

CONTROLLING SWALLOW-WORTS THE SUSTAINABLE WAY

Locations	Canada, United States
Dates	01/01/2006 - Ongoing

Summary

Swallow-worts (*Vincetoxicum nigrum* and *V. rossicum*) are Eurasian plants that have become invasive in North America. The overall goal of the project is to identify specific natural enemies that can be introduced to North America as biological control agents for swallow-worts.

The problem

Swallow-worts (*Vincetoxicum nigrum* and *V. rossicum*) were introduced from Europe into eastern North America around 1850 as ornamental vines and have since become naturalized. The current extent and potential further spread of swallow-worts is of great concern to land managers and farmers in North America. Studies have shown that monocultures of swallow-worts can cause wide-scale degradation of ecosystems. This, and the lack of effective ways of managing these weeds, has spawned interest in implementing a classical biological control programme.

Biological control seeks to introduce host-specific natural enemies to reduce the impact of invasive weeds. A guiding principle is that these agents should not damage other plants.

What we are doing

In 2006, a team from CABI's centre in Switzerland and the University of Rhode Island, USA started surveying potential biological control agents that attack and are specific to swallow-wort plants in Western Europe and Ukraine.

Five potential insect biological control agents were selected for further testing: the leaf-feeding moths *Abrostola asclepiadis* and *Hypena opulenta*, the leaf-feeding beetle *Chrysolina aurichalcea asclepiadis*, the root-feeding beetle *Chrysochus (Eumolpus) asclepiadeus* and the seed-feeding fly *Euphranta connexa*.

Results so far

First releases of *H. opulenta* were made in eastern Canada in 2014 and in the eastern United States in August 2017. Monitoring is ongoing, but establishment has been recorded from Ontario.

CABI, in collaboration with the University of Rhode Island, first studied a population of *C. asclepiadeus* from Ukraine. Since no work could be conducted in Ukraine, CABI started working with a population from France in 2018.

This population, which has also been under study by the European Biological Control Laboratory (USDA-ARS-EBCL), is different at a subspecies level from the Ukrainian population, but the host range seems to be similar. Both populations are able to develop on several native North American (NA) *Asclepias* species under no-choice conditions (offering one plant species at a time), with an occasional attack when *Vincetoxicum* is present.

Open-field tests, conducted at CABI's centre in Switzerland or by EBCL in France, indicated a narrow host range of the beetle under field conditions. Additional host range tests are ongoing at CABI and the State University of New York.

Euphranta connexa is only found on *V. hirundinaria* (white swallow-wort) in Europe. However, *V. nigrum* and *V. rossicum* also proved to be suitable hosts in our tests. Work with *E. connexa* is challenging owing to the difficulties to synchronize the production of fruits on both test and control plants and oviposition of the fly. In view of limited funding, we are currently concentrating our work on *C. asclepiadeus*.

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