

Preliminary Assessment of HORTCARE™ Copper Hydroxide 300 on Kiwifruit

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Prepared For

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Contents	Page
1.0 Trial Objectives	3
2.0 Trial Treatments and Layout	3
3.0 Application	4
4.0 Assessments	5
5.0 Results	5
6.0 Discussion and Conclusion	7

1.0 Trial Objectives

HORTCARE™ Copper Hydroxide 300 is a new copper product that could be available to the horticultural industry. An opportunity has arisen to do a late season preliminary assessment of the product on four kiwifruit varieties.

It is recognised that the period of application is not the best time for applying the product.

The objective of the trial is to determine if there is any staining or deposits left on fruit following application. The trial will compare HORTCARE™ Copper Hydroxide 300 with Kocide Opti and a Control with no chemical application.

2.0 Trial Treatments and Layout

The trial will include four kiwifruit varieties:

1. Hort 16a
2. Hayward
3. Gold G3
4. Green G14

The treatments will have one replicate only with three bays monitored per variety.

Table 1. Trial Treatments

Treatment	Rate	Applications
Copper Hydroxide 300	70 grams per 100 litres	1
Kocide Opti	70 grams per 100 litres	1
Control	-	-



3.0 Application

Method of Application

With the small volumes of water required per treatment a portable spray unit was used with a hand held wand and spray nozzle. To determine the correct amount of water per hectare on a bay basis, water volume was measured into a 5 litre container and timed.

As the spray was primarily targeting fruit and it is challenging to get good penetration of the spray through the leaf canopy at this time of the growing season, a water rate of 1000 litres per hectare was used.



Application Date

The four varieties had the application applied on the same day. The weather was calm and sunny with good drying conditions.

Table 2. Application Details

Date	Treatment	Temperature °C	Relative Humidity (%)
07/04/13	Copper Hydroxide 300	15	75
07/04/13	Kocide Opti	15	75

Stephen Kenna, a kiwifruit spray contractor applied the spray treatments. Growsafe Number : S15710 with an expiry of 22/02/15.

4.0 Assessments

Prior to the spray application individual fruit was selected and tagged. For each of the treatments 10 fruit were tagged. The fruit selected had no staining or marks on them prior to treatment. Just prior to the orchards harvest in April and May 2013 the fruit off each treatment was picked and bagged for assessment. No water stain removal product had been applied to the fruit.



5.0 Results

Each fruit was visually inspected to determine if any residue or marking was present and recorded. The summary results are presented in Table 3.

Table 3. Fruit Marking Assessment

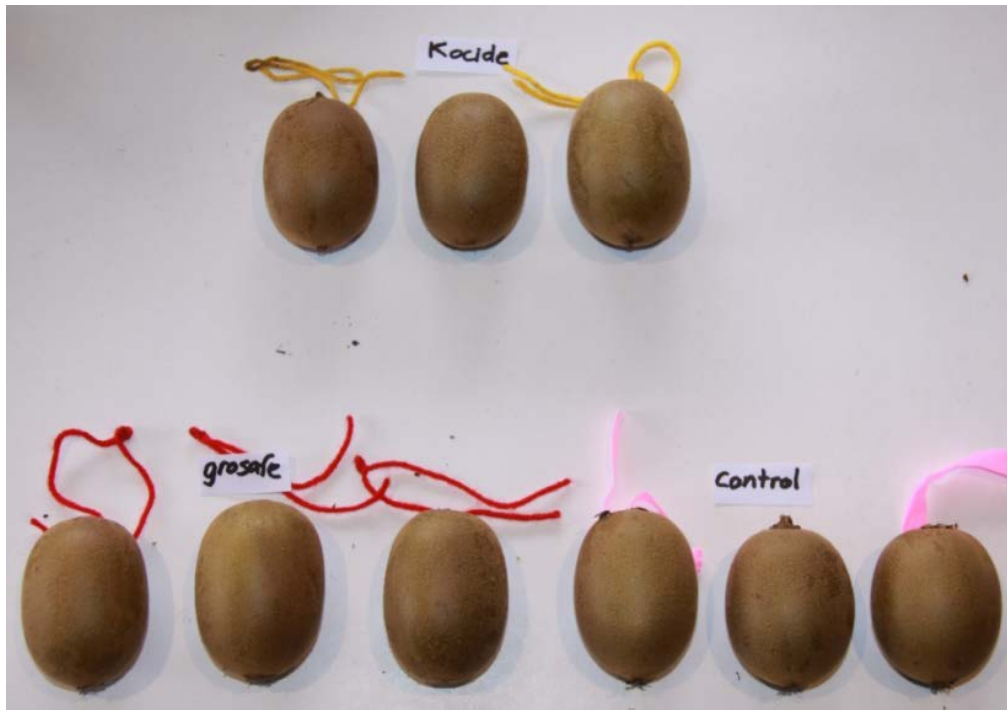
Treatment	Hort 16a	Hayward	Gold G3	Green G14
Copper Hydroxide 300	No residue or marking	No residue or marking	No residue or marking	No residue or marking
Kocide Opti	No residue or marking	No residue or marking	No residue or marking	No residue or marking
Control	No residue or marking	No residue or marking	No residue or marking	No residue or marking

Photographs of various kiwifruit varieties and treatments

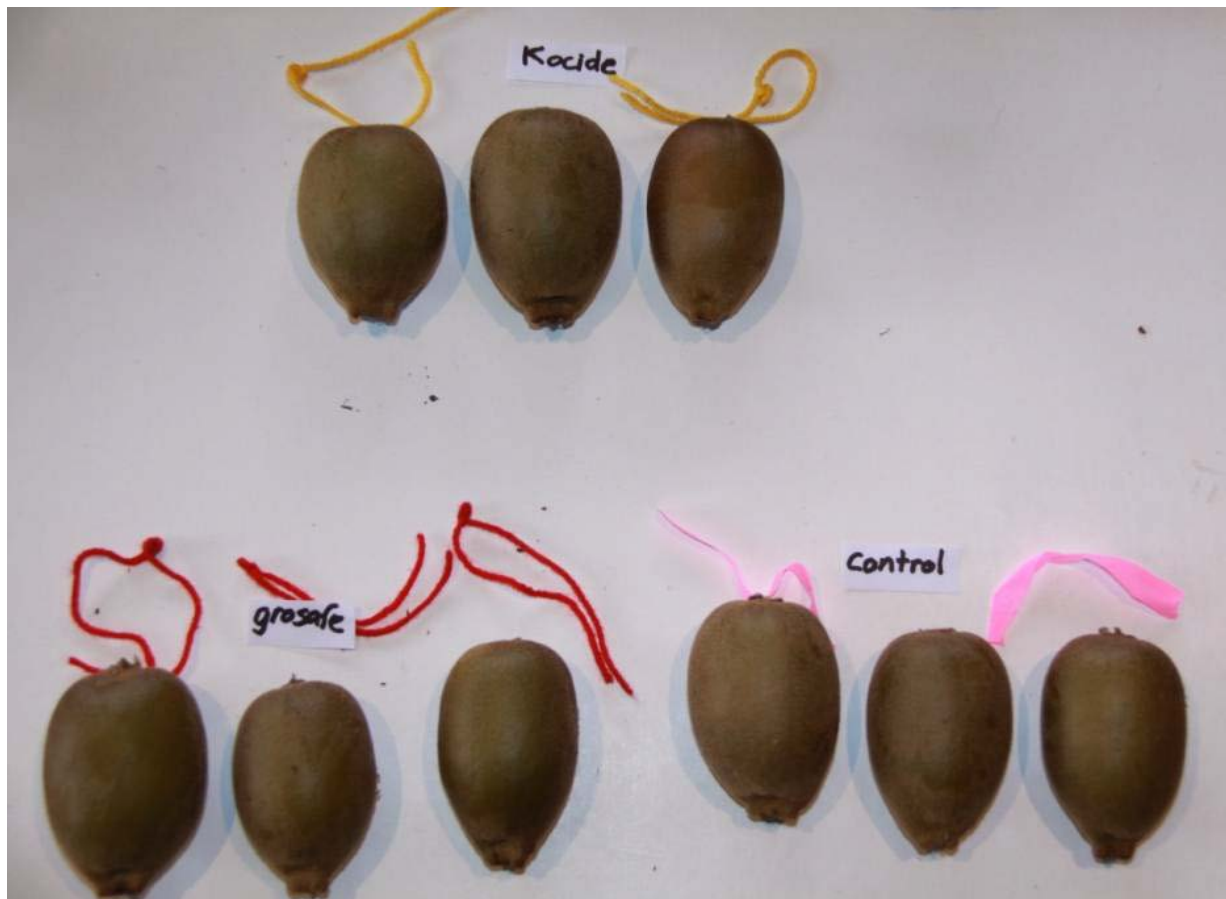
Hayward



Gold G3



Hort 16a



6.0 Discussion and Conclusion

The one application of HORTCARE™ Copper Hydroxide 300 and Kocide Opti produced no residue or marks on the fruit when compared to the control fruit on all varieties. It would be considered the timing of application for the trial was a low risk period for fruit damage. However the kiwifruit industry knowledge is still growing in this area.

As all kiwifruit varieties had during the September to January period a large number of coppers applied to the canopy and fruit as a preventative measure to help try and minimise the infection risk of the bacterial disease PSA. An extra copper could have been a tipping point, unlikely but possible.

The Hort 16a and Gold G3 varieties on the orchard used for the trial had some evidence of “copper damage” on fruit, perhaps from applications around the sensitive periods of post fruitset rapid fruit growth. No fruit in the trial area were affected by this. Leaf condition was also damaged from copper application, particularly the Hort 16a.

Copper damage on fruit and leaves is cumulative over the growing season with fruit potentially more vulnerable around the post fruitset period.

Applying coppers in the appropriate drying conditions can help mitigate the risk of copper damage.

Further Action

To determine the performance of HORTCARE™ Copper Hydroxide 300 a full season trial is recommended.