

Kagome Tomato Trial 2014-2017

Echuca, Victoria Australia

2014-2017

Location

Year

Kagome Australia

Tomatoes

Conducted by

Crop

Small plot replicated

Trial Type

Aim

To measure the effect of BioAg products on tomato yields and soil biological parameters that influence plant growth and nutrient cycling and use efficiency.

Introduction

Based in Echuca Victoria, Kagome Australia is the country's largest tomato processing company, supplying many supermarkets in Australia and internationally with high quality, Australian grown product, which they have done since 1996.

Kagome Australia conducted a number of fertiliser field trials throughout the 2014-2017 processing tomato seasons.

One of these trials, conducted by Steph Moore in her R&D role for Kagome included the use of BioAg's liquid microbial fermented culture products *Soil & Seed*, *Balance & Grow*, and *Fruit & Balance*.

These products balance the nutrient supply for plants and soil microbes, and stimulate soil microbial population and diversity.

Method

The trial compared a control treatment (being Kagome's standard fertiliser applications) versus the BioAg treatment plots, and was replicated four times across two separate sites. The four treated and four control plots alternated across the field and were adjacent to each other. The BioAg treatment was applied through fertigation and foliar sprays in three applications throughout the growing season.

BioAg Treatment – Processing Tomatoes

Table 1 – Soil & Seed, Soil Application through Fertigation

Timing	Application
Planting	3L/ha
Week 3	3L/ha
Week 6	4L/ha
Week 9	4L/ha
Week 12	2L/ha

A total of 16L/ha is applied through the subsurface drip irrigation system.

Table 2 – Balance & Grow, Foliar Application

Timing	Application
Week 3	2.5L/ha
Week 7	2.5L/ha

A total of 5L/ha is applied.

Table 3 – Fruit & Balance, Foliar Application

Timing	Application
Week 11	2.0L/ha
Week 15	2.0L/ha

A total of 4L/ha is applied.

Results

2014-2015

BioAg treatment delivered 14t/ha improvement above the control.

Graph 1 – Yield Comparisons of Control and BioAg Treatments (t/ha)

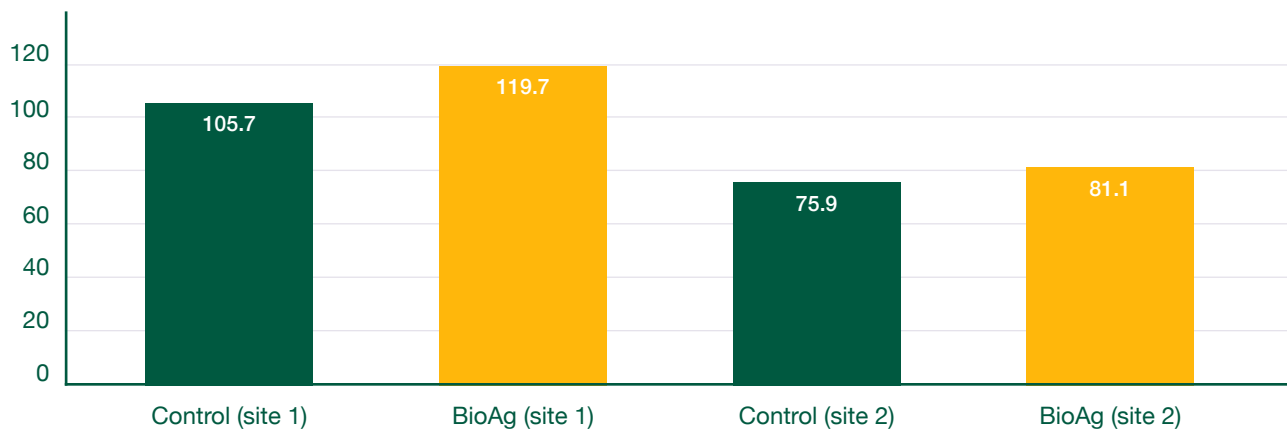


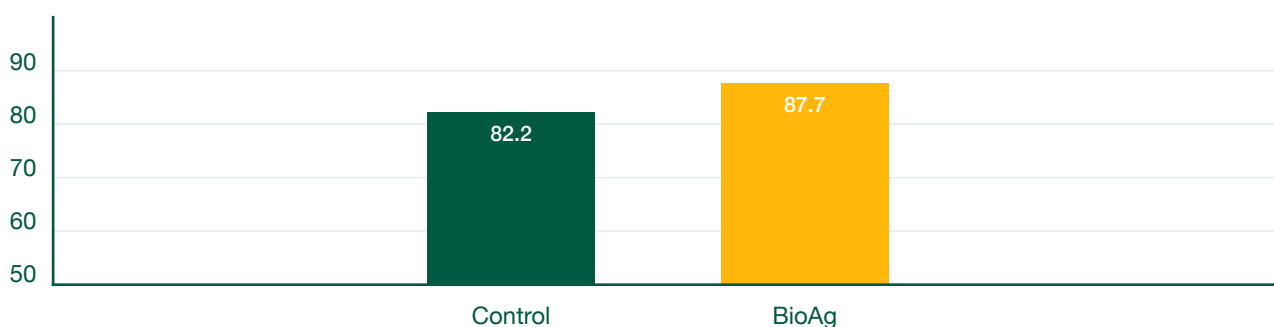
Table 1 – Yield, Brix and pH Results

Site	Yield (t/ha)	% Change	Brix	pH
Control (site 1)	105.7	–	5.35	4.49
BioAg (site 1)	119.7	13.25	5.18	4.43
Control (site 2)	75.9	–	6.37	4.26
BioAg (site 2)	81.1	6.85	6.77	4.27

2016-2017

As has been the case in previous trials, the BioAg regime continues to provide yield increases. For the 2016 trial, harvested on 1 April 2017, the yield increase was +5.4t/ha.

Graph 2 – Yield Comparisons of Control and BioAg Treatments (t/ha)

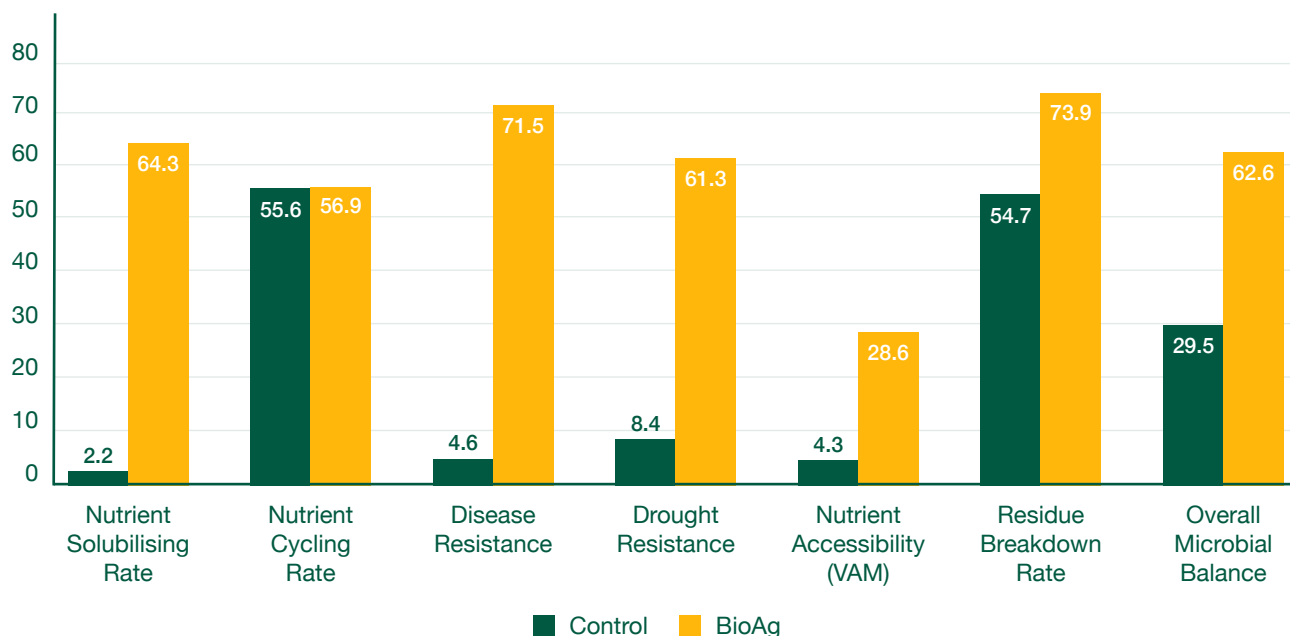


There were variations in both fruit Brix and pH however the results were not consistent and not statistically significant indicating random variability.

Assesment of Soil Biological Parameters

During the season, tests were performed on the trial plot soils by Microbial Laboratories Australia (MLA) to determine what affect the BioAg regime was having on soil biological parameters.

Graph 3 – Soil Health, MLA Microbewise Comparison



The BioAg program significantly improved all indicators of soil health with the exception of nutrient cycling.

Whilst the definition of the soil health categories are self evident, the improvement in the rate of nutrient solubilisation indicates the soil is better able to capture nutrients, thereby minimising loss pathways to soil antagonists or leaching. This in turn delivers improved nutrient use efficiency, enabling a reduction in applications of fertilisers.

Conclusion

When compared to the control plots, the BioAg regime has increased yields and soil health and functions in all areas and often to large degrees.

By improving the processes that occur in the soil such as nutrient solubilising, nutrient cycling and nutrient delivery to root systems, the BioAg products balance the nutrient supply to plants, as well as stimulate and add diversity to soil biology populations, which in turn promotes crop health and yield.

About the Products Used

BioAg's liquid microbial fermented culture range, consists of –

- *Soil & Seed* – Suitable for all crops and pastures improves soil structure, thereby increasing nutrient and moisture retention in the soil, and greatly reducing the amount of nutrient lost through leaching. It encourages rapid germination and early root development, and helps buffer the crop against stresses such as pests, heat/drought and disease.
- *Balance & Grow* – Formulated to increase vegetative growth, root development and soil microbial activity. It provides plants and soils with the appropriate nutrients to stimulate and support plant growth, particularly calcium and phosphate. Early vegetative growth is important to optimise for future yield.
- *Fruit & Balance* – Formulated to increase flowering, fruit set and soil microbial activity. Delivers a source of plant available phosphate when the plant is under peak load, stimulating strong fruiting and enhancing yield potential. *Fruit & Balance* also enhances the nutritional value and quality of fruit by increasing sugar levels in the plant.

Each product is a source of microbial species important to each stage of production, as well as a food source for both the crop and the microbial populations.

The products contain a diverse range of –

- Vitamins
- Minerals
- Amino Acids
- Proteins
- Enzymes
- Carbohydrates
- Dormant microbes

The microbial populations that the products add perform numerous functions that improve the condition of soil and the production of the crop. These include microbes that are nitrogen fixers and agents in remediating contaminated soil, and that promote plant growth, while other species suppress root pathogens.

Acknowledgments

This trial was compiled by Dan Hill.

Area Manager, Southern Victoria and Tasmania.

BioAg Pty Ltd
ABN 58 086 880 211

22-26 Twynam Street Narrandera
NSW 2700 Australia

bioag.com.au
+61 2 6958 9911



Better soils. Better crops. Better stock.

