

Searching for New Potential Agents for an Old Problem: Field Bindweed (*Convolvulus arvensis*)

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Abstract

In the 1980s, two biological control agents were released for field bindweed (*Convolvulus arvensis* L.) management in North America: the bindweed moth *Tyta luctuosa* Denis & Schiffermüller (Lepidoptera: Noctuidae), and the gall mite *Aceria malherbae* Nuzzaci. (Acari: Eriophyidae). While establishment for the moth has not been confirmed, the mite is established in several U.S. states and in Canada, but impact is variable. In 2009, the search for additional potential agents for the US was revived. We currently focus on the stem-boring fly *Melanagromyza albocilia* Hendel. (Diptera: Agromyzidae) and the root-mining flea beetle *Longitarsus pellucidus* Foudras. (Coleoptera: Chrysomelidae). The agromyzid has two generations per year and field observations revealed that attacked shoots often dry up and die. Unfortunately, we were not able to obtain oviposition of the fly under lab conditions in 2010, and so no host-specificity tests could be conducted. Adults of the flea beetle readily laid eggs, and we started to conduct no-choice larval transfer tests with ten test plant species, eight native to North America. Adults emerged from at least three test species; these will be exposed under multiple-choice conditions in 2011. Apart from the agromyzid and the flea beetle, there are at least five additional insects with biocontrol potential, i.e. a defoliating leaf beetle, two leaf and flower feeding moths, and two root-mining sesiid moths. We are also revising the original test plant list. The mite had been tested on 48 plants species in a wide range of families, including many economically important, but unrelated, crop species. Taking into account changes in the emphasis of host range testing since the 1980s and new information on the phylogeny of the family Convolvulaceae, the revised list will mainly contain native North American species and ornamentals and crop plants in the family Convolvulaceae.