

## **Almond Centre of Excellence overview**

The Almond Centre of Excellence (ACE) orchard is located at 57 Anderson Road, Loxton North, South Australia, 5333. The orchard was purchased in 2017 with funding support from the South Australian government. Planting also began in 2017 with the trials on the orchard being funded through the Commonwealth Government's R&D for Profit initiative along with Hort Innovation through industry levy funds. The purpose-built experimental and demonstration orchard spans 60 hectares focusing on research and development to ensure long-term sustainability and profitability for the industry and its stakeholders.

### **Purpose**

The ACE orchard serves as a collaborative platform for industry, researchers and commercial suppliers, enabling the sharing of knowledge and the implementation of the industry's strategic plan. It also serves as a showcase for best management practices, technologies, grower training programs, field days and workshops.

### **Trials**

As the orchard is dedicated to research the accuracy of yield data is significant. Therefore, the commercial harvest methodology has been adapted to produce accuracy of 0.02kg. Each trial has a 'group of data trees (treatment)' that are swept into a windrow that is separated by a split prior to pick up. Each treatment is then collected and weighed on a trailer behind the harvester with subsamples collected by the researching company who takes the for further evaluation such as crack-out, nutritional etc.

### **Harvesting**

Harvesting requires specific measures due to the numerous research and commercial trials that are conducted at ACE orchard. Each trial is individually shaken, swept, and harvested prior to the next to avoid contamination. After a trial has been harvested, the almonds from each treatment are taken and weighed in bins. From these bins subsamples are collected for further research and laboratory testing.

### **Planting Densities (Horizons)**

The ACE orchard is home to ongoing long-term research looking at optimising tree density in plantings. As a form of definition, the various densities are referred to as Horizons. The planted Horizons at ACE orchard include:

#### **Horizon 1**

A traditional tree planting density of 317 trees per hectare at 7m x 4.5m spacings, typical of most commercial orchards. Horizon 1 is designed to be comparable with current industry standards allowing it to be a control from various trials held at ACE.

#### **Horizon 2**

A higher tree planting density of 512 trees per hectare at 6.5m x 3m spacings, that is still in line with current industry developments and can be harvested by traditional

methods. It is a trend of the industry that closer plantings are used to increase immature production volumes.

### **Horizon 3**

Extremely high tree density plantings that pushes operational boundaries. Densities range from 1111 to 1667 trees per hectare at 4-4.5m x 1.5-2m spacings. This density is unable to be harvested by traditional methods.

### **Industry funded projects**

#### **South Australian Research and Development Institute (SARDI)**

- Soil amelioration – Trial 1
- Optimised density – Trial 3
- Optimised density – Trial 4
- Rootstock and scion compatibility – Trial 5 and 6

#### **The University of Adelaide**

- Breeding evaluations – primary, secondary and tertiary
- Cover crops

#### **Plant and Food Research Australia and New Zealand (PFR)**

- High density planting
- Ultra-high density planting
- Architectural studies
- Pruning responses

#### **Almond Board of Australia**

- Rootstock evaluation

### **Commercial trials:**

#### **Stoller**

- Bio-HOLD (Biostimulant)

#### **Muir & Sons/Elemental Enzymes**

- Nucleon

#### **Omnia**

- Rhizovator, Bacstim 100 & Mega Kelp (Biostimulant)
- Eutypa/Botryosphaeria Fungicide

### **Other projects**

- Bee Friendly Farming
- Sprinkler/Drip Dual System
- Bird Laser Scarers
- Autonomous Tractor
- Fish Screens
- Lysimeter in Self-fertile Variety Trial