

New Project

PE 006a

Protected herbs: Improved biological control of aphids (extension to PE 006)

Project Number:	PE 006a
Project Title:	Protected herbs: Improved biological control of aphids (extension to PE 006)
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Industry Representative:	Claire Donkin
Start Date:	01 April 2012
End Date:	31 Jan 2014
Project Cost (Total project cost):	£33,600 (£36,000)

Project Summary:

The challenge: Growers of protected herbs are experiencing problems in controlling hawthorn-parsley aphid and mint aphid within IPM programmes. Grower experience has indicated that these aphids do not seem to be controlled by the parasitoid species available until recently (*Aphidius colemani*, *Aphidius ervi* and *Aphelinus abdominalis*). Commercial experience also indicates that these aphids are not effectively controlled by predators or pathogens. This problem is leading to crop losses, increased pesticide use and increased time needed for applying pesticides and grading out unmarketable plants. Chemical control on protected herbs is difficult due to the limited range of approved IPM-compatible aphicides. Growers are under increasing pressures to reduce the use of pesticides and are keen to adopt more biological control strategies.

The opportunity: A new mix of six aphid parasitoid species (including the three existing species and three newly available species, *Aphidius matricariae*, *Praon volucre* and *Ephedrus cerasicola*) is now available from BCP Certis. This mix has increased the range of aphid species that can be parasitised on other crops e.g. strawberry, ornamental pot plants and HNS. Project PE 006 has given very encouraging results, demonstrating that several of the species in the parasitoid mix will parasitise hawthorn-parsley aphid and mint aphid and have potential to give control. Further work is needed to identify the best parasitoid species or species mix and to validate a robust, cost-effective release strategy for reliable control of these two aphid species in commercial crops.

Aims & Objectives:

(i) Project aim(s):

To develop a robust, cost-effective parasitoid release strategy for reliable control of hawthorn-parsley aphid and mint aphid on protected herbs.

(ii) Project objective(s):

1. Demonstrate that *Aphidius colemani* will parasitise hawthorn-parsley aphid on pot-thick and spaced parsley plants in replicate cages in a commercial herb glasshouse.
2. In small-scale research glasshouse experiments, develop an effective, robust parasitoid release strategy for control of hawthorn-parsley aphid and mint aphid.
3. In an experiment on a commercial herb nursery, validate the success and cost-effectiveness of the selected parasitoid release strategy for control of hawthorn-parsley aphid on parsley.
4. Communicate the results to the industry.

Interdependence of Objectives

The Objectives and work plan have been planned logically. The work in Objective 1 is designed to demonstrate that results given in small-scale research glasshouse studies in project PE 006 can also be achieved in a commercial herb glasshouse. The work in Objective 2 will consist of a series of three experiments and the results of each one will guide the following experiment. The work in Objective 3 will validate the results in Objective 2 but will not be done if a robust, cost-effective parasitoid release strategy is not identified in Objective 2.

Risks of Objectives not being met

The structuring of the work in the sequential Objectives and experiments will reduce the risks of the Objectives not being met.

ADAS staff have experience and facilities for rearing aphids for research purposes and this will minimise the risk of inadequate aphids being available for experiments with replicated treatments. The proposed work will use methods developed in PE 006 and build on those results and this will further reduce the risks of experiments not achieving the objectives.

There is a risk of the target aphid species not being available for timely completion of the experiment in Objective 3. This risk has been minimised by already identifying commercial nurseries with regular infestations of the two aphid species and by securing the agreement of one nursery to host the experiment.

There is a risk of financial loss to the grower if the selected parasitoid release strategy tested in Objective 3 is not fully effective. This risk will be minimised by testing only a strategy shown to be robust in small-scale research glasshouses (identified in Objective 2) in the experiment on the commercial nursery.

Benefits to industry

Growers of protected herbs will benefit from an improved biological control strategy for aphids that will contribute to more robust IPM programmes, reduced reliance on pesticides, reduced plant losses and reduced labour time needed to achieve effective aphid control. The parasitoid mix is commercially available and there are no regulatory hurdles, so growers could adopt the strategy immediately if positive results are given.

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