

Grape

Trial Sheet BioStart Programme Unlocks the Vineyard's Soil Biology Potential



The results of a three-year BioStart trial at Accolade Wines, showed that a regular soil and foliar biostimulant programme lifted vine health and performance in a premium Pinot noir block (Abel clone) at Mud House Vineyard in Wairau Valley.

Method

The following biostimulants were applied:

Mycorrcin – a soil biostimulant that activates beneficial soil microbes to make more nutrients available for plant growth and fast crop establishment.

Foliacin – a foliar biostimulant that improves leaf retention and photosynthesis levels and improves vine resilience.

Digester – a soil biostimulant that activates the soil microbes that breakdown organic matter from cover crops residues which recycles nutrients faster and improves soil structure.

Starting in the 2018/19 season, the trial continued for three years with **Mycorrcin** applied at bud break and with all weed sprays (2–3 per year), **Foliacin** applied regularly with all cover sprays throughout the season from bud break and **Digester** applied after pruning. Vines were analysed for cane diameter, leaf and petiole minerals, juice quality and grape yield.

Results

1. More extensive roots exploring more of the vineyard soil for nutrients (Fig.1)



Figure 1. Impact of BioStart programme on Pinot noir vine roots in Year 3.

2. Higher calcium (19%), and magnesium (11% and 15%) levels in leaf and petiole at flowering (Fig. 2), despite there being lower levels of calcium (-16%) and magnesium (-8%) in the soil around the treated vines (Fig. 3). Demonstrates the vines are utilising the soil nutrients to grow.

Leaf Mineral Test Flowering Yr 3	Untreated	BioStart	Difference
Calcium - leaf (% DM)	1.34	1.59	19%
Magnesium - leaf (% DM)	0.36	0.40	11%
Magnesium - Petiole (% DM)	0.80	0.92	15%

Figure 2. Leaf and petiole test results for Pinot noir vines at flowering in Year 3 of the trial

Soil Mineral Test Spring Yr 3	Untreated	BioStart	Difference
Calcium (Mehlich 3; mg/L)	1,361	1,146	-16%
Magnesium (Mehlich 3; mg/L)	210	193.5	-8%

Figure 3. Soil nutrient analysis in spring of Year 3 of the trial showing more nutrients had been taken up by the vine.



3. Cane cross-sectional area was increased by 8% in year 2 (cane produced in Year 1) and 21% in year three (cane produced in Year 2; Fig. 4).

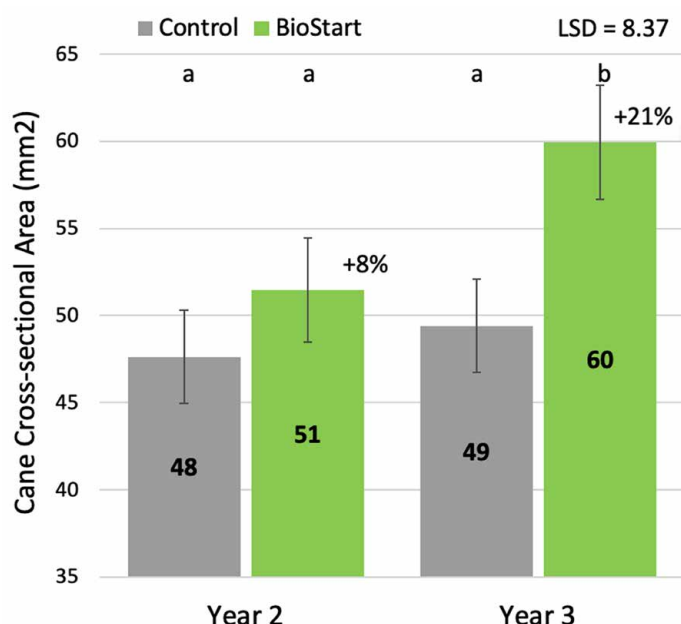


Figure 4. Cane cross-sectional area of Pinot noir vines in years 2 and 3 of the trial.

4. Larger leaves opposite the first bunch on the cane (Fig. 5).

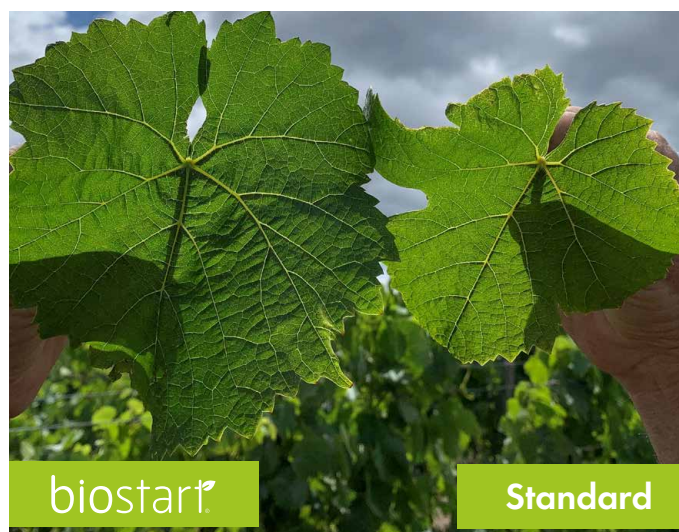


Figure 5. Impact of BioStart programme on Pinot noir flag leaf at PBC in Year 3.

5. Greater Yield

A 26% grape yield increase per vine - from 4 to 5 kg in a low yielding difficult season. (Note there was poor fruit set at flowering and no bunch thinning was carried out in this block). An 18% increase in bunches per vine from 47 to 56 (8.6 more bunches per treated vine). Similar bunch weights for both the untreated and BioStart treated vines showing that the yield increase was from an increase in bunches per vine rather than larger bunches. In a challenging grape growing year, this extrapolated at 1,600 vines/ha to a 1.6 T/ha yield increase from 6.5 to 8.3 T/ha.

6. Juice quality was similar for both treatments and was not compromised by the extra yield in the treated vines.

Conclusion

The long-term benefits of regularly applying a BioStart programme to improve soil biology and foliar health over three years had resulted in better root growth which lead to improved vine nutrition which in turn produced bigger canes that could carry a higher fruit yield without compromising juice quality.

The BioStart programme has allowed these Pinot noir vines to unlock the potential of soil biology to produce better crops.