

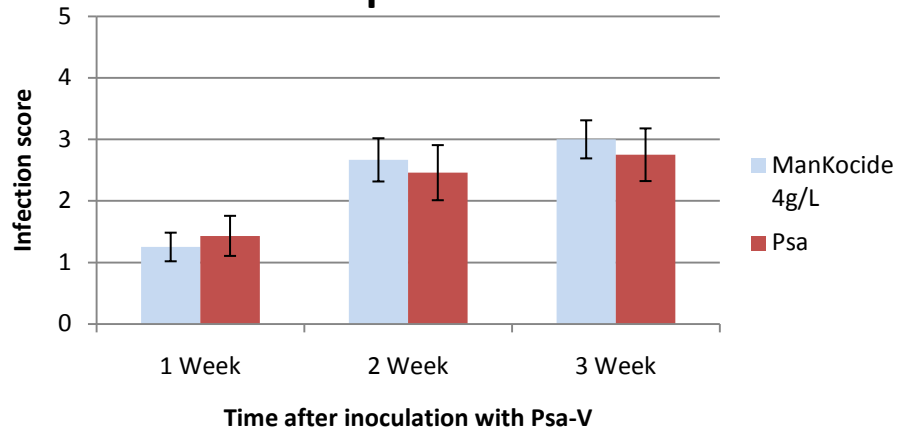
Product testing report

7 November 2011

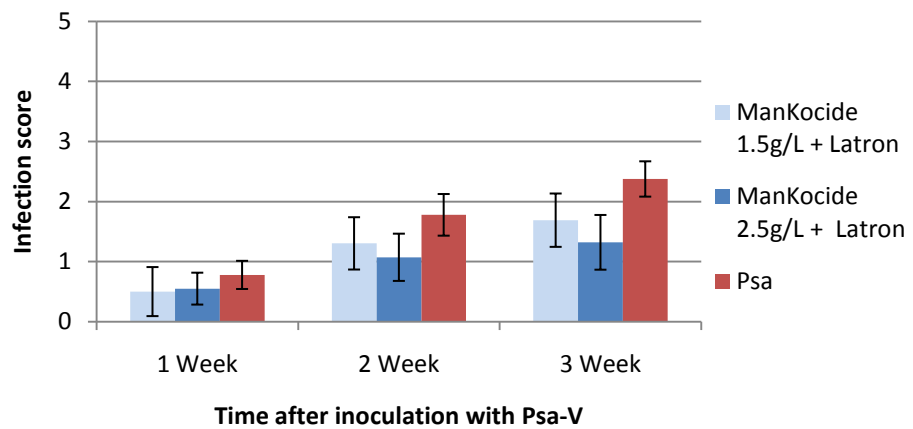
ManKocide®		
Supplying company:	DuPont™	
Active ingredient:	Copper hydroxide, mancozeb, sodium hydroxide	
Mode of action:	Protectant <input checked="" type="checkbox"/>	Biological <input type="checkbox"/> Elicitor <input type="checkbox"/>
Application rate (per 100L):	Multiple	

Test results	
Test	Greenhouse seedling tests
Method description	<p>Experiment 1: Protectant (14 July 2011 – 4 August 2011) Bruno seedlings were treated once with the product, allowed to dry and inoculated with Psa-V (at 10^9 cfu ml⁻¹ concentration). ManKocide® was applied at 4g L⁻¹. Assessments were made at weekly intervals after inoculation. The degree of leaf spotting was determined visually using a 0 – 5 scale and is plotted as an 'Infection Score'.</p> <p>Experiment 2: Protectant (24 August 2011 – 14 September 2011) Bruno seedlings were treated once with the product, allowed to dry and inoculated with Psa-V (at 10^9 cfu ml⁻¹ concentration). ManKocide® was applied at 1.5g and 2.5g L⁻¹, partnered with Latron at 2ml L⁻¹. Assessments were made at weekly intervals after inoculation. The degree of leaf spotting was determined visually using a 0 – 5 scale and is plotted as an 'Infection Score'.</p> <p>Experiment 3: Protectant (20 September 2011 – 6 October 2011) Hort16A seedlings were treated once with the product and inoculated two days later with Psa-V (at 10^9 cfu ml⁻¹ concentration). ManKocide® was applied at 0.45g or 0.9g L⁻¹, partnered with Duwett at 0.33ml or 0.66ml L⁻¹. Assessments were made at weekly intervals after inoculation. The degree of leaf spotting was determined visually using a 0 – 5 scale and is plotted as an 'Infection Score'.</p>
Results	<p>Experiment 1: In Bruno seedlings, ManKocide® did not significantly affect leaf spotting at one, two or three weeks after inoculation.</p> <p>Experiment 2: In Bruno seedlings, ManKocide® applied at 1.5g or 2.5g L⁻¹ and partnered with Latron reduced leaf spotting two and three weeks after inoculation, though not significantly.</p> <p>Experiment 3: In Hort16A seedlings, ManKocide® did not significantly affect leaf spotting at one or two weeks after inoculation.</p>

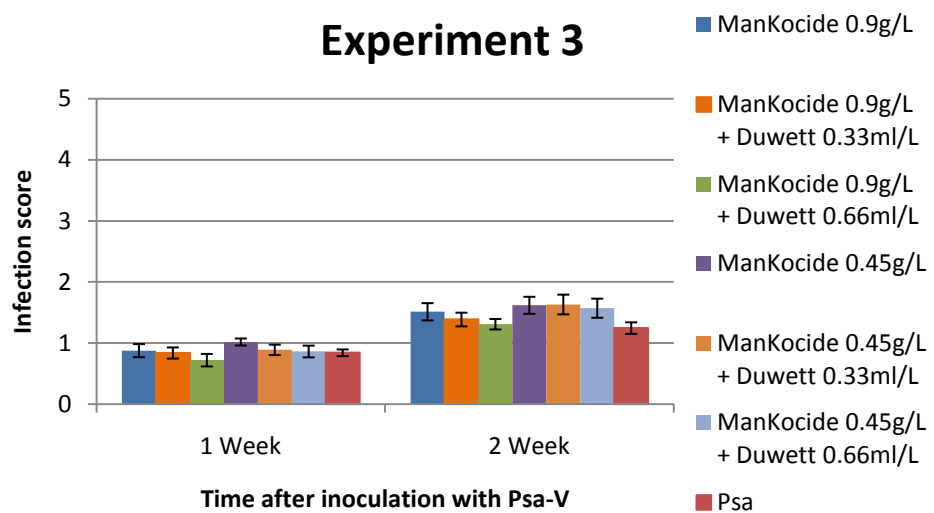
Bruno Experiment 1



Bruno Experiment 2



Hort16A Experiment 3



* Psa inoculated control and the treatment are statistically significantly different at the 5% level

Summary

ManKocide® applied alone had no effect on leaf spotting in Bruno or Hort16A seedlings. When partnered with Latron, ManKocide® reduced leaf spotting in Bruno seedlings, though not significantly. There was some evidence of reduced leaf spotting following application of ManKocide®, further greenhouse trials are planned to clarify efficacy.

Comments

A standardised screening protocol has been used to test products for efficacy against Psa-V to enable a high throughput of products. Protectant, biological or elicitation tests may be performed, depending on the mode of action of the product. Protectant tests involve the product being applied to the plant with inoculation following on the same day, once the product has dried. Biological tests involve the product being applied two to three days prior to inoculation with Psa-V. Elicitation tests involve the product being applied to the plants seven to ten days prior to inoculation with Psa-V. Assessments of leaf spotting are performed at weekly intervals after inoculation. This method has largely involved testing products using information provided on the product's label. In the future, products may be retested using protocols provided by supplying companies. Products which have previously shown some level of efficacy will be given priority for re-testing.

Data are presented for all assessment timings; however, evaluation of results is largely focussed on the final 'three week' assessment data. Disease symptoms will be better developed by this time and earlier assessments are considered to be less reliable. However, in the case of some elicitors, it is possible that the elicitation effect has been expended and that poor results at the 'three week' assessment time indicate reduced efficacy as a result of insufficient frequency of application.

Results from greenhouse trials primarily serve as a screening tool to determine products that will progress to field trials. Care should be taken when extrapolating results to field conditions. Results in the field may differ due to different environmental conditions and differences in plant material.

Note – leaf spotting may not necessarily mean the plant is infected. It simply indicates that the plant has been challenged by Psa.

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