



Importance of good establishment to maximise processing pea yield

Key messages for growers

- TIA research using Ashton, Reliance and Resal cultivars indicates when spacing between plants and within rows is equidistant at 100 plants m², gross income is maximized.
- Simulating machine planting at 13cm, compared to 20cm row spacing, demonstrated that closer row spacing (13cm) can also increase gross margins.
- While still using existing commercial drills, with greater focus on distribution, uniformity of seed metering and soil preparation, achieving the 8 t/ha target is a realistic average.

Importance of pea processing to Tasmanian growers

Each year Tasmanian vegetable growers produce approximately 24,000 tonnes of green peas from about 4000 ha for processing.

Peas represent between 40-45% of Simplot Australia's vegetable processing factory throughput, and underpin the frozen vegetable industry.

Project Objectives

The Pea and Bean Productivity Group alongside Simplot have set an average yield target of 8 t/ha by the year 2020.

The group identified plant establishment as a focus area, as this is the foundation for achieving maximum yield.

This study seeks to evaluate the effect of stand density, drill variability, spacing arrangement and branching on yield.



Why plant density and spacing affects yield

Pea plants compete for light, water and nutrients; essentially for growing space. The optimal distance between and within rows spreads resources evenly between plants.

We confirmed that peas produce a maximum processing yield at ~100 plants m² across all drill configurations.

At this density, when the spacing between plants is equidistant between and within rows, yield can be increased further.

While we can plant on the square by hand, how close can a drill get to this?

This was explored using hand planting at a density of 100 plants m² and an equidistant spacing arrangement to provide a baseline for maximum yield.

This was compared to 13cm and 20cm machine row configurations. Pea yield was increased when hand planted at 13cm, but a smaller gain was achieved by machine. This indicates that more work is required to understand the influence of ground preparation and drill set up on establishment.

Ground preparation and drill set up determines maximum yield potential

Even emergence and establishment is the key to a high yielding crop. To germinate and emerge evenly, seed needs good soil contact, a constant planting depth and uniform moisture.

Rough finish and clods in paddocks compromise depth and seed soil contact. Late emerging seedlings are easily damaged by herbicide, outcompeted and won't mature by harvest.

We compared drill performance and found a high level of variability both across the paddock and with individual drill units. Improving ground preparation and drill performance can increase margins by up to \$750 per hectare.

Effect of plant arrangement on return (\$/ha)



Results from hand planted trial blocks adjusted for MI

Building on the investment for maximum profit

Research by TIA has demonstrated 91% of the final pea yield is harvested from the first two reproductive nodes on the plant.

This emphasises the importance of strong even plant development during this phase, so that flowering and pod development occurs on all plants at the same time.

Flowers and pods readily abort in response to competition, and irrigating during the flowering and pod fill phases plays a significant role in their retention to maximise yield.

Applying preventative fungicides under high disease pressure can also increase returns by up to \$350 per hectare.



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