Grower Summary

SF 012 (GSK206)

Blackcurrants: Evaluation of chemicals to control Sawfly

Final 2006

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Further information

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Project Number:	SF 012 (GSK206)
Project Title:	Blackcurrants: Evaluation of chemicals to control Sawfly
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Report:	Final report, 2006
Publication Date:	28 November 2014

GROWER SUMMARY

Headline

- Lorsban, Tracer and Calypso provided almost complete control of blackcurrant sawfly in this insecticide evaluation trial in commercial blackcurrants.

Background and expected deliverables

Blackcurrant sawfly, *Nematus olfaciens* Benson, is a widespread and common pest of blackcurrant in the UK.

There are at least two generations per annum in the UK. First generation adults appear in late April and May and lay eggs on blackcurrant leaves, mainly on the undersides and frequently in the lower parts of the bushes. Larvae feed in May and June, passing through four (males) or five (females) instar stages. The active pre-pupal stage then deserts the bush and spins a cocoon in the soil in order to pupate. The next generation of adults emerges from late June onwards and the second brood of larvae feeds in July and August. Occasionally there may be a third generation. Pre-pupae of the final brood overwinter in their cocoons, pupating in the spring.

Blackcurrant sawfly has increased in abundance in commercial blackcurrant plantations in some areas of the UK, presumably due to changes in patterns of insecticide use, in particular a reduction in the use of broad-spectrum insecticides after flowering when the pest is active. Alternative, more selective and environmentally safe chemical treatments need to be identified to control the pest.

The experiment reported here was done to evaluate the efficacy of single foliar sprays of eight insecticides for control of blackcurrant sawfly.

Summary of the project and main conclusions

The experiment was done in a heavily infested blackcurrant plantation (cv. Ben Avon) at Hamrow Farm, Whissonsett, Norfolk (by kind agreement of Mr Neville Stangroom). It was located at NGR TG 921 254. It consisted of 46 rows of Ben Hope and 47 rows of Ben Avon. The rows were >300 m long. Five adjacent half rows of Ben Avon were left unsprayed with insecticide by the grower for the trial (southern half of rows 12-16, counting from western edge). The row spacing was 3.0 m. The plantation was planted in early spring 2004.

Treatments were single foliar sprays of eight insecticidal products applied on 9 June 2006 (summarised in the treatment table below).

Treatments

	Active substance and formulation	Product	Product dose (/ha)
	Bacillus thuringiensis 32000 IU/mg WG	Dipel DF	1.0 kg
	chlorpyrifos 75% w/w WG	Lorsban WG	1.0 kg
	methoxyfenozide 240 g/l SC	Runner	600 ml
	fenoxycarb 25% w/w WG	Insegar	600 g
	spinosad 480 g/l SC	Tracer	200 ml
	lambda cyhalothrin 100 g/l CS	Hallmark with Zeon Technology	75 ml
	diflubenzuron 480 g/l SC	Dimilin Flo‡	75 ml‡
	thiacloprid 480 g/l SC	Calypso	375 ml
	untreated		
	untreated		

‡ The recommended rate for Dimilin Flo on blackcurrants is 300 ml in 2000 l water /ha. As only 500 l water was applied, the dose applied was 75 ml.

Of these substances tested, chlorpyrifos, spinosad and diflubenzuron are approved on outdoor and protected blackcurrants, Bacillus thuringiensis, lambda-cyhalothrin and thiacloprid are approved on only outdoor blackcurrants, methoxyfenozide is approved on only blackcurrants in propagation and fenoxycarb is not approved on blackcurrants at all. It should be noted that although chlorpyrifos is approved on blackcurrants, the product used in this trial (Lorsban) was not approved at the time of writing this report.

Sprays were applied with a Birchmeier motorised air-assisted knapsack sprayer in a spray volume of 500 l/ha. A randomised complete block experiment design with five replicates was used. Plots consisted of a 6.5m length of row. Plots were end to end in two rows, with an unsprayed guard row on each side and in between.

Assessments were made in the field three days and seven days after treatment. On each of 10 bushes in the centre of each plot, a random sample of 10 leaves was taken from the lower part (<0.5 m) of the bush where the larval infestation was concentrated. On two of the 10 leaves, the numbers of viable eggs and the numbers of small (<7mm), medium sized (7-12 mm body length) and large (>12 mm body length) larvae were counted on each leaf. The percentage of the leaf area removed by sawfly caterpillar feeding was estimated on each of these two leaves.

None of the treatments reduced egg numbers significantly compared to the untreated control. The Lorsban (chlorpyrifos) and Tracer treatments eliminated or virtually eliminated all larvae (> 99.7% control) and the Calypso treatment was also highly effective (97% control). Hallmark and Dimilin Flo gave partial (~70%) control but Insegar, Runner and Dipel were completely ineffective. The same treatment effects were apparent at the second assessment 7 DAT.

It should be noted that a considerable degree of leaf feeding damage had already occurred before the trial began. The degree of larval feeding damage reflected the degree of efficacy of the treatments at both assessments. Ineffective treatments had a similar % leaf area eaten to the untreated control (see Science Section). Feeding damage was significantly reduced by the Lorsban (chlorpyrifos), Tracer and Calypso treatments. Hallmark and Dimilin Flo gave intermediate results.

Main conclusions

- Lorsban (chlorpyrifos) gave complete control of blackcurrant sawfly larvae and Tracer and Calypso nearly complete control, by 3 days after treatment. Control endured, neonate larvae dying as they emerged from eggs, until at least 7 days after treatment, when the trial was terminated.
- Hallmark and Dimilin Flo gave approximately 70% control of larvae.
- Dipel, Insegar and Runner were completely ineffective.

Financial benefits

Blackcurrant sawfly is a major pest of blackcurrants and can only currently be controlled using conventional insecticides. If present in significant numbers within the crop, bushes can be very quickly defoliated leading to a reduction in growth, yield and quality. Rapid and effective control of the pest will not only reduce yield losses in the year of damage, but will also improve bush growth and yields produced in subsequent seasons.

Action points for growers

- Growers should monitor carefully for the presence of blackcurrant sawfly eggs and larvae on the undersides of leaves within blackcurrant plantations.

- Monitoring should be done in April/May and again in July/August.

- When the pest is found, application of a control substance should be made without delay, targeting the undersides of the leaves.

- Chlorpyrifos products, spinosad (Tracer) and thiacloprid (Calypso) offer good control, if applied to the undersides of the leaves.