

Tackling Food Waste: Oz Group Co-op's Third Grade Fruit Management

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In this mini-series, we look at various innovative ways that members of the berry industry utilise waste to maximise profitability and reduce environmental impacts. In this edition, we look at the utilisation of a familiar waste product found on all berry farms; third grade fruit.

It is undeniable that horticulture industries across Australia produce tonnes of food waste every season that may never even leave the farm gate. The biggest contributing factor is the application of grading standards to categorise fruit designed to provide quality tiers that meet both retail and consumer expectations. This is accentuated in the berry industry as the fruit is considerably more delicate as compared to apples or oranges, for example.

The waste generated often comes from produce that does not meet the highest grade for fresh sale, driven by expectations set out by retailers to service the needs of their consumers. Fresh fruit grades are described as using objective standards and vary between both countries and customers within the supply chain. Consumer expectations are also continually evolving, and standards have had to adjust over time to continue to meet those expectations. Quality and shelf-life play an increasingly vital role in determining acceptability in both the fresh produce wholesale market and retail sale channels.

The most common defects to occur during blueberry and Rubus harvests are splits and tears, with the risk of bruising more likely during the post-harvest process, which includes transportation, grading, packaging and storage. Harvested berries with large picking scars, tears and splits are prone to quicker deterioration, which will affect the overall presentation of the final packed product.

Ensuring that all berries with defects are removed during the grading process is extremely important to maintain a high-quality standard and deliver the maximum potential shelf-life.

Fruit grading happens throughout the entire harvesting process, from the pickers to the sorters, to the farmers and eventually through the packing facilities. During this process, large amounts of fruit is discarded, either thrown on the ground at farm or moved to waste disposal sites at packing facilities.

Substantial improvements in the grading process have been made in recent years, with most packhouses mechanising some part or all of their systems and thereby reducing the manual components of the packaging line. These days, AI and tailored sensory technology ensure that fruit is graded with increased efficiency and accuracy.

As the berry industry continues to expand and mature, increased operational costs and more competitive sale pricing will result in tightening profit margins for growers. This places an added emphasis on finding more creative ways to improve cost efficiencies and margins back to the grower.

Generating an income from waste products not only reduces the cost associated with waste disposal but adds an additional source of revenue to profit margins.



Mechanised sorting equipment in use at the Oz Group Co-op packhouse takes fruit from the orchards (above) and separates the defective fruit from the premium berries. Photo credit: Gaius Leong

Since 2017, the Oz Group Co-op have become Australia's single largest supplier of blueberries to the fresh market. In 2020, it generated 163 tonnes of waste product that cost approximately \$250,000 in waste disposal fees. The waste was used in the production of mulch, which ensured continuance for the product but not profitability to the growers.



(L-R) Fruit graded out for colour defects, fruit with size defects and the finished premium packed fresh berries.

Photo credit: Gaius Leong

Extensive market research and adequate investment has assisted Oz Group with innovative ways to monetise fruit that does not meet market grade by creating new products like snap frozen berries and jam, or allowing other companies to incorporate graded-out fruit into their products like freeze-dried powder, juices and smoothies, alcoholic drinks, or soft drinks. These additional sales channels were secured over a period of 3-5 years and this value stream is currently overseen by the Oz Group's production development manager, Shaun Tholen.

The product development process began with investment into equipment that provided snap-freezing capabilities. Even though the investment was substantial, the organisation saw the opportunity to improve profitability and sustainability through tapping the potential of an underutilised resource. Since Covid-19, an increasing number of businesses have approached the Oz Group to discuss incorporating the use of graded-out fruit in their products.



Snap freezing capability developed by the Oz Group in recent years. Berries are washed, snap frozen then portioned and packed.

Photo credit: Gaius Leong

The berries are treated in various ways, depending on the requirements of the supply chain. Products can either be delivered to the customers as snap frozen, bulk frozen or fresh.



Frozen berries sold to Coles are frozen using a technique called IQF (individual quick freeze). Currently, at time of writing, these are the only frozen berries available year-round that are produced in Australia. Most frozen berries available in the supermarkets originate from South America and Asia. Photo credit: Gaius Leong



Oz Group employees Shaun Tholen (L) and Susan Marshall (R). Photo credit: Gaius Leong



The company can now supply multiple formats of processed fruit using graded-out fruit that would previously have been wasted. Photo credit: Gaius Leong

In 2023, Oz Group estimates that 95% of the projected 200 tonnes of production waste will be re-used, while the remaining 5% will still be used for mulch production. The 5% comprises of mould affected berries which are not viable for food grade use. This shift in approach has doubled the profitability of graded-out fruit and reduced waste disposal fees by 92%. This is a substantial improvement in a few short years.

Since the beginning of 2023 (January-June is a considerably low production period for the Oz Group), sales from the by-products have generated healthy revenue and helped to even out cash flow. The benefits to the environment are substantial too, with the reduction in transportation to the waste facility resulting in lower CO₂ emissions and a reduction in pressure on local waste disposal services.

As waste management continues to take a higher priority in the industry, let us continue to build a more sustainable, and environmentally-conscious attitude to not only reducing waste but enhancing the overall viability of horticultural businesses.

Acknowledgements

Special thanks to Oz Group's employees, Shaun Tholen and Susan Marshall for the tour of the packing facilities and necessary information provided for this article.



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