Grower Summary

SF 012 (GSK218)

Blackcurrant: Comparison of spray strategies for control of leaf spot (*Drepanopezizza ribis*)

Final 2008

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Further information

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GROWER SUMMARY

Headline

In a replicated large plot field trial, the lowest incidence of leaf spot was recorded in plots treated at early grape stage (April) and post-harvest with chlorothalonil and in early July with Systhane.

Background and expected deliverables

Drepanopezizza ribis causes leaf spot disease of blackcurrant. The disease can rapidly build up under favourable wet conditions and, if not controlled, severe epidemics can result in premature leaf-fall, leading to reduction in yield and quality. This disease is currently managed by frequent fungicide applications which, if applied near harvest, can result in fungicide residues in the fruit.

In 2005 a Defra funded project (HH3233SSF) was initiated to re-examine the epidemiology of leaf spot with the main objective of minimising pesticide residues in the fruit. Research was undertaken to investigate infection of leaves in relation to environmental conditions and leaf age on cvs. Baldwin and Ben Hope in controlled inoculation studies. All leaves on selected shoots were inoculated and then incubated under different initial conditions: 10, 17.5 and 25°C each with five wet periods (4, 8, 12, 24 and 30 h). Number of infected leaves was determined. The two cultivars differed significantly in the susceptibility to infection by *D. ribis* – cv. Baldwin was much more susceptible than cv. Ben Hope. Older leaves were more susceptible to infection with conidia (asexual spores) than younger leaves. Increasing length of wetness duration led to increasing incidence of leaves infected. The effects of temperature were inconclusive and generally very small in comparison with other factors.

Monitoring of field epidemics over three years (2005-07) confirmed the main findings from controlled inoculation studies: severe disease was associated with extreme wet conditions and older leaves. The field data also suggested that significant disease increase only occurred from July onwards.

This means that strict control of infection on rosette leaves may not be essential because much of the epidemic and leaf fall associated with leaf spot was mainly observed on extension shoots. This is particularly true if crop husbandry measures have been applied during winter to reduce overwintering inoculum and hence minimise the ascospore risk. However, rosette leaves (strig leaves) may be important in supplying nutrients to the fruit so as insurance, one spray against infection on rosette leaves may be used if the disease the previous season was very severe and extreme wet weather was forecast or experienced or if

there is excessive leaf litter in the plantation and therefore a possibility of ascospore infection. Recent trials by ADAS showed that fungicides applied in early spring gave almost complete control of leaf spot (GSK Project 159). From late June onwards (the main epidemic period on shoots), application of fungicides to control leaf spot must be timed to coincide with weather patterns.

Previous studies in the 1950s indicated that ascospores released from apothecia (sexual fruiting bodies) on overwintering leaves on the plantation floor could infect both young and old leaves and were responsible for initiating the spring epidemic. Over the three years of the project no leaf spot ascospores were seen on spore traps established in the plots in spring for monitoring, no apothecia have developed on overwintered leaves and first leaf spot infected leaves often do not appear until May. Therefore, it seems likely that most of the observed leaf spot infection in the field plot at EMR resulted from conidia rather than ascospores and this probably accounts for the lack of early spring infection and the clear association with old leaves. Also overwintering of leaf spot as lesions on twigs and fruit strigs may be more important than previously thought.

The strategies to be tested are therefore:

- Application of fungicides in early March during the late dormant stage to control early infection
- Application of fungicides to control leaf spot from April onwards to protect shoot growth and managed according to rain forecasts

The objective of this work was therefore to evaluate the timing of the early spray programme based on these strategies for efficacy in leaf spot control.

Summary of project and main conclusions

In a replicated large plot trial in an established blackcurrant plantation the efficacy of a spray programme, based on (chlorothalonil) applied pre-bud burst and post-harvest and Systhane (myclobutanil) applied in early July (in relation to forecast weather) was compared to similar programmes, one without a spray in July and one with a similar programme but with the first spray delayed until early grape stage. All treatments were compared to an untreated control and applied to three different blackcurrant cultivars – Baldwin, Ben Lomond and Ben Hope.

2008 was a wet year with significant rain falling in most months from March to September. Despite the favourable wet weather in March and April the first leaf spot lesions were not recorded until 6 May, when spots were noted at a very low incidence on mature strig leaves on Baldwin. A low incidence of spots was noted on the older leaves on shoots of cv. Baldwin in mid June, but significant numbers of infected shoot leaves were not noted until mid June, possibly resulting from the wet weather at the end of May. Thereafter, leaf spot incidence steadily increased on untreated plots of all cultivars until the last assessments in late September, when most bushes in untreated plots were defoliated.

In all cultivars, the lowest incidence of leaf spot was recorded on plots receiving programme 3 (First spray at early grape – Table 1). Subsequent development of leaf spot was rapid, so that by the second and third assessments in August and September, most leaves on the shoots were infected in all cultivars and there was little difference in disease incidence between cultivars and treatment programmes applied. However, in all cultivars at all assessments, the lowest leaf spot incidence was always recorded in plots receiving programme 3 (Table 1).

Main conclusions

- The lowest incidence of leaf spot was recorded in plots treated with programme 3, where fungicides were applied at early grape stage in early April, in July and post-harvest.

- Application of fungicides in March prior to bud burst did not reduce leaf spot incidence compared to untreated plots in Ben Hope and Ben Lomond, which were dormant at the time of treatment.

Table 1. Spray programmes evaluated in 2008

Timing	Programme 1	Programme 2	Programme 3	Programme 4
Pre bud burst / late dormant (March)	Land Gold chlorothalonil 50	Land Gold chlorothalonil 50	-	-
Early grape (April)	-	-	Land Gold chlorothalonil 50	-
Early July	-	Systhane	Systhane	-
Harvest (July)	-	-	-	-
Immediately post harvest	Land Gold chlorothalonil 50 + Systhane	Land Gold chlorothalonil 50	Land Gold chlorothalonil 50	-

Financial benefits of the project

Blackcurrant leaf spot can rapidly build up under favourable wet conditions and, if not controlled, severe epidemics can result in premature leaf-fall, leading to reduction in yield and quality. This disease is currently managed by frequent fungicide applications which are costly and, if applied near harvest, can result in fungicide residues in the fruit.

- This project has evaluated the optimum timing of sprays in spring for the control of leaf spot.
- Better timing of sprays at this time can result in better disease control and less fungicide use.

Action points for growers

- The work is at an early stage and it is difficult to give practical advice to growers on spray timing for leaf spot control based on one year's work.