

# Case Study

## South Australian Olive Grove

<b>Location:</b>	Coonalpyn, South Australia, Australia
<b>Case Study Period:</b>	August 2016 - Present
<b>Crop:</b>	Olives - Super High Density

The customer is an olive grove in Coonalpyn, South Australia. They are a well respected grower in the Australian Olive industry, producing award winning oil with super high density trees. Very sandy soils have negatively impacted the tree health and nutrient uptake, potentially impacting olive yields, oil quality and oil volume.

### The Challenge

- Build organic matter in very sandy soils
- Improve nutrient uptake to the trees
- Improve CEC
- Improve tree health
- Positively impact yield quantities
- Improve olive oil volume and possibly quality
- Confirm commercial benefits.

### Products Utilised

- Bactivate General Program
- Bactivate Seaweed Solution

### Soil results

After only one year of treatment on the farm, significant soil improvements have been noted. On Block LRO1, organic matter has increased by 41.5%, CEC has improved by over 400%, available calcium has improved by 19%, total soluble salts have decreased by 73% while total phosphorous in the soil has increased by 74%. Available phosphorous has increased by a colossal 1100%.

On block LRO2, organic matter has increased by 56%, CEC has improved by 530%, available calcium has increased by 15%, total soluble salts have decreased by 44% while total phosphorous has increased by over 350%.

The changes to the soil chemistry in just one year have been exceptional, particularly the improvements in CEC and organic matter in very sandy soil. One of the key functions of the microbes used in the Bactivate Program is to improve the organic matter content of depleted soils and increase the nutrient holding capacity, all reflected in the CEC. This all translates to the tree being able to take up better the nutrients that are held within the soil structure, which in turn could lead to a reduction in the amount of fertilisers required. Equally, this positively impacts the volume and quality of fruit produced.



Date of soil analysis	August 2015	August 2016
Block Number	Block LRO1	Block LRO1
Key complete soil analysis items:	Initial analysis	12 month analysis
pH	9.5	9.3
Organic Matter	0.574	0.91
Organic Carbon	0.29	0.46
CEC	0.65	2.81
<b>Exchangeable Cation Balance:</b>		
Calcium Ca%	46.9	57.9
Magnesium Mg%	15.6	22.5
Potassium K%	3.1	5.7
Hydrogen %	0	0
Ca/Mg ratio	2.56	2.57
Total Soluble Salt ppm	795.3	294.69
Total Phosphorus	21.7	59.8
Available Phosphorus	0.1	1.11
<b>Biology:</b>		
Lactic Acid Bacteria CFU	210,000	40,000
Active Fungi CFU	40,000	150,000
Cellulose Utilisers CFU	33,000	48,000
Total Active Fungi CFU	73,000	198,000
Active Actinomycetes CFU	1,000	20,000
C/N ratio	83.2	14.4

Date of soil analysis	August 2015	August 2016
Block Number	Block LRO2	Block LRO2
Key complete soil analysis items:	Initial analysis	12 month analysis
pH	9.5	9.5
Organic Matter	0.58	1.32
Organic Carbon	0.29	0.66
CEC	0.65	3.46
<b>Exchangeable Cation Balance:</b>		
Calcium Ca%	45.3	53.3
Magnesium Mg%	15.6	17.1
Potassium K%	3.1	4.3
Hydrogen %	0	0
Ca/Mg ratio	3.05	3.12
Total Soluble Salt ppm	603.9	339.9
Total Phosphorus	13.6	47.9
Available Phosphorus	0.1	0.1
<b>Biology:</b>		
Lactic Acid Bacteria CFU	600,000	400,000
Active Fungi CFU	50,000	230,000
Cellulose Utilisers CFU	40,000	200,000
Total Active Fungi CFU	90,000	430,000
Active Actinomycetes CFU	1,000	1,000
C/N ratio	71.7	1.7

Conducted by Swep Laboratories.  
ppm denotes parts per million = milligrams per kilograms.  
Cells/g = cells per gram of material.

### **Overall summary**

The Bactivate Program is having a profound effect on the soil composition. The key metrics and analysis points agreed at the inception of the applications, are improving and in many cases significantly. Ongoing soil analysis and an assessment of the health and performance of the trees will continue, in the coming years.

### **Anecdotal Evidence and Results:**

#### Barnea

- Usually get anthracnose but harvested early in order to avoid
- Harvested ok this year
- New root growth identified

#### Arbocina

- Trees really healthy
- Cropping at about 9T per ha each year average across the board
- Looking to get to an average of 10T per ha

#### Starcomgistics

- Trees look better
- Sandy soils with some clay soils
- Trees in sandy soil areas much improved

