

Control of Downy mildew with biostimulant Foliacin and Seaweed extracts

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Key words

Grape, Foliacin, Laminaria

Overview

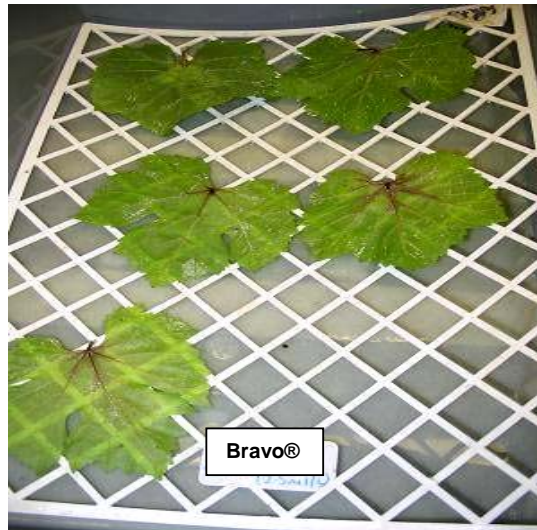
The treatments were sprayed onto detached, young grapevine leaves. The fungicide Bravo® acted as a control against downy mildew and water was a control for the disease. There were 5 leaf replicates per treatment. The treatments and their concentrations (listed below) were selected due to their success in inhibiting Botrytis bunch rot in grapevine leaves from Pinot noir.

Treatment	Concentration
Foliacin™	1%
Mono-potassium phosphate (MKP)	0.2%
MKP + Foliacin™	0.2% + 1%
Laminaria 1 (Seaweed extract)	5.56 mL/L
Laminaria 2 (Seaweed Extract)	69.5 ml/L
Water (positive pathogen control)	NA
Bravo® fungicide	2.5 mL/L*

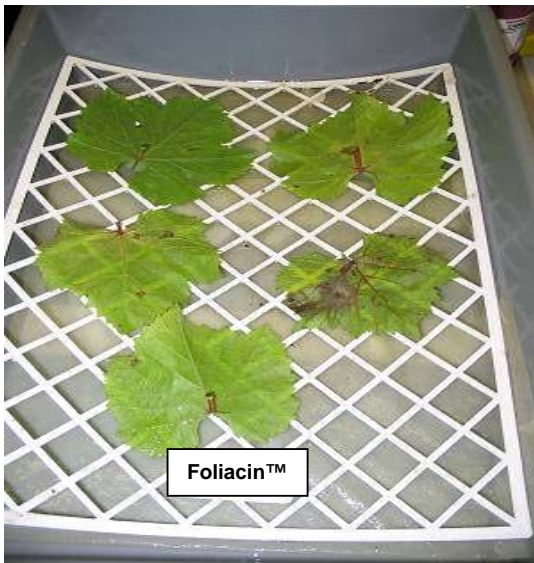
* recommended rate on grapevines

Treatments were allowed to dry and leaves were incubated in the dark and under high humidity at 20°C. After 24 h, the leaves were inoculated with a large droplet of a suspension of *P. viticola* sporangia (1×10^5 per mL) near the petiole on the abaxial surface of the leaves. The leaves were incubated upside-down in the dark and under high humidity at 18°C for 2 h to promote the release of zoospores. After 2 h, the temperature was raised to 21°C to ensure optimum development of downy mildew. The leaves were turned onto the adaxial side after 48 h and incubated for a further 12 days. Once symptoms had started to appear (leaf chlorosis and necrosis), the leaves were assessed.

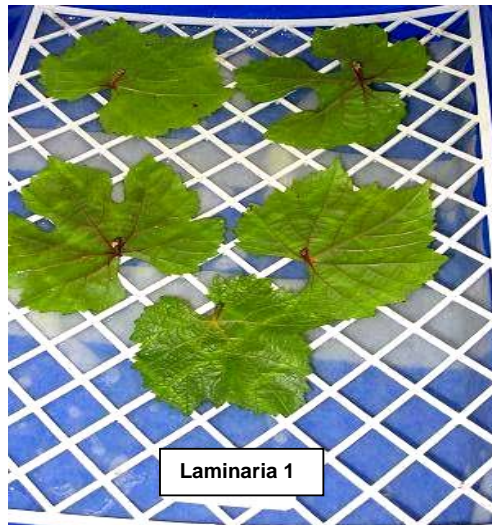
Results



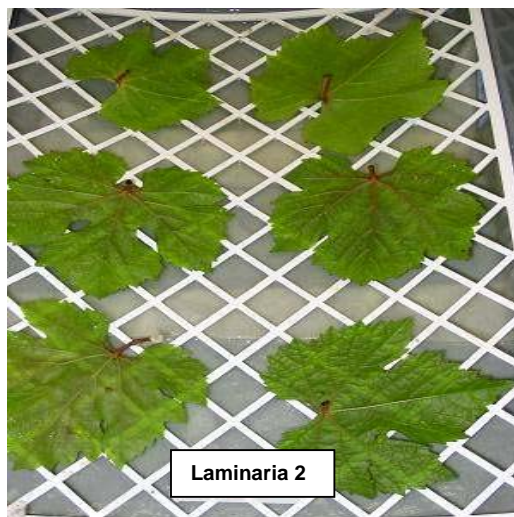
Leaves treated with Bravo® showed no/ very few symptoms of downy mildew. The region of disease was where the inoculation drop was placed, and disease in some leaves extended a little further along the leaf veins.



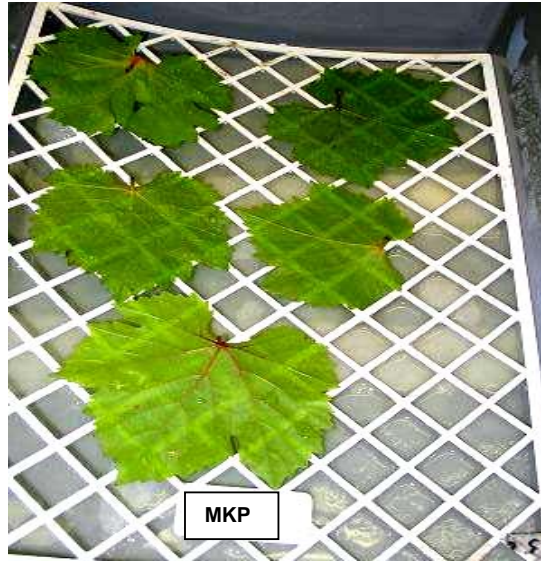
Foliacin™-treated leaves exhibited varying levels of disease. There seemed to be phytotoxicity spots present on all of the replicates. In the second picture, there are phytotoxicity spots and disease lesions present as well as mycelium



Leaves treated with Laminaria 1 exhibited as little disease as Bravo®. There was disease present on the petioles and only slightly along the veins of the leaves.



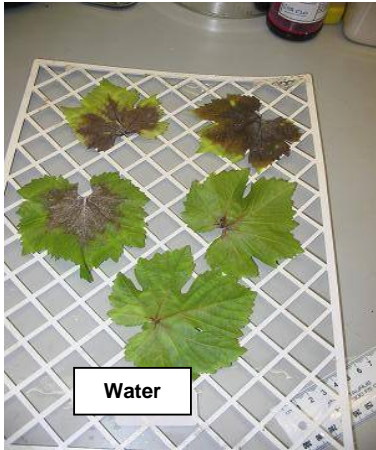
Laminaria 2 had the same effect as Laminaria 1 and Bravo, where there was little or no disease present. Laminaria 2-treated leaves showed the least symptoms of downy mildew compared to any of the treatments.



MKP showed good control of downy mildew as did the Laminaria's and Bravo®.



Leaves treated with MKP + Foliacin™ showed the second highest disease levels and heavy mycelium coverage. Phytotoxicity spots were present, which was consistent with leaves treated with Foliacin™. A mixture of MKP and Foliacin™ seemed to provide a more favourable environment for downy compared to Foliacin™ alone.



Water-treated leaves exhibited the highest levels of disease, exhibiting large lesions that spread from the mid veins to the outer regions of the leaf replicates. Leaf chlorosis/necrosis was quite evident in the outer 2 leaves in the second picture.