

# Review of Botrytis management practices in the Hawke's Bay region 2004/05 season

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## Background

*Botrytis cinerea* is present in all vineyards at a variable loading, but only results in damaging bunch rot epidemics when physiological and environmental factors are pathogen-optimal. Weather conditions in Hawke's Bay during the 2004/05 season provided ideal conditions for bunch rot epidemics with up to seven severe Botrytis infection periods in the last two weeks of March.

At vintage 2005 the level of Botrytis bunch rot varied between Hawke's Bay vineyards, suggesting that some management practices might provide better protection against Botrytis under high disease pressure situations than others. Therefore the Hawke' Bay Focus Vineyard Project commissioned a study to examine a range of production practices to try and identify factors that appeared to help limit the development of Botrytis in Hawke's Bay vineyards in the 2004/05 season and to subsequently provide some grower best practice guidelines.

## Grower survey

A grower survey was developed and circulated to Hawke's Bay growers to collect information on blocks that performed well and blocks that performed badly. The survey only focused on Chardonnay as this variety showed the most variability in Botrytis levels during the 2004/05 season. Surveys were collected from 26 different vineyards representing 44 blocks.

## Analysis of grower surveys and interviews with selected vineyards

Survey results were entered into a database and examined in relation to the perceived Botrytis control (as scored by the growers). Of the 44 blocks, 3 had poor Botrytis control, 9 moderate control, 10 good control, 15 very good control and 7 excellent control. Key survey participants were interviewed to obtain information not captured in the survey forms.

***Vineyard location and vintage dates:*** Vineyard location was not identified as a key factor influencing Botrytis control, although levels of Botrytis were lower in the Gimblett-Roy's Hill area. Early harvest blocks (15-19 March), which were picked before the bulk of the rain (14-31 March), had better Botrytis control and these tended to be in the Gimblett-Roy's Hill area. Also the Bay View area that received 150mm rain compared to 90mm elsewhere tended to have higher levels of Botrytis.

***Clone and rootstock:*** Neither clone nor rootstock was identified as being important factors in Botrytis control. However, there was an indication that B95 presented the grower with the greatest challenge, which is consistent with other studies.

***Canopy management – canopy density and bird netting*** Bird netting was used on all but two blocks of the blocks studied, so a valid assessment of the effect of netting was not possible. There was comment by some surveyed that a few blocks were still using "over the row" nets and that these were associated with increased Botrytis. Open canopies were associated with better Botrytis control, and wider row spacings were also seen to be beneficial. One block with very poor Botrytis control was reported to have substandard leaf removal.

***Calcium and use of tonic-like products:*** The use of these products, as listed on the returned survey forms, was minor (20% applied calcium and only 7% applied tonic-like products) hence the sample size (resulting from few growers using these products) was too low to allow an accurate indication.

***Botryticide usage, powdery mildew and leaf roller control:*** Surprisingly, there was a negative relationship between fungicide usage and Botrytis control, with those showing poor control using on average one more botryticide per block than those with very good to excellent control (Table 1). The higher usage may simply have arisen because Botrytis was already problematic, and growers were applying further sprays to get it under control; we did note that those blocks with poor control had much higher Rovral® usage. No relationship between the level of powdery mildew or leafroller control

and Botrytis levels at vintage was found, suggesting that powdery mildew and leafroller were not contributing to Botrytis.

Table 1. Summary of Botryticide Usage

Botrytis Control	Botryticides per block	Percentages of growers used the following Botryticides							
		Shirlan <sup>®</sup>	Euparen <sup>®</sup> Muli	Switch <sup>®</sup>	captan	Bravo <sup>®</sup>	Teldor <sup>®</sup>	Scala <sup>®</sup>	Rovral <sup>®</sup>
Poor-moderate control	4.2	50	42	100	0	50	75	33	67
V. good-excellent control	3.2	18	50	82	32	0	68	64	9

**Block-specific contributing factors:** Participant interviews identified block-specific reasons for the level of Botrytis control achieved. For example, a block infected with Grapevine leaf roll virus had low levels of rot because of virus-induced delayed fruit maturity. A block of clone UCD15 had very poor fruit set and the resultant “chicken” berries were highly susceptible when the mid-late March rains arrived, leading to poor Botrytis control. Another vineyard block (4 cane) had higher yields and lower maturity (8 April vintage) than the adjacent 2-cane pruned block (28 March vintage), and consequently the 4-cane block was less susceptible to *Botrytis cinerea*.

### Analysis of sprays diaries

Spray diaries were collected for each of the blocks surveyed and entered into a database for analysis.

**Spray application intervals:** Spray application intervals did not appear to be a factor in Botrytis control, with poor performing blocks having shorter spray intervals than good performing blocks due to their higher use of botryticides.

**Water rates:** Spraying volume rates did not have a bearing on the success of Botrytis control. For example, those using 500-600 litres per hectare had poor control, and those using 200-500 litres per hectare had excellent control.

**Spray application timing:** Weather data gathered from weather stations around Hawke’s Bay showed a significant variation in the number, severity and length of Botrytis infection periods depending on location. For example, Roy’s Hill weather station had a total of 8 severe infection periods from 1 Nov to 15 April while Longlands weather station had 21. Examining the spray diaries in relation to the infection period data showed that poor performing blocks were not well timed in relation to infection periods for their locality, especially early in the season.

### Other research on Botrytis management

Research from overseas has shown that nutrition may have a role to play in Botrytis management. Our research results from other fruit crops, such as stone fruit, show that susceptibility to disease is influenced by plant nutrition, particularly the balance between nitrogen and calcium.

See the PDF ‘*Botrytis management: best practice guidelines*’ for further information on Botrytis management