

WA Strawberry Quality Forum

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Strawberry growers, market agents, quality assurance specialists, and industry staff came together at an industry quality forum on 14 July 2021 to discuss how the WA strawberry industry could improve fruit quality and sales.

Perth Market insight

The Perth market is small, and WA produces more strawberries than the current market demands, especially from August to November (Figure 1). As strawberry volumes begin to increase in July, oversupply becomes an issue and wholesale prices drop (Figure 2).

Fruit that meets the requirements of major customers is in plentiful supply; while fruit that doesn't meet these requirements is also plentiful but is very difficult to sell. This puts downward pressure on grower returns as 'out of spec' fruit is heavily discounted. Returns of 80 cents to \$1 for a 250g punnet are common for discounted strawberries during peak season. The break-even return for traditionally grown strawberries in WA is estimated at \$1.40 per 250g punnet.

Up to 70% of fruit sold through the Perth Market is purchased sight-unseen. Buyers of this fruit expect good quality and growers must comply with higher-level quality assurance schemes, such as Freshcare, HARPS and ethical trade initiatives. During peak season, fruit must be exported to external markets, either domestic or international, which requires further certification. These export markets are vital and fruit quality and varieties that travel well are essential. Buyers of sight-unseen product are brand or supplier loyal and expect the same if not better product if their preferred brand is unavailable.

The remaining 30% of fruit is sold from the market floor to an increasingly small pool of buyers. Foot traffic in the markets is low as most product is sold prior to the market opening. Fruit not sold sight-unseen is therefore very difficult to move and usually goes to price-sensitive buyers for discount prices.

Buyers that walk through the markets tend to purchase smaller quantities and want the better-quality fruit but for the same price as the cheaper lines. There is no mid-range pricing in the Perth Market anymore.

Mondays are a busy day at Perth Markets, with lots of fruit changing hands. Good quality fruit generally moves quickly on a Monday (when the market is not flooded). Tuesdays are less busy, and Wednesdays are very quiet with little opportunity to move fruit that didn't sell on Monday. Thursday is the busiest day and any fruit not purchased earlier in the week is discounted on that day, so it's not held over the weekend. Any good quality fruit generally moves quickly on a Thursday. Fridays are also busy, and marketers aim to minimise any strawberries they are still holding before the markets close for the weekend.

Opportunities for improvement

The berry category is growing in Australia so there is optimism for the future, particularly if issues with fruit quality can be overcome. Improvements in quality and consumer acceptability have seen increases in sales volumes and prices in other horticultural industries.

Forum participants highlighted four key areas where there is an opportunity for growers to improve consumer acceptance and industry profitability:

- **Variety selection** – choosing superior tasting varieties that produce consistent quality throughout the season such as Albion and Fortuna – choose 'quality over quantity'.
- **Fertiliser and irrigation practices** – ensuring the correct balance of nutrients is always available to optimise fruit integrity and taste.

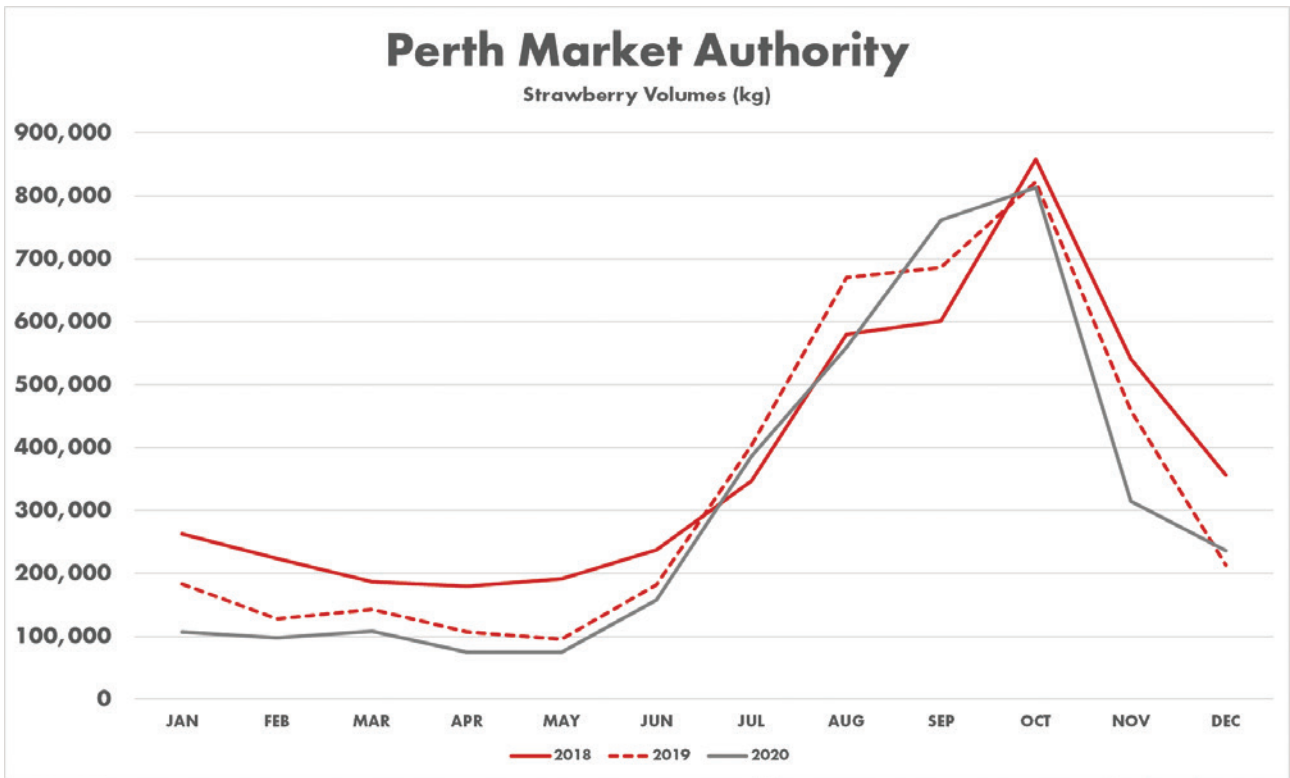


Figure 1. Volumes of fruit sold through the Perth Market Authority (Market West data).

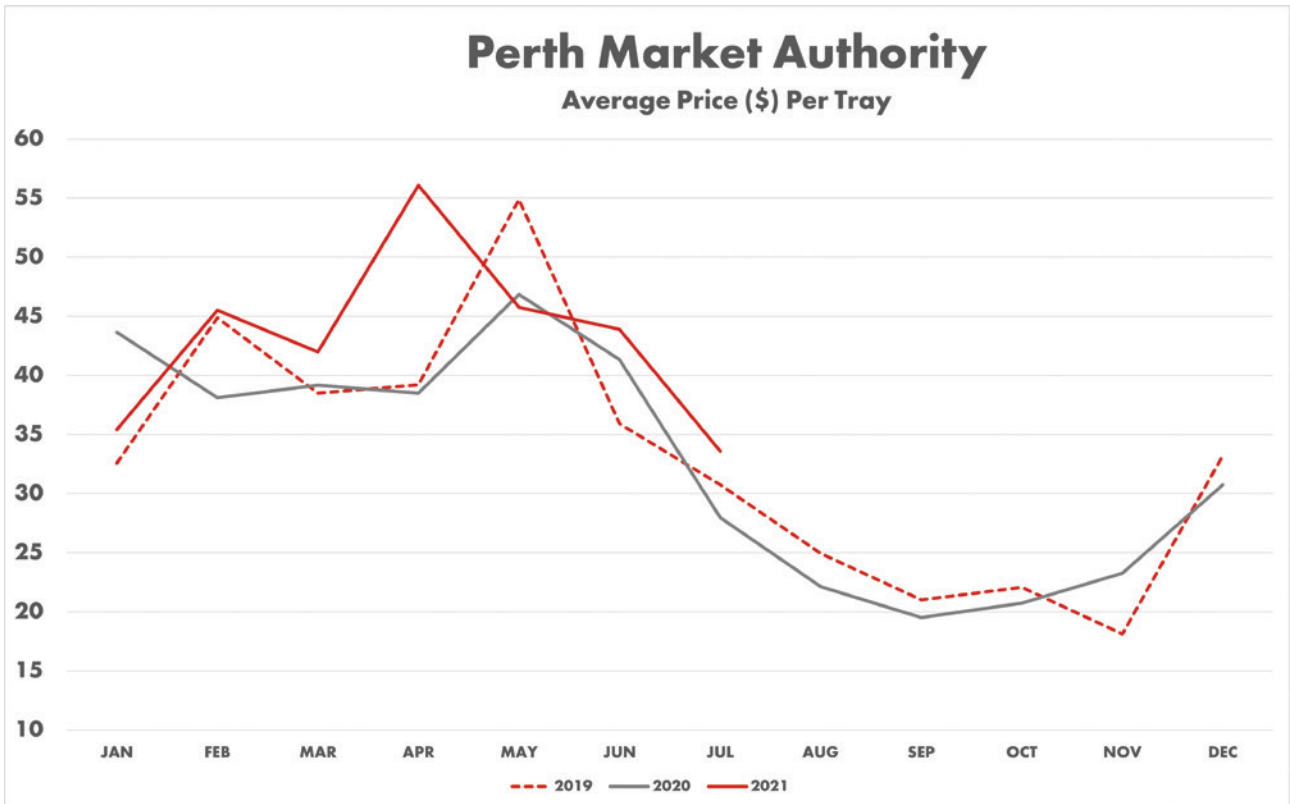


Figure 2. Average monthly prices for strawberry trays sold through the Perth Market Authority (Market West data).

- **Picker and packer training** – picking and packing fruit with the appropriate level of ripeness into industry-standard size categories to avoid mixing of sizes and ripeness in punnets.
- **Cold chain management** – removal of field heat on-farm to prevent rapid deterioration of fruit and maximise shelf life.

A transition to protected cropping using substrate production on tabletops was also seen as a good opportunity to improve quality and profitability and a way to address labour shortages.

Variety selection

In the Perth region, the most reliable varieties in terms of consistent fruit quality and consumer acceptance are Albion and Fortuna. Albion performs well from August to November and is considered one of the best tasting varieties on the market. Fortuna is another mid-to-late season variety with excellent taste and storage characteristics. Fortuna is more susceptible to soil pathogens than other varieties so you must have good soil fumigation practices (Figure 3) and healthy mature runners to succeed with this variety.

Other high-yielding early varieties such as Festival and Fronteras have been problematic in WA. Festival generally performs well in winter when the correct fertiliser and irrigation is applied but has very poor quality outcomes when too much nitrogen (N) and not enough potassium (K) and calcium (Ca) are applied. Quality also quickly deteriorates in warm weather, so marketable fruit is generally not produced after August. Fronteras also has very poor quality characteristics when fertiliser and irrigation applications are out of balance; it also suffers from green shoulder which can be unappealing to buyers.

Some of the quality issues seen with these early season varieties can be improved with better fertiliser management and picking practices, however good results can be tricky to achieve.

New varieties continue to become available through Australian and international breeding programs. It will be important for growers to evaluate these varieties on-farm and carefully select those that produce superior tasting fruit with consistent quality in the WA environment.



Figure 3. Good fumigation practices are essential to success when growing Fortuna. Soil must be uniformly wet to achieve good fumigation, as fumigant will not flow through dry patches. This aerial image shows a common pre-fumigation sprinkler uniformity pattern seen in the Perth region. Variations in pressure and flow rate create this poor uniformity which leads to poor fumigant distribution. Photo credit: Google Earth



Figure 4. Problematic traits of early season varieties: both Red Rhapsody and Fronteras (pictured left) suffer from green or white shoulder in the Perth climate, which is not appealing to buyers. Festival (pictured right) looks great, and attracts buyers, but is often tasteless so does not get repeat purchases. Fronteras also often lacks flavour and can become watery and soft later in the season. Photo credit: Helen Newman, APC

Fertiliser and irrigation practices

- Over-application of nitrogen and poor maintenance of calcium and potassium levels in the soil create fruit that is flavourless and watery with little shelf life.
- Base applications of compost and manure before planting must be avoided as they provide excessive and uncontrolled amounts of nitrogen to the plant early in the season.
- Regular application of fertiliser through the irrigation system (fertigation) is recommended, with the balance of nutrients adjusted to meet the requirements of each individual variety.
- Growers focused on maintaining fruit quality should also conduct regular petiole sap and soil tests throughout the season to help guide their nutrition programs.

Monitoring and accurate maintenance of soil moisture is also crucial. Over application of water will wash nutrients out of the root zone which is wasteful and liable to create deficiencies. Under application of water disrupts the flow of nutrients to the plant (also causing deficiencies) and causes salts to concentrate damaging plant roots and leaving them susceptible to soil-borne diseases. For the best results, irrigation schedules should be monitored and adjusted using in-field soil moisture monitoring equipment.

Picker and packer training

Unripe fruit with green or white shoulders is not visually appealing to customers so care must be taken with the timing of picking. Mixing of berry sizes within the one punnet, particularly when small berries are hidden under large ones, is also concerning and drives customers away. Training pickers and packers in how to select suitably ripe fruit and how to grade fruit size will help address this problem.

Implementation of cold chain procedures

Investment-in and utilisation-of on-farm cooling systems to remove field heat from strawberries (yes, even in winter!) is crucial to maintaining fruit quality and is another key area for improvement. Some market floors forced-air-cool fruit on arrival, however as fruit must be cooled within an hour of harvest, cooling on-farm is crucial. For details on this see the post-harvest handling article on Page 72 in the Winter 2021 edition of the Australian Berry Journal.

