

Project title: **New approaches to aphid control in strawberries combining botanicals and natural enemies.**

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The results and conclusions in this report are based on an investigation conducted over a one-year period. The conditions under which the experiments were carried out and the results have been reported in detail and with accuracy. However, because of the biological nature of the work it must be borne in mind that different circumstances and conditions could produce different results. Therefore, care must be taken with interpretation of the results, especially if they are used as the basis for commercial product recommendations.

AUTHENTICATION

We declare that this work was done under our supervision according to the procedures described herein and that the report represents a true and accurate record of the results obtained.

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GROWER SUMMARY

Headline

Initial laboratory bioassays indicate that botanical biopesticides may be effective against the potato aphid (*Macrosiphum euphorbiae*) on strawberry.

Background

The strawberry plant is a host for 30 aphid species, some of which are economically important pests. Whilst control of these aphid pests has historically relied upon conventional synthetic insecticides, this situation is changing. Reasons for this change include widespread insecticide resistance, approvals for conventional synthetic insecticides being withdrawn, concerns about the impact of synthetic pesticides on the environment and human health and difficulties in integrating many synthetic insecticides with biological control programmes. These reasons together with pressure from consumers and retailers to reduce the use of synthetic pesticides are leading growers to consider alternative control options.

Previous research has highlighted the efficacy of biopesticides against aphid pests. It has been suggested that biopesticides, including those based on plant extracts, may complement or even replace conventional synthetic pesticides because of their specificity and the reduced risk of resistance developing in target pests. The role of parasitoid wasps and other natural enemies in controlling aphid pest populations has also been well established, however, there is a lack of published research exploring the compatibility between botanical biopesticides and aphid natural enemies within an integrated pest management programme.

Summary

Mortality bioassays were performed on potato aphid (*Macrosiphum euphorbiae*) populations on strawberry leaves using a selection of biopesticides. These products were FLIPPER (Bayer Crop Science, UK) (active ingredients: fatty acids C7–C20) and two physically acting biopesticides coded AHDB9811 and AHDB9810. Additionally, a widely used conventional synthetic pesticide, Batavia (Bayer Crop Science, UK) (active ingredient: spirotetramat), was included for comparison. The products were applied to potato aphid-infested strawberry leaves at the highest application rate recommended by the manufacturers and their efficacy was compared with two controls: leaves that were treated with water and leaves that were untreated.

All of the products had the effect of increasing aphid mortality when compared to the negative controls. This suggests that it may be possible to use botanical biopesticides in place of conventional synthetic pesticides in order to control aphid populations in strawberry crops.

Financial Benefits

According to figures from DEFRA (2020), in 2019 the UK strawberry industry was worth £347.8 million domestically, with exports amounting to a further £4 million. Improved control of strawberry pests, including aphids, provided by a wider range of control products will lead to a reduction in crop damage.

Action Points

There are no grower action points at this stage.