

Open Field Experiment to Assess the Host Specificity of *Lixus cardui* (Coleoptera: Curculionidae), a Potential Candidate for Biological Control of *Onopordum acanthium* (Asteraceae)

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Abstract

Scotch thistle *Onopordum acanthium* L. (Asteraceae) is native to Europe and Asia and has been introduced to temperate climates elsewhere, including North America and Australia. In the US the weed is most problematic in the semi-arid parts of the Northwest, California and Nevada. *Lixus cardui* Olivier is a weevil that lays its eggs in the flowering stem of Scotch thistle in cavities chewed by ovipositing females. The larvae burrow, feed and pupate within the stem. An open field experiment, to evaluate the host specificity of the weevil, was conducted on a small experimental plot at the Agricultural university of Plovdiv, Bulgaria, in 2010. Nine plant species, belonging to the family Asteraceae, were arranged in a pseudo Latin square design with a distance of 1 m among the plants in the rows. Most plants were provided as rosettes, which were transplanted from the field in Southern Bulgaria during April and early May (*O. acanthium*, *Cirsium arvense* (L.) Scop., *Arctium lappa* L., *Carduus acanthoides* L., *Carthamus tinctorius* L. and *Centaurea cyanus* L.). Some were sown in the lab and then transplanted to the experimental plot (*Cynara scolymus* L., *Silybum marianum* (L.) Gaertn. and *Helianthus annuus* L.). Adult *L. cardui* were collected in May and June in the area around Plovdiv and were released in the experimental field, one or two on each plant. At the end of August the plants were dug out, except those which did not bolt (*C. scolymus* and *A. lappa*). The stems were dissected and examined for larvae, pupae or adults of *L. cardui*. The results of dissections showed that all the Scotch thistle plants were damaged by the weevil, while its presence was never registered in any other test species. Specimens from these experiments are currently undergoing genetic and morphological studies to understand if we are in the presence of different genetic entities not distinguishable by morphological traits.