



Agriculture & Horticulture
DEVELOPMENT BOARD



Grower Summary

TF 219

Control of spider mite
(*Tetranychus urticae*) on
protected cherry using the
predatory mite *Amblyseius*
andersoni

Annual 2015

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Further information

If you would like a copy of this report, please 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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Project Number:	TF 219
Project Title:	Control of spider mite (<i>Tetranychus urticae</i>) on protected cherry using the predatory mite <i>Amblyseius andersoni</i>
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Project Cost:	£28,414

GROWER SUMMARY

Headline

- *Amblyseius andersoni* introductions made at a rate of one Gemini sachet per five cherry trees could aid control of pest mites.

Background and expected deliverables

Growing cherries under protection brings benefits of consistency of supply by reducing splitting from frost and rain. However, the increased temperature and humidity under tunnels also causes problems including attacks from pests and diseases which thrive in these conditions.

Pest mites on cherry include two-spotted spider mite (TSSM, *Tetranychus urticae*) and the European red mite (*Panonychus ulmi*). Due to the warmer conditions in protected cherry there has, in recent years, been a build-up in *T. urticae* close to harvest causing bronzing of the leaves and webbing, making harvest difficult or impractical. This was particularly problematic in 2013 when warmer, drier weather conditions promoted the population growth of *T. urticae* on cherry trees in tunnels. There was concern by agronomists that this may affect the subsequent years' bud growth.

Approved pesticides on cherry for spider mite control are either damaging to natural enemies, have short persistence or have harvest intervals which are too long.

Many species of predatory mites occur naturally and/or are available commercially. Naturally occurring predators offer some control of spider mites, but there is often a lag between the population build-up of the pest and the predator, resulting in spider mites overwhelming the trees before the predator can gain control.

Amblyseius andersoni is a generalist predator and will feed on many mite species including *P. ulmi*. Commercial trials have shown promising results using *A. andersoni* Gemini sachets to control spider mites in outdoor apple trees.

The aims of the research in the first year of this project were to evaluate the effectiveness of two release densities of *A. andersoni* in Gemini sachets in cherry orchards to control spider mites in protected cherry and to test the efficacy of laboratory mite extraction and counting methods on cherry leaves.

Summary of the project and main conclusions

Two orchards with a history of *T. urticae* infestation in 2013 were selected for a field trial to test high density (one Gemini sachet per tree) and low density (one Gemini sachet per five trees) releases of *A. andersoni* for spider mite control. The trial was a randomised replicated block, with six replicates in each of the two orchards. Gemini sachets were stapled into the canopy of the trees on 16 April. Assessments included a pre-assessment to measure background levels of predatory and phytophagous mites, a near harvest assessment (2 June) and a spring assessment (the latter to be conducted in spring 2015). Leaves were collected and then mites extracted using an ethanol extraction method, shown to be the most effective (see report for comparisons).

At the pre-assessment (before the introductions of *A. andersoni* were made), the numbers of mites on cherry leaves did not significantly differ between treatments or orchards. This included numbers of *A. andersoni*, *Euseius finlandicus*, (predatory mites), predatory mite eggs, *T. urticae*, *P. ulmi* or other, probably saprophytic, mites.

At harvest there were significantly more *A. andersoni* on leaves in the cherry trees where Gemini sachets had been deployed compared to the untreated, control trees. The numbers of pest mites in the different treatments were not significantly different between treatments and, unlike 2013, the pest mites did not increase to damaging levels in 2014 in either orchard. This may have been because there were background levels of *A. andersoni* already present. There was no difference in the numbers of *A. andersoni* in the high or low density Gemini sachet release plots suggesting that, in this one year trial, there is no added advantage to deploying a Gemini sachet in every tree.

Financial benefits

The economic damage caused by *T. urticae* feeding on cherry has not been estimated, but it led to economic losses in 2013 when some fruit was discarded. Supermarkets demand consistency of supply from year to year and many, e.g. Sainsbury's, are aiming to sell

double the volume of UK fruit by 2020. Reliable control of *T. urticae* from early in the season would help to reduce the risk of damaged fruit nearer to harvest.

Action points for growers

- Releases of *A. andersoni* in Gemini sachets can be made at one sachet per five trees to supplement natural predatory mites for spider mite control in cherry orchards.
- Growers should avoid the use of plant protection products where possible to preserve predatory mites in trees.
- Consideration of sprays applied for spotted wing drosophila (SWD) management are likely to interfere with spider mite control, so supplementing with early, but well-timed predatory mite releases may be necessary to control pest mites before SWD becomes a problem.