

BOTRY-Zen Field Application 2004-2005

Summary:

- Under high *Botrytis* pressure conditions BOTRY-Zen performed extremely well this season compared with standard chemical programmes.
- In seventy-nine percent of the blocks where direct BOTRY-Zen comparisons were made with standard programmes, BOTRY-Zen performed as well as or better than the standard.
- Growers who used BOTRY-Zen were able to reduce their chemical inputs while overall maintaining acceptable levels of *Botrytis* control.
- Presented as a wettable granule, BOTRY-Zen (which can be stored at room temperature), proved easy to use across every element of the application process from direct tank loading to plant application.

BOTRY-Zen was sent out to growers in November / December last year. Two applications of 4kg / ha were recommended for all growers at flowering (early and late) followed by a third application approximately 2 weeks later in Auckland, Gisborne, Hawke's Bay and Nelson. Use of alternative Botryticides was recommended late season to protect the ripening berries from direct infection (because BOTRY-Zen only colonises dead/decaying material it cannot protect the berries from direct infection). The use of BOTRY-Zen early season not only replaces early season synthetic botryticides but by colonising the sites that *Botrytis* would normally inhabit, BOTRY-Zen reduces the potential for a late-season *Botrytis* outbreak, under infection conditions, from within the bunch.

In general, *Botrytis* pressure was variable throughout the regions over flowering. Gisborne / Hawke's Bay had a good, dry flowering - bunch closure but *Botrytis* pressure was very high from mid-March with up to 10 days of long rain spells. Growers who did not apply post bunch closure botryticides had *Botrytis* problems at vintage. Marlborough had a difficult growing season characterised by cool damp conditions over flowering which favoured *Botrytis* build-up early season. Later in the season the region also suffered from mid-late season rain.

The BOTRY-Zen Botrytis Monitoring Programme.

Vineyards were sampled over January – February to assess:

- How well the bunch trash (flower caps and aborted berries) trapped in the bunches, was colonised by BOTRY-Zen and;
- The potential level of *Botrytis* infection early season.

The vineyards were assessed again at vintage for *Botrytis* bunch rot. Where possible the BOTRY-Zen blocks were compared with a 'Standard' block that had received synthetic botryticides,

Harvest Assessment

The harvest assessment involves scoring 250 bunches in each treated block. We recorded the number of bunches with *Botrytis* (*Botrytis* incidence) and the proportion of the bunch infected with actively sporulating (or actively growing) *Botrytis* (*Botrytis* severity). The results for the blocks that used BOTRY-Zen this season are presented in **Table 1**.

There was no doubt that this season was very demanding on disease control products and in general BOTRY-Zen performed equally as well as the standard blocks which received full season botryticides.

Of the 34 blocks listed, BOTRY-Zen performed "as well as or better than" the standard in 15. In 12 blocks (where no direct standard was comparable) BOTRY-Zen presented results within the industry 4% disease guidelines and in 2 was outside these guidelines. In only 5 blocks (shaded in grey) the standard statistically performed better than BOTRY-Zen, but this is not surprising given the comments in Table 1.

Table 1: Percent Crop Loss from *Botrytis* and Botrytis Fungicides used 2005

Block	Variety	BOTRY-Zen Crop Loss (%)	Standard Crop Loss (%)	Statistical Significance LSD (p< 0.05)	Comments
Gisborne					
A	Chardonnay	7.0	0.13	<i>ns</i>	No botryticides on BOTRY-Zen block
B	Chardonnay	6.12	0.51	<i>ns</i>	Organic block. BOTRY-Zen block more susceptible clone
C	Chardonnay	1.71	No Standard block	N/A	
D	Chardonnay	0.18	0	*	BOTRY-Zen replaced 2 Botryticide sprays
E	Chardonnay	9.66	4.91	*	
F	Chardonnay	1.81	1.42	<i>ns</i>	
Hawke's Bay					
A	Merlot	1.2	2.8	<i>ns</i>	
B	Merlot	1.5	2.6	*	
C	Traminer	Grower reported no difference between BZ and non-BOTRY-Zen blocks		N/A	
D	Merlot	0.11	No Standard block	N/A	
E	Sauvignon Blanc	3.5	No Standard block	N/A	
E	Pinot Gris	2.9	No Standard block		
F	Riesling	9.2	No Standard block	N/A	
G	Chardonnay	0.1	0.04	<i>ns</i>	
H	Chardonnay	4.4	3.6	<i>ns</i>	
I	Chardonnay	7.5	9.8	<i>ns</i>	
J	Chardonnay	1.5	No Standard block	N/A	
K	Merlot	0.3	No Standard block	N/A	
L	Merlot	<i>Grower reported low levels of Botrytis (<1%) same as Std</i>		N/A	
M	Chardonnay	<i>Manager happy with BZ performance</i>		N/A	
N	Riesling	0.2	0.5	<i>ns</i>	
Marlborough					
A	Pinot noir	0.4	No Standard block	N/A	
B	Merlot	2.4	No Standard block	N/A	
C	Sauvignon Blanc	9.3	10.2	<i>ns</i>	
D	Sauvignon Blanc	10.2	5.6	*	Botryticide applied too late
E		13.0	6.4	<i>ns</i>	
F	Riesling	11.3	15.0	<i>ns</i>	
G	Riesling	12.4	7.4	*	No botryticide post PBC
H	Riesling	10.9	No Standard block	N/A	
I	Riesling	15.7	8.0	*	No botryticide post PBC
J	Sauvignon Blanc	6.6	5.5	<i>ns</i>	
K	Sauvignon Blanc	4.4	1.0	*	No botryticides on BOTRY-Zen block
L	Chardonnay	4.4	5.6	<i>ns</i>	

N/A – a Least Significant Difference (LSD) is not available as there is no comparison block.

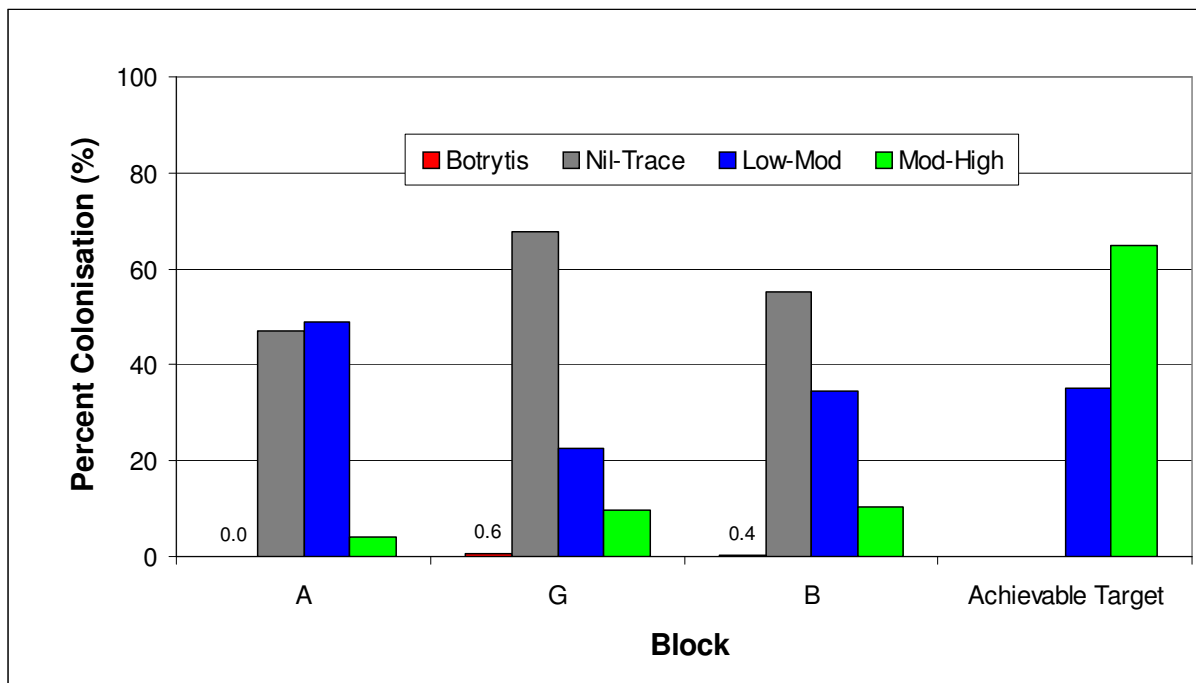
ns – the results were not significantly different * the results were significantly different

There were a number of blocks with greater than 4% crop loss particularly in Marlborough, and the standard botryticides had difficulty controlling *Botrytis* as well. This is where a look at the whole management approach is important including shoot thinning/leaf plucking, sprayer calibration and water rates and spray application timing. To get disease control the product must reach the target in time to stop an infection.

Colonisation of Bunch Trash

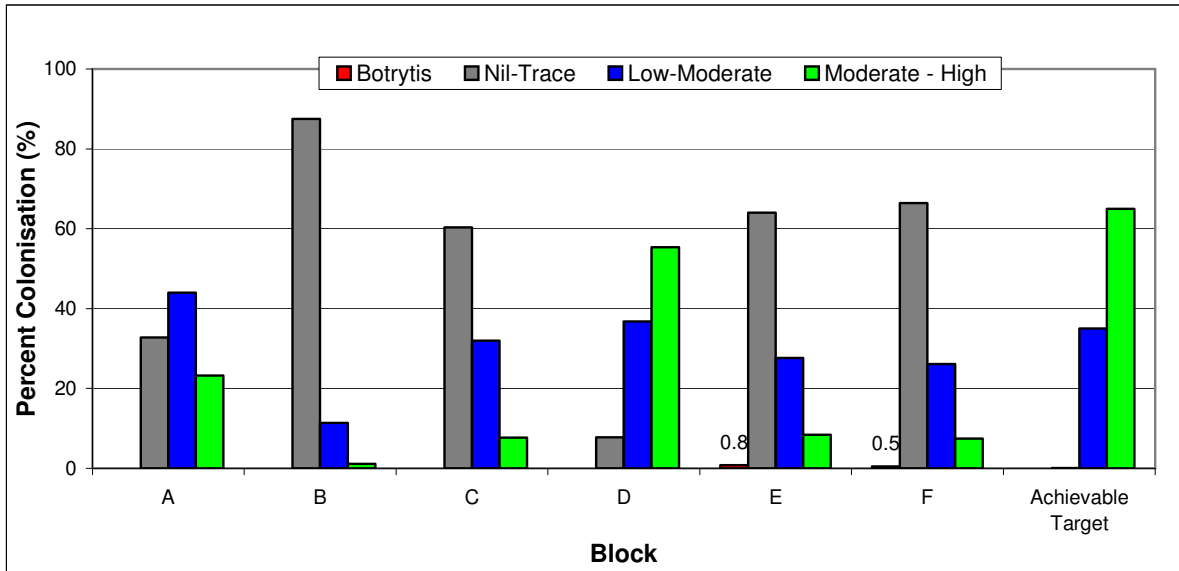
The bunch trash is removed from the grape bunches, incubated in *Botrytis* conducive conditions (6 days at 18°C and high humidity) then visually scored. A Nil-trace = virtually no BOTRY-Zen present, low-mod = 25-50% of the tissue colonised by BOTRY-Zen and Mod-High = 50%+ of the tissue is colonised by BOTRY-Zen). Potentially disease causing *Botrytis* incidence (where present) was also scored visually and in the graph appears as a number above the red bar.

Graph 1: BOTRY-Zen and *Botrytis* Colonisation of Bunch Trash, Bunch Closure Gisborne 2005



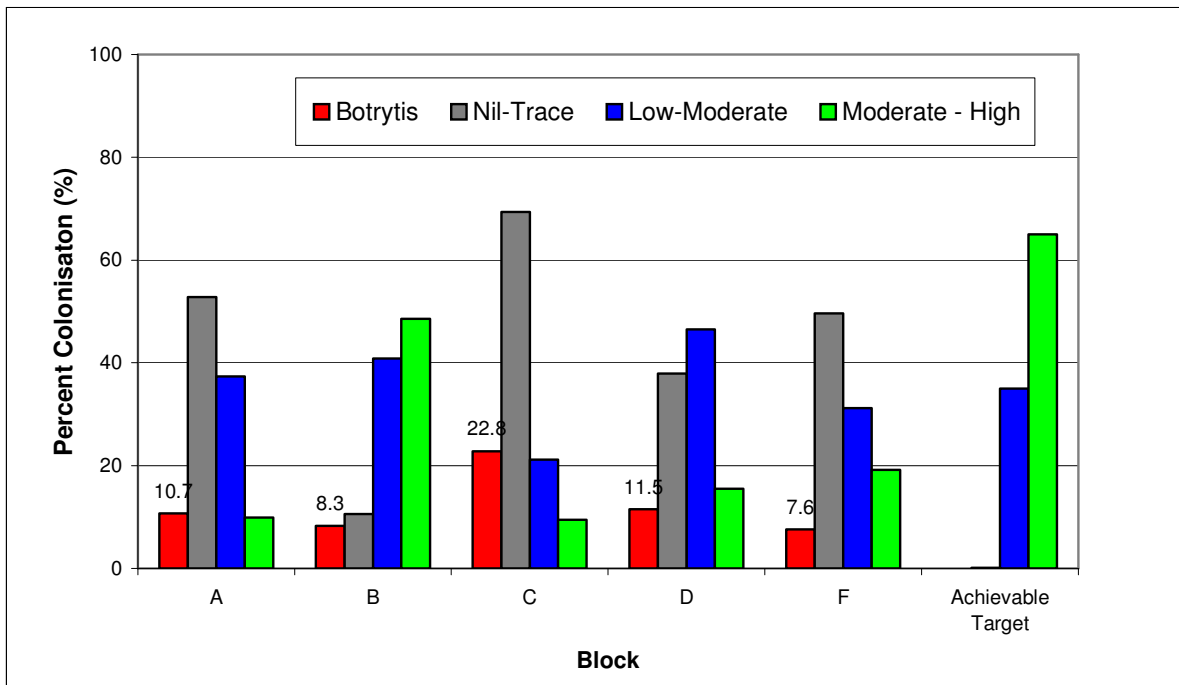
On the three BOTRY-Zen blocks sampled in Gisborne there was a high proportion of tissues that had nil or virtually no BOTRY-Zen colonisation of the bunch trash (Graph 1). There were also few sites (10% or less) that had a moderate to high colonisation. At bunch closure *Botrytis* colonisation of the bunch trash was very low.

Graph 2: BOTRY-Zen and *Botrytis* Colonisation of Bunch Trash, Bunch Closure Hawke's Bay 2005



Three vineyards had greater than 60% of the bunch trash within the bunches unprotected with BOTRY-Zen (Graph 2). Only one vineyard was able to reach the achievable target: zero% or the tissues with no BOTRY-Zen and greater than 50% of the tissues with moderate to high BOTRY-Zen colonisation (green bars). This was achieved with a well-calibrated vineyard sprayer. Similar to Gisborne and reflecting the relatively dry flowering period there were very few bunch trash tissues with *Botrytis* colonisation at bunch closure.

Graph 3: BOTRY-Zen and *Botrytis* Colonisation of Bunch Trash, Bunch Closure Marlborough 2005



Block B, similar to block D in Hawke's Bay, demonstrated that it is possible to achieve the desired target of BOTRY-Zen colonisation. While several other blocks (Blocks A and F) showed a trend in the opposite direction. The proportion of bunch trash tissues infected with *Botrytis* at bunch closure in Marlborough was much greater compared to that in Hawke's Bay and Gisborne and reflects that the environmental conditions were conducive for *Botrytis* in this region early in the growing season. With the exception of Block C, the results suggest that despite these *Botrytis* favourable conditions the BOTRY-Zen was able to keep *Botrytis* trash infections down below 10-15%. Not surprisingly the block with the least BOTRY-Zen (Block C, 70% of the bunch trash with nil BOTRY-Zen) had the highest incidence of *Botrytis*.

The data we have gathered (presented in the table and above graphs) show that there was a lot of variation between the blocks. The amount of *Botrytis* inoculum in the bunch trash at bunch closure was greatest in Marlborough, and there was very little *Botrytis* infection of the trash in the Northern regions in 2004-2005. This may have contributed to the higher crop losses seen in the Marlborough blocks compared to the Northern regions (Table 1).

The average *Botrytis* scores for the regions are shown in Table 2.

Table 2: *Botrytis* colonisation of the bunch trash at bunch closure averaged over the regions.

	Low	Mod-High
Gisborne	1.8	0.4
Hawke's Bay	3.9	0.2
Marlborough	20.3	10.9

Importantly several blocks had poor levels of BOTRY-Zen colonisation and there are a number of factors that could contribute to poor colonisation. These factors are also likely to affect the efficacy of chemical sprays.

- Not enough product added to spray tank.
- Product mixed with non-compatible chemicals.
- No adjuvant or unsuitable adjuvant for the spray volumes.
- Rain immediately after application washes product off plants.
- Water volumes too low for spray applicator resulting in patchy distribution.
- Poorly calibrated sprayers / blocked nozzles resulting in patchy distribution.
- Travelling too fast down rows.
- Poorly timed applications

Conclusion:

- **Given the *Botrytis* pressure this season the BOTRY-Zen programme has performed extremely well.**
- **Growers have been able to reduce their chemical inputs this season while maintaining an acceptable level of *Botrytis* control.**
- **Many of the vineyard managers spoken to were very pleased with the results at vintage and intend to use the product again. The significant reduction in chemical usage and comparable control in their vineyards is the key reason supporting the continuing use statements.**
- **Further analysis will be done on spray diaries, spray dates and other contributing factors to see why there was some variation in BOTRY-Zen colonisation and control.**
- **The pathway forward for wider industry use of BOTRY-Zen is clearly promising and the Company will be taking all appropriate steps to effectively and commercially present the product in coming seasons.**

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