

Bactivate

Delivering Better Soil, Better Crops, Better Return

The benefits of maintaining healthy soil biology are well understood. The science is unequivocal. The use of beneficial soil microbes can:

- improve plant growth and health,
- increase crop yield and quality,
- address the impact of soil and plant disease,
- accelerate the turnover of organic matter,
- help address problems such as salination,
- solubilize minerals locked up in the soil and, finally,
- increase the uptake of nutrients.

It's an impressive list. But, despite all of this, the bottom line remains the bottom line.

At Bioptiv we are committed to delivering Better Soil, Better Crops, and a Better Return for all of our customers.

The nature of that last item, the Better Return, is the bottom line, and for every customer it's different. For some customers the focus is on reducing input costs. For others it's about increasing yield and crop quality. All of these things contribute to an improved gross margin – an improved bottom line.

For others (for example, the farmer wishing to pass the property onto the next generation) perhaps the bottom line is more than purely financial, and the objective of improving the soil quality is more than just short-term financial gain.

Still others find that improved crop quality can enable access to other markets. Fruit previously sold for juicing can be sold as table fruit, crop grades can improve, and oil quantities and qualities can change, in some cases significantly.

The Bactivate Program is all about understanding and documenting your objectives and priorities, and then formulating, recording, defining and delivering a plan to achieve your bottom line.

A well-designed and properly implemented biological program can deliver all of the benefits you plan for, and can deliver the bottom line you need. In many cases the Bactivate Program will deliver a gross margin improvement in year two or three and sometimes, even earlier.

This report illustrates the impact that the Bactivate Program has had for some of our customers. The customers are all different, their needs and priorities – their bottom lines – are unique as well, and the impact of the program on their farming operations is equally unique.

We trust that you will find the examples compelling, and we look forward to working with you to formulate the Bactivate Program that is right for you, ultimately helping you to improve your bottom line.



BIOPTIV

Case Study

Victorian Almond Orchard

Location:	Victoria, Australia
Case Study Period:	2016 to present
Crop:	Almond Trees

This case study documents the Bactivate Program, its application and results at a successful Almond Orchard based in Victoria, Australia. The key objectives of the study were to :

- Determine if the Bactivate Program could deliver long-term economic benefit to the business
- Demonstrate quality improvements to the growth of young trees as well as to nut performance
- Improve yields

The Challenge

- Quantify and validate improved plant health
- Reduce the loss of nuts as a result of weather e.g. lack of rainfall, frost and prolonged heat events
- Quantify growth milestones in younger trees

Trial Areas

- Trial Area 1 - Mature almond trees planted in 2008
- Trial Area 2 - Young almond trees planted in 2016

Products Utilised

- Bactivate Boost
- Bactivate Seaweed
- Bactivate Plus Liquid

Results - Trial Area 1, Mature Almond Trees

During the season, Bioptiv staff visited the the orchard to commence data collection and visually observe and document the growth patterns of the trial areas/trees.

Observations were as follows:

- Improvements in canopy area were noted and photographed
- Pre-harvest nut counts were higher in treated areas
- Staff commented 'anecdotally' on the superior performance of the treated areas

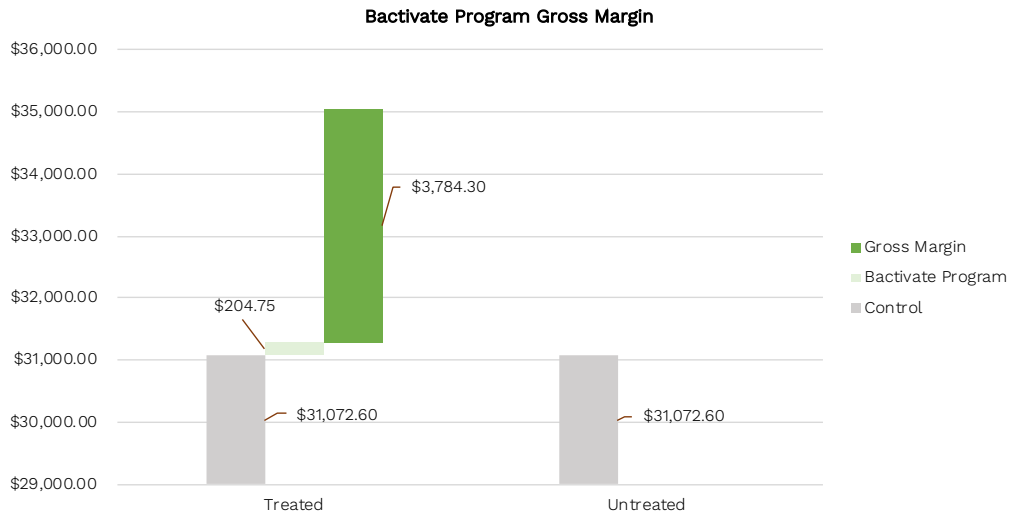
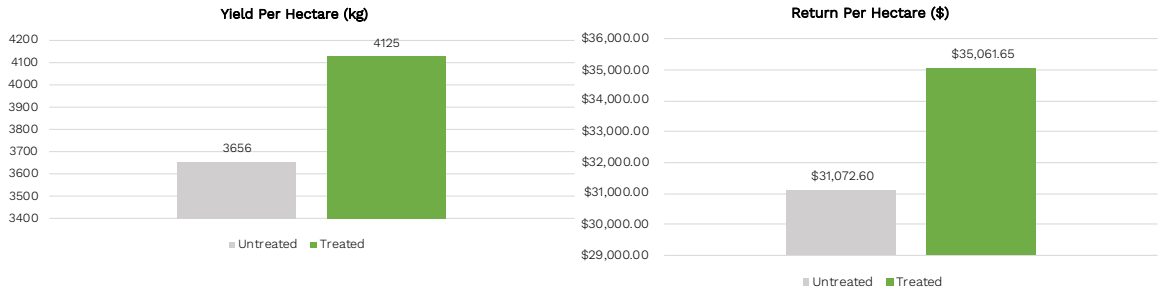
Harvest was conducted in 2019. The results for the treated and untreated areas were provided by the farm's management team (see below). The gross margin analysis was then conducted by Bioptiv to quantify the economic value/benefit to the business.



Mature Tree Results

Planted	Yield (kg)/Hectare		\$ Return/kg	Hectare Treated
	Treated	Untreated		
2008	4125	3656	8.50	6.36

Return/Hectare		Difference Per Hectare	With Product Cost \$	Yield Percentage Improvement	Times ROI
Treated	Untreated				
\$ 35,061.55	\$ 31,072.60	\$ 3,989.05	3,784.30	12.8%	18.5



Young Tree Results

Only tree circumferences were measured due to ongoing tree pruning management processes. Measurements were recorded in September 2018 and February 2019.

On average, the treated area showed a consistent **24% improvement in tree trunk circumference**, translating into a higher product yield potential as well as improved capacity to withstand climatic extremes.

Other observations included:

- Improvement in treated canopy areas
- Pre-harvest nut counts appeared higher in treated areas
- Treated trees appeared healthier with better branch formation





Treated Carmel (18 Sept 2018)



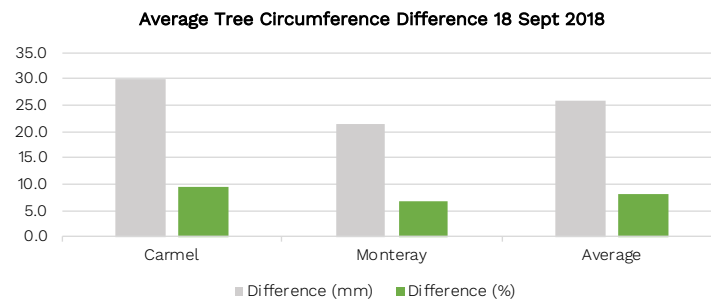
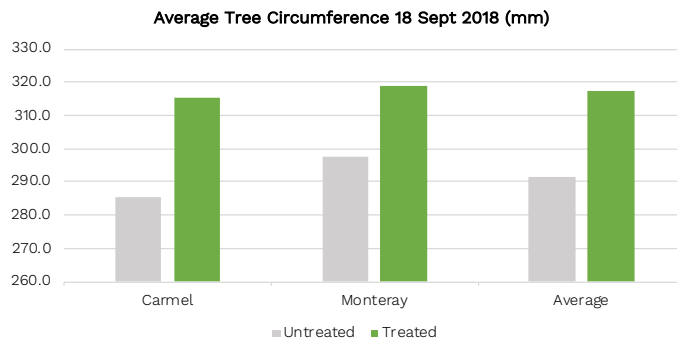
Untreated Carmel (18 Sept 2018)



Treated Mont.. (18 Sept 2018)



Untreated Mont.. (18 Sept 2018)





Treated Carmel (19 Feb 2019)



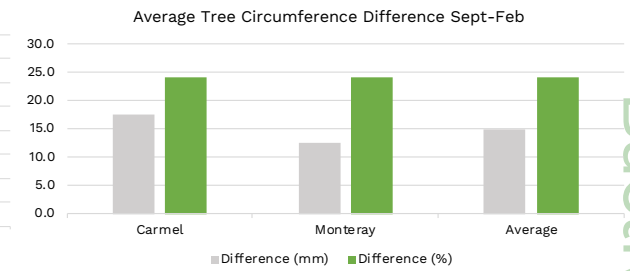
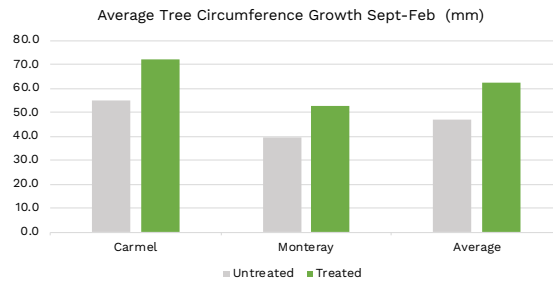
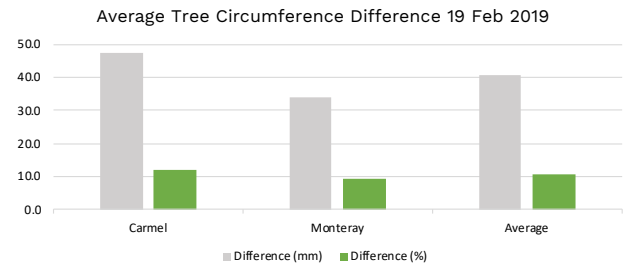
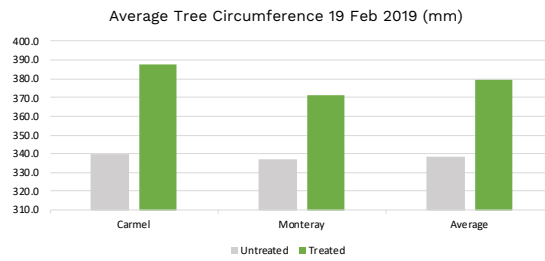
Untreated Carmel (19 Feb 2019)



Treated Mont..(19 Feb 2019)



Untreated Mont..(19 Feb 2019)



For further information on this and other Bioptiv case studies, please contact Bactivate Pty Ltd on sales@bactivate.com.au or by calling 1800 112 779