

Efficacy of Postharvest Actigard Spray Application

In New Zealand Actigard® spray applications are not authorized during fruit growth due to the potential for residues on fruit. Applications can be made up to pre-flower (5% flowers open) and after harvest. In this trial undertaken by Zespri OPC staff in France, a single postharvest application at early leaf fall on Hayward free of symptoms reduced Psa symptoms expression in a single visual assessment in the summer of the following season when Psa symptoms first starting appearing.

Method

This trial was conducted in a “clean” (non symptomatic) Hayward block adjacent to a highly infected Hort16A block. The Hort16A block was cut back completely late winter (January February 2012) after having shown symptoms for about ten months with poor removal of infected material.

The single application of Actigard to marked vines in the trial Hayward block was made at the beginning of leaf fall, i.e. mid November 2011, after harvest. There was no Psa symptoms of any kind observed at the time of application.

Application was made via motorized knapsack at a rate of 90mg/vine. This equates to 60g/ha which would be considered a low rate in comparison to the current New Zealand label rate.

For replication reasons, treatments were applied in the Hayward block in an alternate layout as per trial map (Figure 1.) However, with this design untreated plants are surrounded with treated plants and might show fewer symptoms than what they would have shown if no plants had been treated. Conversely, treated plants are surrounded by untreated plants and might show more symptoms than what they would have shown if the whole block had been treated. The mass effect is lost even though it could be very important when fighting Psa

A single visual assessment was undertaken 203 days later, at the beginning of summer (i.e. early June 2012), after the grower had reported symptoms. The block had been sprayed during autumn, winter and spring with copper based products.

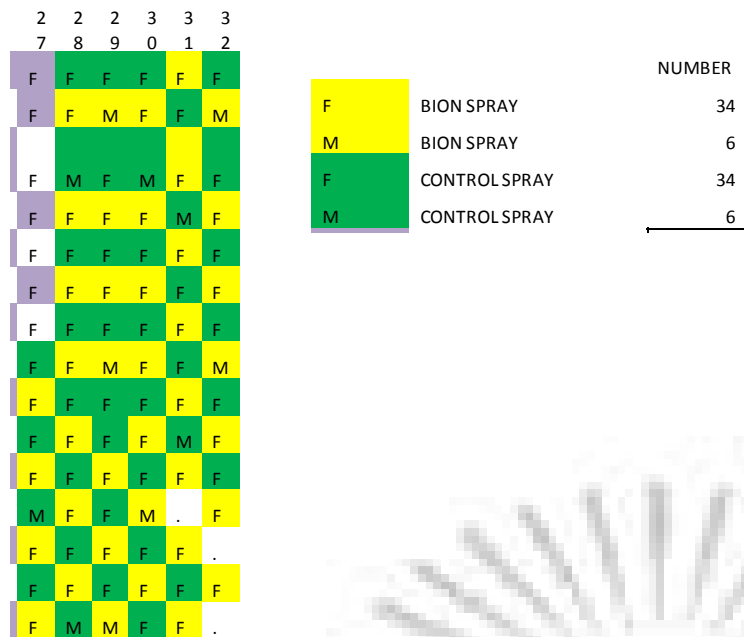


Figure 1- Map of the trial. The layout is mostly alternate.

During the season, the grower applied Nordox75WG® at 2.6kg/ha early November, Nordox75WG® at 1.6kg/ha mid January after winter pruning, Nordox75WG® at 400g/ha after budbreak, Copfort (copper gluconate) at 2L/ha in May before flowering.

The result reported here is a comparison of two programs a) A single post harvest Actigard application with copper products applied as a maintenance protectant cover and b) A copper maintenance protectant cover only.

Results

There were fewer symptoms on the Actigard sprayed vines, both males and females, 203 days after application (Figure 2). Seventy eight percent of the treated females and 68% of the Actigard treated males were still completely clean at the time of the assessment, versus respectively 50% females and 18% males in the non Actigard vines . There were no cankers and dead canes on Actigard treated plants, and symptoms were limited to spots on leaves, whereas, the disease had gone vascular in 20% of the females and 62% of the males in the non Actigard vines.

This trial also reflects the difference that was observed before with males showing more susceptibility to the disease than females.

It is considered vines have to be photosynthesizing and in a physiological active state to respond to Actigard applications. During the postharvest period prior to major leaf fall the vines should still be able to respond however may do so more slowly. During winter dormancy the vines are not expected to show to response to elicitor applications. This would suggest the response seen in early summer was because the Actigard application helped protect the vine from late autumn infection before the plant entered dormancy. Leaf scars have been shown to be a potential infection point however we don't have data on how important they are relative to other entry points.

An alternative explanation is that the Actigard application simulated a response that helped protect the plant during **winter and/or spring**.

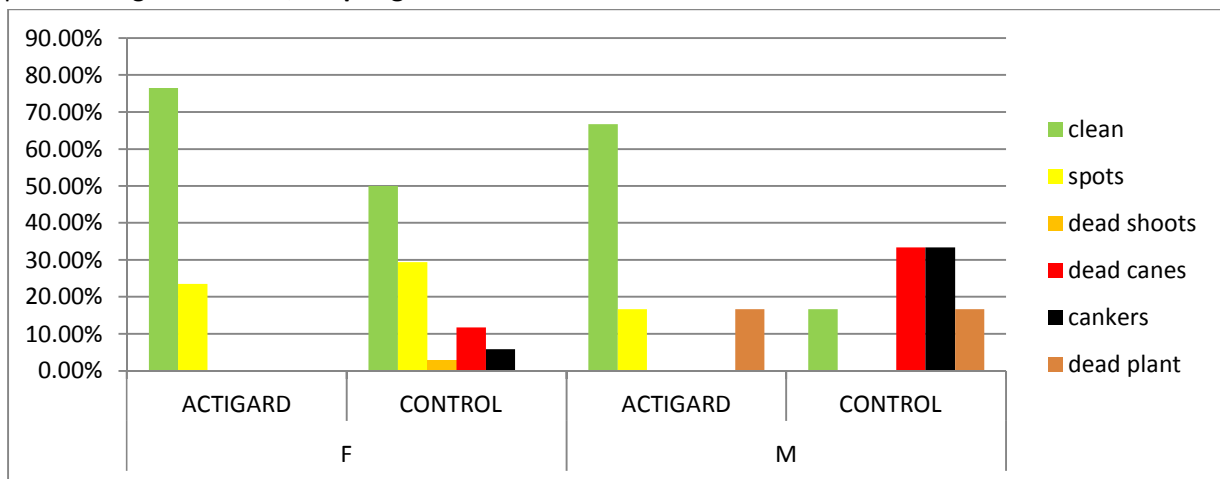


Figure 2 – symptoms repartition on female and male vines treated and untreated with Actigard spray applications. Note the Control treatments includes a base copper protective programme

From those results, there seems to be a benefit in spraying Actigard postharvest on healthy vines, even if the mode of action is not precisely understood. It did not provide full control but this may be able to be improved with multiple applications, higher rates (Not exceeding the current approved New Zealand rate of 200g/ha) and/or if used in conjunction with protectant type sprays. Trials in New Zealand Hayward have shown fewer leaf spot expressions in the level of Psa leafspots in spring when Actigard is used in conjunction with copper than either product applied alone Autumn trials in New Zealand on young Gold3 did not show any impact on the degree of secondary infection.

Acknowledgements:

Olivier Ducasse – Zespri French Grower, Florence Willaert – Zespri France.