



ACE RESEARCH PROJECT

Rootstock Evaluation (ABA)

Importance

Almond plantings in Australia are predominantly grown on Nemaguard rootstock irrespective of soil type or management systems. In 2021 76% (44,408 hectares) of industry plantings were recorded to be grafted to Nemaguard. Nemaguard has several advantages such as being nematode tolerant, easy to propagate, relatively cheap and moderately vigorous. At the same time it has some significant disadvantages such as being moderately vigorous, and only moderately water and nutrient efficient, susceptible to calcareous soils and lime induced chlorosis along with root pathogenic disorders in a replant situation and only moderately salt tolerant.

For the long-term sustainability and profitability of the Australian almond industry, new rootstocks are required that are compatible with Australian management systems. While there has been an increase in the availability of prunus rootstocks imported into Australia over the last decade there is limited information available on the performance of these rootstocks in Australian soils.

An initial rootstock evaluation trial site was established at Lindsay Point, South Australia in 2013 (AL11012) to assess and evaluate rootstock compatibility with the common cultivar grown in Australia, Nonpareil. A second rootstock evaluation project was established in 2019 and 2020 at the ACE orchard (AL16006) comparing the performance of several different rootstocks against current industry standard rootstock Nemaguard. The purpose of this site was to further the assessment of rootstocks that did not establish in the first trial site, while also adding some newer rootstocks to the sandy soil evaluation.

Features

The rootstocks include Atlas, Viking, Cornerstone, Garnem and Nemaguard. All rootstocks were grafted with both Nonpareil and Vela varieties. Rootstocks were planted at Horizon 2 density in groups of 20 trees in a randomized design for statistical analysis. This trial is planted on light sandy loam.

Trees were planted over two years due to a shortage in propagation material. The assessed rootstocks and number of replicates are as follows:



- 2019 – Nemaguard (3), Atlas (2), Viking (3), Garnem (3), Cornerstone (3), Rootpac R (1) and Barrier 1 (1).
- 2020 – Atlas (2), Viking (1), Cornerstone (1).

Results (Last Updated, April 2023)

Trees planted in 2019 are now coming into production enabling mechanical harvesting. The values provided in Table 1 are from the 2019 plantings only and do not include the results from trees that were planted in 2020 as there was very little crop on the two-year-old trees.

Table 1. 2021 and 2022 yield data from the ACE Orchard rootstock trial from 2019 plantings.

Rootstock	Number of Replicates	Average Kernel yield 2021 (kg/ha)	Average Kernel yield 2022 (kg/ha)	Average Kernel per tree	Average Fruit per tree	Average Crackout*
Atlas	3	977	1,455	4.07	38	32
Viking	3	735	1,264	3.54	35	30
Garnem	3	1,054	1,730	4.85	48	30
Cornerstone	3	1,518	1,475	4.13	43	29
Nemaguard	3	1,568	1,557	4.36	44	30