest percentage

of seed germination of the three species was achieved after six weeks under both types of mulching 39.2% and 91.3% in the non covered soil, compared to the coverage for four weeks the percentage of germination in the covered soil was 47.1%, while in the non covered soil the percentage of germination was 90.8%.