

.....

“We’re a young grove but we’ve already seen a 15% increase in production from using compost”

Marek Kwiecien-Fisher,
Operations Manager Regans Ford Estate

.....

Compost for olives – a case study from Regans Ford Estate Pty Ltd, WA

Who

Dr Derek Fisher (Director)
Marek Kwiecien-Fisher (Operations Manager)
Regans Ford Estate Pty Ltd

Where

Regans Ford, north of Perth, Western Australia

What

Olives

Aims

- increase water and nutrient holding capacity of soil
- decrease evaporation from soil in summer
- improve productivity and profitability

Outcomes

- 15% increase in growth
- 15% increase in yield (heavier berries and more of them)
- higher soil moisture content
- increased fertiliser use efficiency

Regans Ford Estate Pty Ltd

Many conventional olive groves are struggling to remain profitable in the face of continually declining international olive oil prices. Dr Derek Fisher, Director of Regans Ford Estate, has taken a different approach to olive plantings and management to minimise their major costs and maximise profitability.

Their 87,000 olive trees are in high density or super high density

plantings and they’re using innovative irrigation and fertigation technologies to get the most out of their inputs. Although the majority of their trees are less than three years old, they’re already seeing savings in water, electricity, fertiliser and labour compared to conventional olive groves.

Regans Ford Estate is still striving to improve profitability and maximise the return on their investment in olive groves.

Why compost?

Water and nutrient retention can be a problem at Regans Ford Estate as the soil is predominantly deep sand over clay and fast draining.

They use micro-pulse irrigation to try and keep water and nutrients in the top 40-50cm of the soil profile. The small doses delivered by the micro-pulse irrigation ensure good water-use efficiency compared to conventional irrigation strategies, but with water kept so close to the

soil surface and soil temperatures reaching up to 70°C in summer, evaporation is high.

Regans Ford Estate applies wetting agents to improve water and nutrient retention but needed a barrier to prevent evaporation. They decided to apply compost to the soil surface to see if it would reduce their evaporation losses over the long term (more than 2-3 years) and keep valuable water in their soil for longer.

Irrigation technology and compost

Typically mulch is made up of a mixture of coarse and fine particles that allow water to penetrate into the soil profile. At Regans Ford Estate they used fine mulch which created a crust when it dried. This prevented water from evaporating or penetrating into the soil. As Regans Ford Estate don't rely on rainfall, it's not as important if water doesn't penetrate from above – a fine mulch works best for them to minimise evaporation. Regans Ford use the latest in computer controlled micro-pulse irrigation technology that puts the water right where the trees need it, in drip lines under the mulch. The fine organic particles in the soil conditioner encourage soil biology and contribute to increased cation exchange capacity – two important elements missing in the conventional management system.

The fine mulch on the soil surface helps to protect the soil from high temperatures and drying out (through evaporation). This means the upper parts of the soil profile are available for plant roots to use which significantly increases the volume of soil that can store water and nutrients.

Compost application

A trial was set up on two adjacent blocks of olive trees in October 2009. Each block had 10,000 trees in a super high density planting over eight hectares. These high density plantings effectively create a hedge of olive trees. In one block, an organic soil conditioner (OSC) was mechanically applied at the base of the olive tree hedge in a continual band of 30cm either side of the trunks at an average depth of 6cm. The soil conditioner was a 'fine' grade, with 100% of the particles less than 10mm in diameter. No compost was applied to the adjacent block so that comparisons could be made. Measurements of shoot growth and internode length were taken from trees in April 2010 and February 2011, six and sixteen months after compost was applied. Berry numbers and weights were assessed in February 2011. Soil moisture was measured continually at a range of depths between 10 and 60cm. Once dried, the compost band developed into a rough, hard physical barrier against evaporation.

.....

“We're growing on sands with very low water retention and cation exchange capacity – we need to increase water and nutrient holding capacity”

Marek Kwiecien-Fisher, Operations Manager Regans Ford Estate

.....

Where to from here?

Regans Ford Estate are continuing to trial compost to see if they can further improve production and profitability. They have applied compost to their groves at a range of different depths and regular soil testing will help them monitor the benefits. They hope to find the most economical rate of compost application for their production system.

The bottom line...

Shoot and internode lengths were higher in the block where compost was applied, resulting in a 15% increase in production. The number and weight of fresh berries was also significantly higher. Soil tests showed the cation exchange capacity, an indicator of a soil's ability to supply essential plant nutrients, was significantly higher where compost was applied. This meant improved fertiliser efficiency and led to savings in fertiliser costs.

Soil moisture was higher in the block where compost was applied because the soil could hold more water. With less irrigation, Regans Ford Estate also cut electricity costs as they didn't need to power their water pumps as often. Cutting fertiliser and electricity costs reduces the operating costs of the farm.

Regans Ford Estate have been so pleased with the results of their trials they now use compost on all of their olive groves.

For more information on the program contact:



An initiative of Compost Australia

www.compostforsoils.com.au

the resource for compost users