Grape Powdery Mildew Eradication 2016

Report on Farmlands preparation of a trial site for an adjuvant trial – which also produced excellent eradication of grape powdery mildew.

Trial details in this report were reviewed and approved by Chris Herries, National Technical Manager, Farmlands Horticulture

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Table of contents

1.0 Introduction

Towards the end of 2016 season, Farmlands Horticulture[1] undertook a trial to assess the efficacy of different adjuvants with sulphur as a protectant spray against grape powdery mildew infection.

The trial site used was an abandoned vineyard of Gewurztraminer with considerable/epidemic levels of powdery mildew infection already present in both bunches and canopy.

The intention of the Farmlands trial was to eradicate the powdery mildew in bunch zone alone (leaving the canopy infection untreated) before spraying the canopy with sulphur with different adjuvants, and at different water rates, and then to compare the levels of reinfection from the canopy and adjacent rows into the bunches.

Grape powdery mildew disease is spread through airborne spores and is regarded as a disease of proximity and it seemed a good plan – but it failed because no re-infection occurred.

This report describes how the eradication of the powdery mildew infection in the bunches was undertaken and the effectiveness of that eradication. The eradication spray was two applications of HML32, Nordox[2] and Potassium Bicarbonate, which are the inputs of the grape powdery mildew eradication recipe recommended by Henry Manufacturing Limited.

This report does not report on the adjuvant trial itself.

This report has been written up by Henry Manufacturing Limited to demonstrate the effectiveness of HML32 with copper and potassium bicarbonate as an eradicant treatment for grape powdery mildew.

It has been reviewed and approved by the National Technical Manager of Farmlands Horticulture who undertook the eradication sprays and subsequent adjuvant trial.

2.0 Trial Site

The trial site is located on a mothballed block of Gewurztraminer on Omarunui Rd, Waiohiki, Hawke's Bay (see **Error! Reference source not found.**). It had received minimal viticultural attention during the growing season but had received some applications of sulphur. All vines were mature (perhaps 15 years old). They were 2 & 3 cane-pruned, VSP trellised and planted in an approximate north-south orientation.

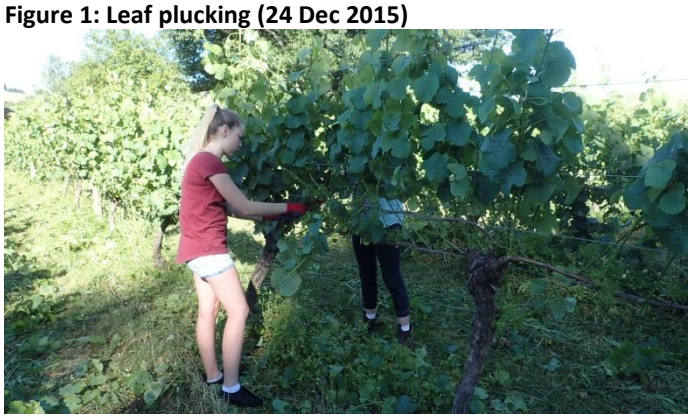
The block has a history of poor crop outcomes, mainly due to high powdery mildew infection. When this trial began all bunches were almost completely shaded by canopy and adjacent leaves.

[1] Farmlands is a major agrichemical distributor and retailer in New Zealand. Chris Herries, National Technical Manager for Farmlands undertook the trial and the preparation of the site.
[2] Nordox™ - cuprous oxide containing 75% metallic copper.

2.1. Trial Site - Viticultural Preparation

All trial plots (including untreated) were located on one row being the second row in from the edge of the block. This row was heavily leaf plucked bringing a high level of bunch exposure before application of the eradication treatments (Figure 1.)

Figure 1: Leaf plucking (24 Dec 2015)



2.2. Trial Site - Eradication Sprays

Using a motorised knapsack sprayer (Figure 2), a mixture of HML32 (1.25L/100L), Nordox (60g/100L) and potassium bicarbonate (300g/100L) was applied to the bunchline alone. The first spray was on 24 December 2016, the second spray was 5 days later on 29 December 2016.

Figure 2: Method of application to canopy of adjuvants and sulphur

The same mix was applied again (as above) to an adjacent area which also had epidemic powdery mildew infection on 17 January 2016 and again on 24 January 2016, 7 days apart. In this treatment the infection was again eradicated but some surface scarring of berries was evident. This demonstrates the different outcomes from early or later eradication applications.

3.0 Eradication Results

Because the original purpose of the trial was not eradication of the powdery mildew infection, no formal assessment was undertaken in respect of that. The adjuvant trial itself failed to deliver a result because NO re-infection of the bunches occurred, regardless of water rate or adjuvant – which was unexpected given the epidemic infection in the canopy directly above the bunches or in the neighbouring row. The trial by default indicated effective eradication.

Photographs were taken which demonstrate the level of infection and the eradication outcomes from the application of HML32, copper and potassium bicarbonate (Figure 3).

Photographs 2 and 4 were taken on the same day (9 February 2016) and reflect the difference in the berry damage or lack thereof when eradicating powdery mildew early before serious infection takes hold.

Photograph 6 shows the final quality of the fruit (taken on 10 March 2016).

4.0 Conclusions

The results demonstrate the excellent efficacy of HML32, copper and potassium bicarbonate for the eradication of powdery mildew infections.

It also demonstrates that if the infection is sprayed early, the fruit will have little to no damage with very good final fruit quality.

Figure 3: Photographic record of Powdery Mildew Infection and Eradication outcomes

1. Example of the level of powdery mildew infection prior to spraying (taken 22 Dec 15)

2. Example of a clean bunch after being sprayed with HML32, copper and potassium bicarbonate on 24/12/15 and 29/12/15. (photo taken 9 Feb 16)

3. Example of a bunch on an untreated row (photo taken 17 Jan 16)

4. Example of bunches with the level of inffection in Photo 3 after being sprayed with HML32, copper and potassium bicarbonate on 17/1/16 and 24/1/16 - note scarring from powdery mildew damage (photo taken 9 Feb 16)

5. Example of untreated bunches on neighbouring row (photo taken 10 Mar 16)

6. Example of the bunches were powdery mildew infections had been eradicated early. (photo taken 10 Mar 16)