

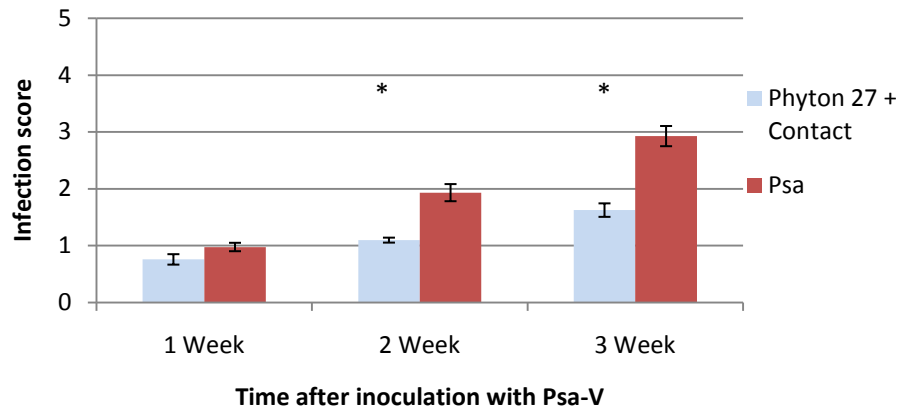
# Product testing report

18 January 2012

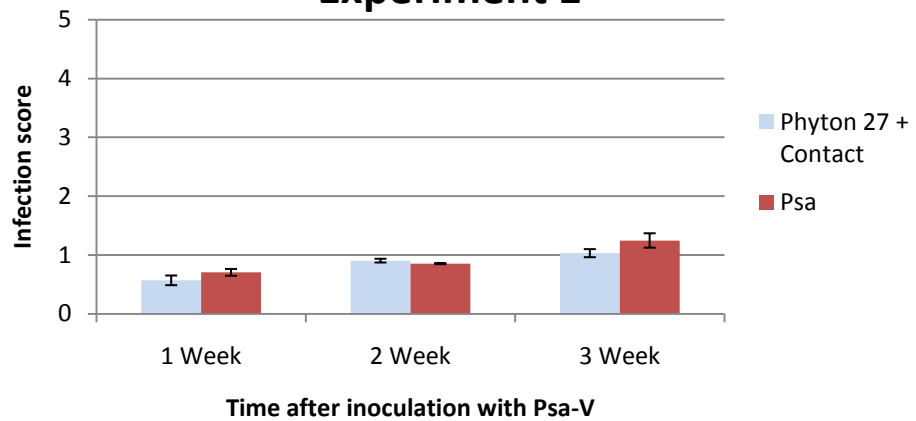
Phyton 27		
Supplying company:	Phyton Corporation	
Active ingredient:	Copper sulphate pentahydrate	
Testing protocol:	Protectant <input checked="" type="checkbox"/>	Biological <input checked="" type="checkbox"/> Elicitor <input type="checkbox"/>
Application rate (per 100L):	Experiment 1: 200ml Experiment 2 & 3: 300ml	

Test results	
Test	Greenhouse seedling tests
Method description	<p><b>Experiment 1: Protectant (9 September 2011 – 4 October 2011)</b> Hayward and Hort16A seedlings were treated once with Phyton 27 at 2ml L<sup>-1</sup> partnered with Contact at 0.25ml L<sup>-1</sup> and inoculated three days later with Psa-V (at 10<sup>9</sup> cfu ml<sup>-1</sup> 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'.</p> <p><b>Experiment 2: Biological (28 November 2011 – 21 December 2011)</b> Bruno seedlings were treated once with the product and inoculated two days later with Psa-V (at 10<sup>9</sup> cfu ml<sup>-1</sup> 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'.</p> <p><b>Experiment 3: Biological (28 November 2011 – 21 December 2011)</b> Hort16A seedlings were treated once with the product and inoculated two days later with Psa-V (at 10<sup>9</sup> cfu ml<sup>-1</sup> 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'.</p>
Results	<p><b>Experiment 1:</b> In Hayward seedlings, Phyton 27 partnered with Contact reduced leaf spotting. Reductions in leaf spotting were significant two and three weeks after inoculation with Psa-V. In Hort16A Phyton 27 partnered with Contact had no effect on the degree of leaf spotting.</p> <p><b>Experiment 2:</b> In Bruno seedlings, Phyton 27 significantly reduced leaf spotting at all assessments.</p> <p><b>Experiment 3:</b> In Hort16A seedlings, Phyton 27 significantly reduced leaf spotting at all assessments.</p>

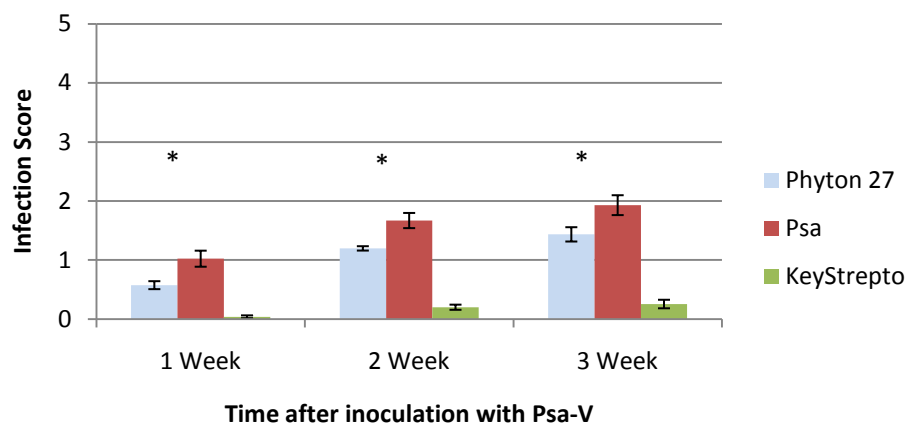
## Hayward Experiment 1



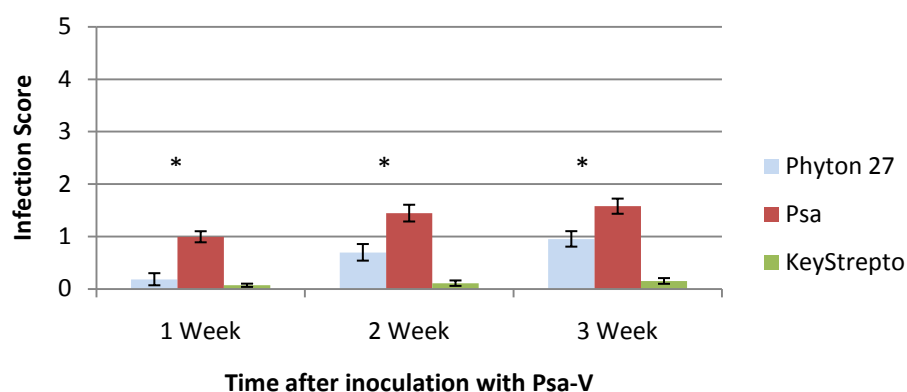
## Hort16A Experiment 1



## Bruno Experiment 2



## Hort16A Experiment 3



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

### Summary

A single application of Phyton 27 (2ml L<sup>-1</sup>) partnered with Contact significantly reduced leaf spotting in Hayward; however, there was no effect on the degree of leaf spotting in Hort16A. Later experiments, applying Phyton 27 (3ml L<sup>-1</sup>) significantly reduced leaf spotting in Bruno and Hort16A seedlings. Phyton 27 will be included in future in-pot field trials. The manufacturer is carrying out tests to determine systemic activity of the product.

### 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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