New Project

PE 006

Protected herbs: improved biological control of aphids

Project Number:	PE 006
Title:	Protected herbs: improved biological control of aphids
Start and end dates:	01 April 2011 to 31 March 2012
Project Leader:	Jude Bennison
Industry Representative:	Claire Donkin (Protected Edibles Panel)
Location:	Main site: The work in Objectives 1 and 2 will be done at ADAS Boxworth, Boxworth, Cambridge, CB23 4NN. Additional sites: The work in Objective 3 will be done at Lincolnshire Herbs, Spalding Road, Bourne, Lincs, PE10 OAT.
HDC Cost:	£22,000

Project Summary:

The challenge: Growers of protected herbs are experiencing problems in controlling hawthorn-parsley aphid and mint aphid within IPM programmes. These aphids do not seem to be controlled by the parasitoid species available until now (*Aphidius colemani*, *Aphidius ervi* and *Aphelinus abdominalis*) and commercial experience indicates that they 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. This project will determine whether any of the parasitoid species in the new commercial mix has potential for control of 'problem' aphid species on herbs.

Aims & Objectives:

(i) Project aim(s):

To improve biological control of two 'problem' aphid species on protected herbs that are currently difficult to control within IPM.

(ii) Project objective(s):

1. In laboratory studies, determine the parasitism and host-killing of hawthorn-parsley aphid and mint aphid by six commercially available aphid parasitoid species.

2. In small-scale research glasshouse experiments, evaluate the control of hawthorn-parsley aphid and mint aphid by selected individual or mixed parasitoid species.

3. In an experiment on a commercial herb nursery, evaluate the control of hawthorn-parsley aphid on parsley by selected individual or mixed parasitoid species.

4. Communicate the results to the industry.

Interdependence of Objectives

The Objectives and work plan have been planned logically. Promising parasitoid species from laboratory studies in Objective 1 will be tested individually or in mixes on a whole plant scale in Objective 2. Any promising species or species mixes identified in Objective 2 will then be tested on a commercial nursery in Objective 3. Thus, the work in Objective 3 is dependent on the results of Objective 2, and the work in Objective 2 is dependent on the results of Objective 1.

The work in Objective 1 is designed as an initial screening study to identify promising parasitoids and eliminate ineffective ones. This will reduce unnecessary time spent in conducting glasshouse experiments with ineffective parasitoids in Objective 2 and the method used will also enable direct observation of any host-killing activity by the parasitoids.

The results of Objective 2 will guide the species to test in Objective 3. The work in Objective 3 will not be done if no effective species are identified in Objective 2.

Risks of Objectives not being met

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

There is a risk of the target aphid species not being available for timely completion of the Objectives. 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 in Objective 3.

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.

There is a risk that none of the parasitoid species will prove effective against the target aphid species. This risk will be identified in laboratory work in Objective 1 and will be validated in research glasshouse work in Objective 2.

There is a risk of financial loss to the grower if the selected parasitoid species tested in Objective 3 are not fully effective. This risk will be minimised by including only promising parasitoid species (identified in Objective 2) in the experiment on the commercial nursery.

Further information

Email the HDC office (hdc@hdc.ahdb.org.uk), quoting your HDC number, alternatively contact the HDC at the address below:

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