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DEVELOPMENT BOARD



Grower Summary

SF 012 (GSK195)

Blackcurrants: Evaluation of
fungicides for the control of
Botrytis

Final 2004

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GROWER SUMMARY

Headline

- Three-spray programmes of the two newer fungicides, Signum and Frupica, gave better control of *Botrytis* than the standard Elvaron Multi.

Commercial benefits of the project

This project provides information on fungicides for the control of *Botrytis* in blackcurrants to enable growers to reduce flower 'run-off' and improve crop yields.

The recently introduced fungicide Signum (boscalid + pyraclostrobin) has been shown to have excellent potential for use in blackcurrants for the control of *Botrytis cinerea*, giving significantly better control than the industry standard, Elvaron Multi (tolylfluanid). It also has broad-ranging activity against blackcurrant leaf spot and American gooseberry mildew. For use on blackcurrants, a full label recommendation or SOLA will be required.

Results show that the standard Elvaron Multi programme could be improved for both *Botrytis* and leaf spot control by the use of Strobry WG (kresoxim-methyl) at the end of flowering.

The use of Bravo 500 (chlorothalonil) was found to give a very positive yield response, although the results on *Botrytis* control were less clear cut.

Objectives and background

Botrytis is an important disease of blackcurrants causing flower 'run-off' and fruit contamination pre-and post-harvest. Yield losses can range from 15 to 50% and are often underestimated by growers in situations where there is no obvious disease sporulation. The last *Botrytis* control experiment on blackcurrants was carried out four years ago. Since that time, newer fungicides have become available with potential for *Botrytis* control. It is essential to have a range of fungicides available for *Botrytis* control, with different modes of action, as an anti-resistance strategy.

The objectives of this project were to:

1. Provide information on the effectiveness and yield response from two new fungicides applied for *Botrytis* control compared with industry standards.
2. To investigate the optimum timing for a strobilurin fungicide when used in a *Botrytis* control programme.
3. Assess the level of incidental leaf spot and powdery mildew control achieved from the use of these fungicides when applied in a *Botrytis* control programme during flowering.
4. Assess the relative benefit from using a fungicide claimed to have rapid translaminar action (Scala) as the initial spray compared with a standard protectant programme.

Summary of results

Most of the fungicide programmes reduced *Botrytis* levels on flowers and strigs compared with those in the unsprayed plots. Three-spray programmes of the two newer fungicides, Signum and Frupica, gave better control of *Botrytis* than the standard Elvaron Multi.

Signum proved to be the most effective product tested, giving good (93%) control of pre-harvest *Botrytis* within the bush and the best yield response, more than doubling the yield of the untreated. Signum was the only treatment that significantly reduced post-harvest *Botrytis* fruit rots.

Frupica was slightly less effective than Signum in controlling pre-harvest *Botrytis* within the bush but the yield response was small and not significantly better than the control. Further work would be needed to confirm this result and to see if there had been some phytotoxicity resulting in reduced fruit set.

The two-spray programmes (start and end of flowering) were not adequate in controlling pre-harvest *Botrytis*, however the two-spray programme of Bravo 500 still gave a 63% yield increase over the untreated. The substitution of an initial spray of Scala for Elvaron Multi in the two spray programme slightly improved *Botrytis* control and more substantially improved the yield response (from 2% - not significant, to 46% - significant).

The use of Stroby WG instead of Elvaron Multi within the three-spray Elvaron Multi programme was beneficial for *Botrytis* control and slightly improved the yield response over Elvaron Multi alone. It was more effective when used as the third of three sprays (end of flowering), rather than as a mid-flowering spray.

Although the treatment programmes were not timed to give a full season's control of powdery mildew or leaf spot, Signum and Frupica, with a final spray of three applied on the 10th May both gave good control of leaf spot until July. The standard Bravo 500 treatment also gave good control over the same period, despite only two sprays being applied. The Elvaron Multi programmes gave a reduced but still significant level of leaf spot control; inclusion of Stroby WG at the fruit set stage further improved control.

Powdery mildew infection started rather too late for the treatments applied over flowering to be fully effective. Results indicate that Signum was the most effective treatment, followed by Frupica.

The full results are listed in Table 1.

Table 1: Summary of results

	Yield (t/ha)	Botrytis (infections/shoot m)	Leaf Spot (%)
		10/06/04	09/07/04
1,2: Untreated Controls	1.60	54.7	37.0
3: Elvaron Multi x 3	2.54	38.5	26.5
4: Frupica x 3	1.81	17.6	3.5
5: Signum x 3	3.51	5.1	1.8
6: Elvaron Multi, Elvaron Multi, Stroby WG	2.61	29.2	16.5
7: Elvaron Multi, Stroby WG, Elvaron Multi	2.35	40.2	24.0
8: Bravo 500, nil, Bravo 500	2.60	48.9	1.2
9: Elvaron Multi, nil, Elvaron Multi	1.63	33.4	22.5
10: Scala, nil, Elvaron Multi	2.33	32.0	25.1
F pr	<0.001	<0.001	0.003
%CV	21.1	36.6	28.5
s.e.d. (df=28)(comparing 3-10)	0.338	9.16	3.94
s.e.d. (df=28)(comparing 1,2 with 3-10)	0.292	7.93	3.41
LSD at 5% (comparing 3-10)	0.837	18.76	8.06
LSD at 5% (comparing 1,2 with 3-10)	0.599	16.24	6.99

Results that differ by less than the LSD (least significant difference) are not significantly different at the 5% probability level.

Action points for growers

- Fungicide products currently permitted for *Botrytis* control on blackcurrant are Bravo 500 (and other formulations of chlorothalonil), Teldor, Talat, Scala and Elvaron Multi.
- Signum shows great potential as a multi-purpose fungicide for use in blackcurrants, and should be used as part of a programme when available through SOLA or label recommendation.
- When using Strobry WG for powdery mildew control, some incidental *Botrytis* control can be achieved. The best timing for the first spray is end of flowering rather than mid-flowering.
- Bravo 500 remains an extremely cost-effective treatment when used during flowering for yield response and leaf spot control. However, it did not give a significant reduction in *Botrytis* levels within the bush.
- There are some indications that Scala gives an enhanced yield response compared with Elvaron Multi, when used as the first flower spray.
- Although Frupica gives excellent control of the leaf spot and good control of botrytis, the failure to increase yield suggests it may be phytotoxic.

Practical and anticipated financial benefits

The use of Signum fungicide as part of spray programme has the potential benefit of improving disease control and increasing yield providing a SOLA or label recommendation can be obtained for its use. The use of Strobry WG at the end of flowering is shown to be the best timing for disease control and yield response. The benefit of using Bravo 500 as a fungicide over flowering is confirmed.