Microbiological Inoculant Increases Fruit Weight & Size in SA Olive Grove

INNOVATION AT WORK CASE STUDY | **May 2025**

Figure 1 & 2: Left: 5L Neutrog POPUL8, back and front,

Right: Neutrog Sales Representative, Luke Wormald and Olive Producer Matt Waters

KEY FINDINGS

- **~5% increase** in average fruit size
- **~8% increase** in average fruit weight

No significant nutritional differences in soil nor tissue samples were observed.

Standard grower nutrition programs were applied to both the control and treated olive trees throughout the season.

Olive fruit prices continue to exceed those for oil production, but table olive production requires minimum fruit size to meet market standards.

A product like POPUL8™, which has shown potential to slightly increase fruit size and weight, could be used strategically to help growers meet grade specifications and therefore returning higher prices for their crop.

Figure 3. DJ's Agronomist Jen Pedder braving the weather on-farm in the Fleurieu Peninsula

OVERVIEW

The Waters Family and DJ's Growers Agronomist Jen Pedder

Matt Waters is an olive and grape grower based in Sellicks Hill on the Fleurieu Peninsula, SA. He manages 6.65 hectares of Kalamata olives and 9 hectares of shiraz vines near the coast.

Matt works with DJ's Growers agronomist Jen Pedder for pre-season spray planning, in-season pest and disease monitoring, fungicide and herbicide recommendations, while utilising annual soil and tissue testing for nutritional decisions.

From historic soil and plant tissue results Jen was able to identify phosphorous as a common limiting nutrient for this site. A Neutrog POPUL8™ trial was conducted to evaluate the product's ability to liberate the nutrients calcium and phosphorus locked up in the soil. The product was fertigated through the olive groves drip lines in two applications—1. pre-flowering and 2. post-harvest.

THE CHALLENGE

Can an inoculant product complement and or reduce conventional fertilizer programs by improving the availability of locked-up nutrients in a South Australian olive grove?

Rising fertiliser costs are increasing production expenses for primary producers. With the well-documented environmental concerns of conventional fertiliser use, many are now exploring alternative approaches to nutrient management including bio stimulants, biological inoculants, bio-pesticides, reduced pesticide use, and low-input farming systems.

Inoculants can play a role in this system by introducing beneficial microorganisms into the soil or plant environment to enhance desired microbial activity or suppress harmful organisms.

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BIOLOGICALS

Key considerations for growers

When using biological products:

- Assess mixing compatibility of the product with other tank mix or application partners, e.g. copper products often kill many inoculant bacteria
- Timing the application of live or potentially fragile organisms is critical to the efficacy of biological products
- Environmental factors should be considered before application. UV, temperature, h
- umidity, moisture etc. can all affect quality of biological products.
- Look for field trial results that support the efficacy of products.
- Seek products that have proven results in your crop and or soil type.

By taking these factors into consideration, growers can make more informed decisions into the 5 R's. The Right rate, the Right source, Right time, Right place and the Right data.

Biological inoculants can release nutrients by introducing beneficial microbes, some of these microbes convert unavailable forms of nutrient into plant-available nutrients, and others can support root access through improved soil structure and plant-microbe interactions.

METHOD

The aim was to better understand the capabilities of microbes and fungi contained within POPUL8™ and their ability to liberate locked up nutrients within a conventional program.

Popul8 was applied to the olive grove via fertigation 5L/ha. It was applied twice; post-harvest in July 2024 & pre-flowering in October 2025.
A section of the olive grove was left untreated to be used a 'control'. Initial testing included soil, tissue and nutrient composition of fruit at commencement of the trial. These were all taken again 12 months later in both the control and treated sections. Measurements of fruit size and weight were taken post applications in both the control and treated sections.

Figure 3.

Treated (Left) Vs. Untreated (Right) after 2 applications of POPUL8™

POPUL8™

From Neutrog

"POPUL8™ contains a diverse microbiome of some 200+ naturally occurring microbes, plus a further 42 specifically selected bacteria and fungi have been isolated, identified and added for their individual and joint symbiotic purpose and beneficial characteristics.

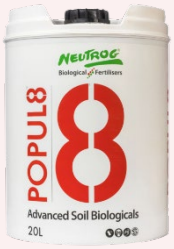
POPUL8™ promotes Nutrient Cycling from its microbiome of 200+ diverse bacteria and fungi known for their ability to break down organic compounds

Liberate nutrients such as phosphorus, potassium and calcium from the inclusion of specific individual microbes

Fix Nitrogen from the inclusion of specific individual microbes that can fix up to 40kg of nitrogen, per hectare, per year

POPUL8™ is suitable for all plant types, soil types and all locations.

It should be applied to soil only, ideally on low UV days and prior to rain if possible. Water in well"



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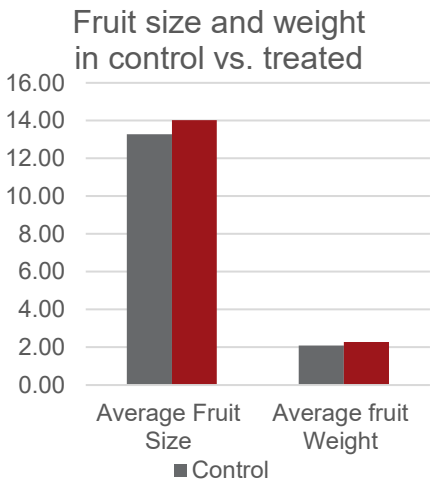
TRIAL RESULTS

Results showed a ~5% increase in average fruit size and ~8% increase in average fruit weight.

Leaf tissue was sampled from both the treated and control blocks after treatment. No significant difference was observed in the tissue results

Soil samples were taken from both the control and treated blocks after two applications of POPUL8™. No significant difference was observed in the soil results.

Nitrogen as nitrate was observed to be higher in the control block and nitrogen as ammonium was higher in the treated section. Consistent with nitrate variability between soil samples.



KEY MESSAGES

Inoculants enhance fruit size

Tissue testing during mid-season growth (August to October) and again at fruit set (December to January) allows olive growers to fine-tune their foliar fertiliser programs if needed. Post-harvest soil testing, conducted between April and June, provides insight into the soil's available nutrients for crop production the following season. By combining tissue, soil analysis and historic crop removal, growers and agronomists can better understand nutrient requirements and adjust their programs accordingly saving money on over or under-applying required nutrients.

This demonstration trial aimed to assess whether an inoculant product could help Matt Waters reduce his reliance on synthetic fertilisers. While tissue and soil test results were inconclusive regarding nutrient uptake or changes in soil nutrient levels, the observed increases in average fruit size and weight suggest potential nutrient release or other co-benefits from the inoculant, resulting in increased fruit size and weight.

Figure 4. treated (left) vs untreated (right)

WHAT'S NEXT

Jen is keen to see this work continue, with future trials including both total phosphorus and Colwell-P (plant-available) soil tests before and after application. This would help identify any changes in locked-up phosphorus becoming more available from the applied biological inoculant.

RESOURCES

Neutrog POPUL8™ website

POPUL8 - Neutrog

Biological Products Database – Soil Wealth ICP

Fleurieu & Hills Landscape Board – Supporting farmers to boost soil health in a changing climate

Supporting famers to… | Landscape South Australia - Hills and Fleurieu

Soils for Life – Practice guide for biological inputs and fertilisers

Practice Guide: Biological Inputs and Fertilisers - Soils For Life

ACKNOWLEDGMENTS

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DJ'S GROWERS MV

P. (08) 8324 4900

44 Chalk Hill Rd, McLaren Vale 5171

E. jennifer.pedder@djsgrowers.com.au

DJ's Growers McLaren Vale

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