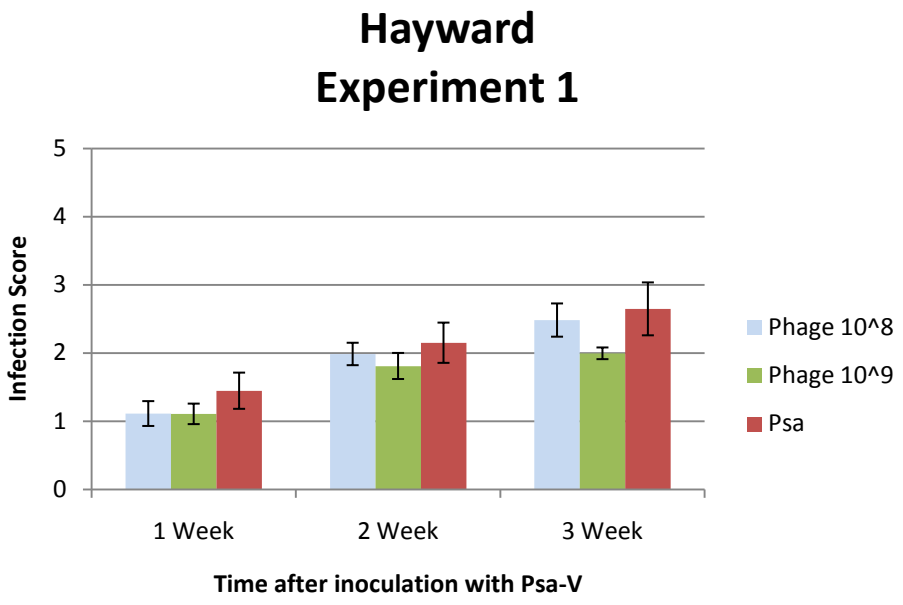
Product testing report

6 December 2011

Bacteriophage			
Supplying company:	Omnilytics		
Active ingredient:	Bacteriophages collected from NZ water sources		
Mode of action:	Protectant ☐	Biological ☒	Elicitor ☐
Application rate (per 100L):	10^8 pfu ml^{-1} & 10^9 pfu ml^{-1}		

Test results	
Test	**Greenhouse seedling tests**
Method description	**Experiment 1: Biological (26 October 2011 – 18 November 2011)** Hayward seedlings were treated once with the Bacteriophages at 10^8 and 10^9 pfu ml^{-1}. Plants were inoculated two days later with Psa-V (at 10^8 cfu ml^{-1} concentration). 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'.
Results Key: *0 = no leaf spotting* *1 = up to 10%* *2 = up to 25%* *3 = up to 50%* *4 = up to 75%* *5 = 100%* *(of leaf area)*	**Experiment 1:** In Hayward seedlings, application of the Bacteriophage at 10^8 pfu ml^{-1} concentration did not affect the degree of leaf spotting. Application of the Bacteriophage at 10^9 pfu ml^{-1} reduced leaf spotting three weeks after inoculation, though not significantly.



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Summary

A single application of the Bacteriophage at 10^8 or 10^9 pfu ml^{-1} did not significantly reduce leaf spotting following inoculation with Psa-V.

Bacteriophage are a novel biological option and have demonstrated efficacy on commercial crops in the USA. Therefore further testing is planned.

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.