

Farm benchmark report 2019 production season

Sample Farm



Acknowledgements

This report has been produced as part of the “Benchmarking the macadamia industry 2019-2021” project (MC18002). This is a joint initiative of the Department of Agriculture and Fisheries, the University of Southern Queensland and NSW Department of Primary Industries with support from the Australian Macadamia Society.

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FUND**

Disclaimer

Results presented in this report are based on data provided by industry participants. Figures presented are based on summary statistics using underlying data that is not included in this report.

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Scope and coverage

A total of 272 farms covering 10,759 hectares participated in benchmarking during the 2019 season. Yield and quality information was sourced from 265 of these farms, which produced 26,539 tonnes of nut-in-shell at 10% moisture content. This represents approximately 57% of total industry production based on the Australian Macadamia Society crop estimate of 46,600 tonnes of NIS.

This report on the 2019 season is based on available data collected up to March 18, 2020.

What's included in this report?

This report summarises yield and quality results for your farm for the 2019 production season and costs of production for the 2018/19 financial year. It also compares your farm's performance with the averages of other farms in the benchmarking pool. If you have participated in previous seasons then trends over those seasons are also shown.

In 2019 average productivity for farms in the benchmark sample was 2.77 t/ha of NIS and 0.87 t/ha of SK. These values are lower than the 2018 season but consistent with the long-term average for the benchmark sample (2.74 t/ha NIS and 0.88 t/ha SK respectively). SKR averaged 33.6% across the sample in 2019, which is the lowest seasonal average recorded since 2013. The 2019 average is substantially lower than the 2018 result (35.8%). It is also lower than the long-term average (34%).

Average productivity dropped between 2018 and 2019 in the CQ, SEQ and MNNSW regions. NRNSW was the only production region to achieve increased average productivity between the 2018 and 2019 seasons. SKR dropped in 2019 in the SEQ, NRNSW and MNNSW regions but remained stable in the CQ region.

Summary of the 2019 season

Figure 1 shows trends in the average nut-in-shell (NIS) and saleable kernel (SK) yield per bearing hectare for mature farms in the benchmark sample from 2009–2019. Average saleable kernel recovery (SKR) for all farms in the sample is also shown.

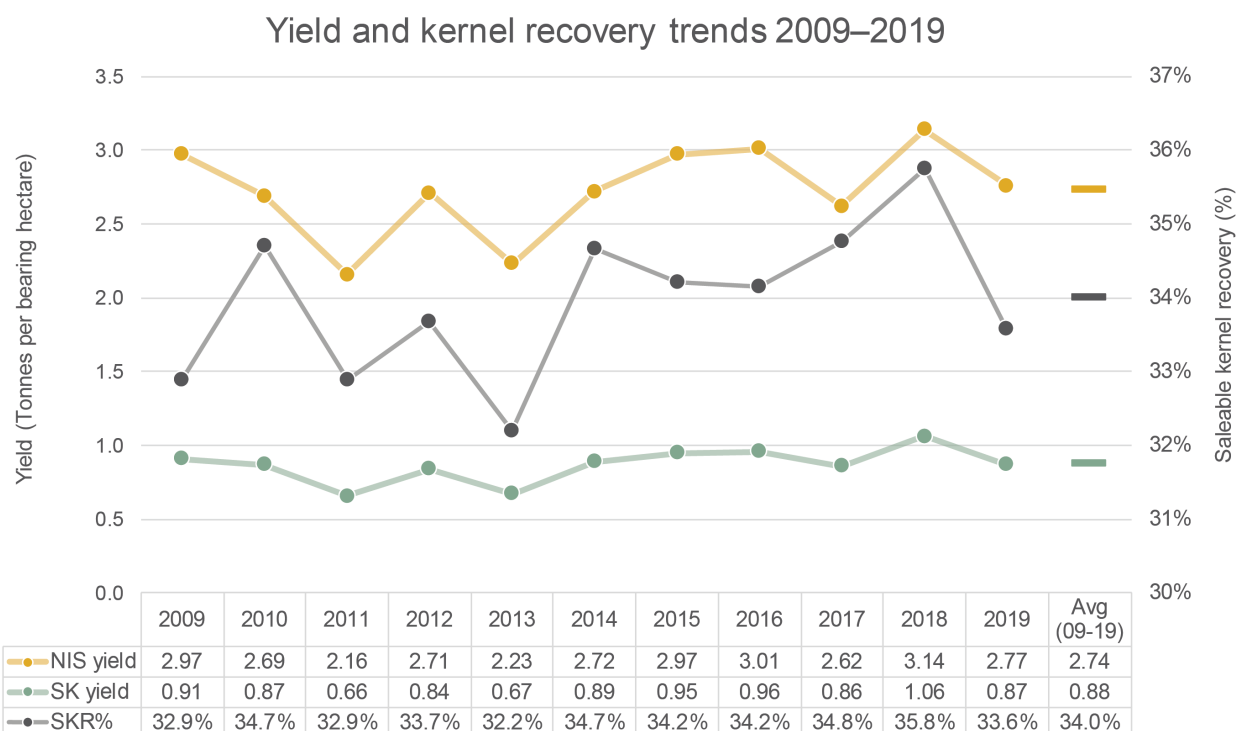


Figure 1: Average yield and kernel recovery trends for 2009 to 2019

Benchmark participants were asked to rank limiting factors affecting production on their farm in 2019 (Figure 2).

The top three factors ranked by participants were hot or dry weather, pests and wet weather. Approximately 2% of respondents indicated that there were no factors limiting production in 2019.

Hot or dry weather was by far the most commonly reported factor affecting production across all regions. This was similar to conditions reported in 2017.

Pests were the next most commonly reported factor limiting production in 2019 (Figure 2). Over a third of farms in the CQ region reported pests as a limiting factor. Farms in the SEQ, MNNSW and NRNSW regions all reported similar levels of between 14 and 17%.

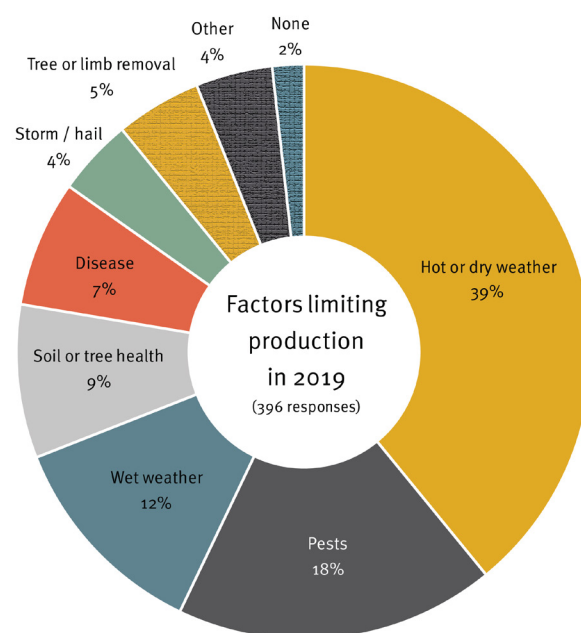


Figure 2: Major factors limiting production in 2019



Figure 3 shows the factors limiting production within each region. Hot or dry weather and Fruit Spotting Bug impacted farms across all production regions in 2019.

Many participants who ranked wet weather as a limiting factor indicated that timing was the issue, particularly rain coinciding with flowering. Approximately 90% of these reports were from participants in NSW. The high incidence of flower diseases reported in the NRNSW region may be related to wet weather at flowering in this region.

Regional factors limiting production for the 2019 season <i>% shown in brackets indicates the proportion of regional participants who reported limitations</i>			
Region	Limiting factor most reported	Limiting pest most reported	Limiting disease most reported
CQ	Hot or dry weather (40%)	Fruit Spotting Bug (34%)	Husk spot (24%)
SEQ	Hot or dry weather (44%)	Fruit Spotting Bug (19%)	Phytophthora (8%)
NRNSW	Hot or dry weather (69%)	Fruit Spotting Bug (22%)	Flower diseases (18%)
MNNSW	Hot or dry weather (62%)	Fruit Spotting Bug (19%) or Birds (19%)	Phytophthora (42%)

Figure 3: Regional factors limiting production in 2019

Results for your farm for 2019

Figure 4 provides a summary of your yield and quality for the 2019 season. You can compare your 2019 results against all farms in the benchmark sample as well as other farms in your locality and region, and other farms of a similar size, age and management system.

Yield and quality summary for 2019

Farm: Sample Farm

Owner / Manager: Sample Grower

Your yield results compared with the averages of bearing farms in the survey	Total farms	Bearing farms	Planted hectares	Bearing hectares	NIS yield (t / bearing ha)	Moisture content %	Whole kernel %	Saleable kernel (t / bearing ha)	Total kernel (t / bearing ha)
Your farm	1	1	30	30	3.5	18.5	60	1.17	1.22
All farms in the benchmark pool	273	265	39.6	37.16	2.709	15.16	48.78	0.86	0.92
SEQ region	53	53	27.61	27.16	2.826	14.08	46.7	0.88	0.93
Glasshouse Mountains locality (4510 to 4520)	23	23	22.53	22.09	2.928	14.51	47.45	0.93	0.97
Similar bearing tree age (15 to 19 years)	53	53	45.36	44.28	2.739	15.62	50.75	0.91	0.98
Similar farm size (30 to 50 ha.)	45	44	38.23	37	2.623	14.81	48.45	0.8	0.86
All owner operated farms	195	189	29.46	26.35	2.671	15.7	48.26	0.84	0.9
All irrigated farms	96	91	69.53	64.41	2.77	12.75	47.89	0.88	0.94

Your quality results compared with the averages of bearing farms in the survey	Kernel recoveries			Reject kernel analysis %					
	Premium KR%	Commercial KR%	Reject KR%	Insect damage %	Mould %	Discoloured %	Brown centres %	Immature %	Germinated %
Your farm	32.5	3.4	1.5	0.7	0.2	0.1	0.3	0.15	0.05
All farms in the benchmark pool	30.16	3.43	2.47	0.99	0.33	0.19	0.45	0.46	0.08
SEQ region	30.59	2.55	2.04	0.85	0.27	0.21	0.38	0.26	0.07
Glasshouse Mountains locality (4510 to 4520)	31.17	2.85	1.54	0.41	0.24	0.13	0.38	0.33	0.06
Similar bearing tree age (15 to 19 years)	31.46	3.83	2.81	1.07	0.39	0.21	0.51	0.58	0.05
Similar farm size (30 to 50 ha.)	29.92	2.76	2.3	0.75	0.34	0.18	0.48	0.45	0.08
All owner operated farms	30.24	3.24	2.41	0.99	0.32	0.18	0.36	0.46	0.07
All irrigated farms	31.35	2.65	2.46	0.99	0.28	0.27	0.68	0.31	0.07

Figure 4: Summary and comparison of yield and quality results

Figure 5 shows how your farm's production of saleable kernel (shown as a red bar) compared with other farms in the benchmark sample. These include farms within your locality, region and state. Your farm is also compared with farms of similar size, average tree age, management style and use of irrigation.

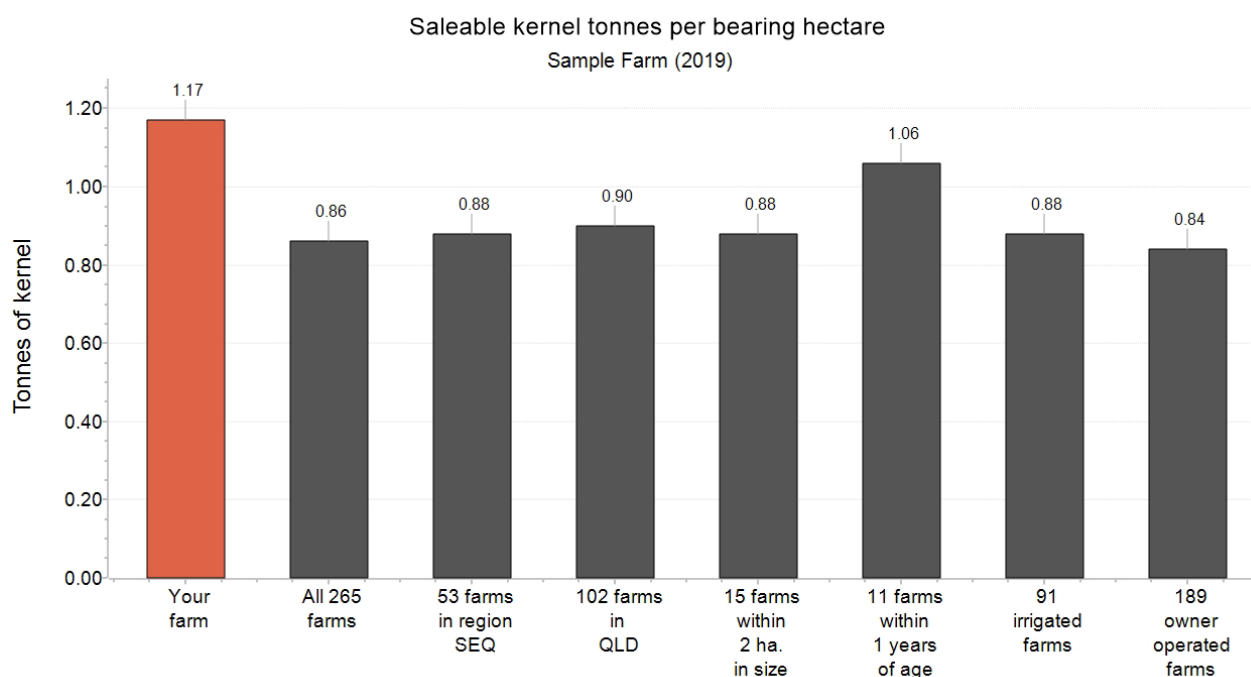


Figure 5: Saleable tonnes per bearing hectare for the 2019 season

Figure 6 ranks your farm's production of saleable kernel against all other farms in the benchmark sample. The green shaded areas to the left and right of the chart show the top and bottom 25% of farms in the sample and the area in the middle shows the middle 50%. Your farm is shown highlighted in red. Your saleable kernel per bearing hectare result and your rank in relation to other farms is shown in the subtitle on the chart.

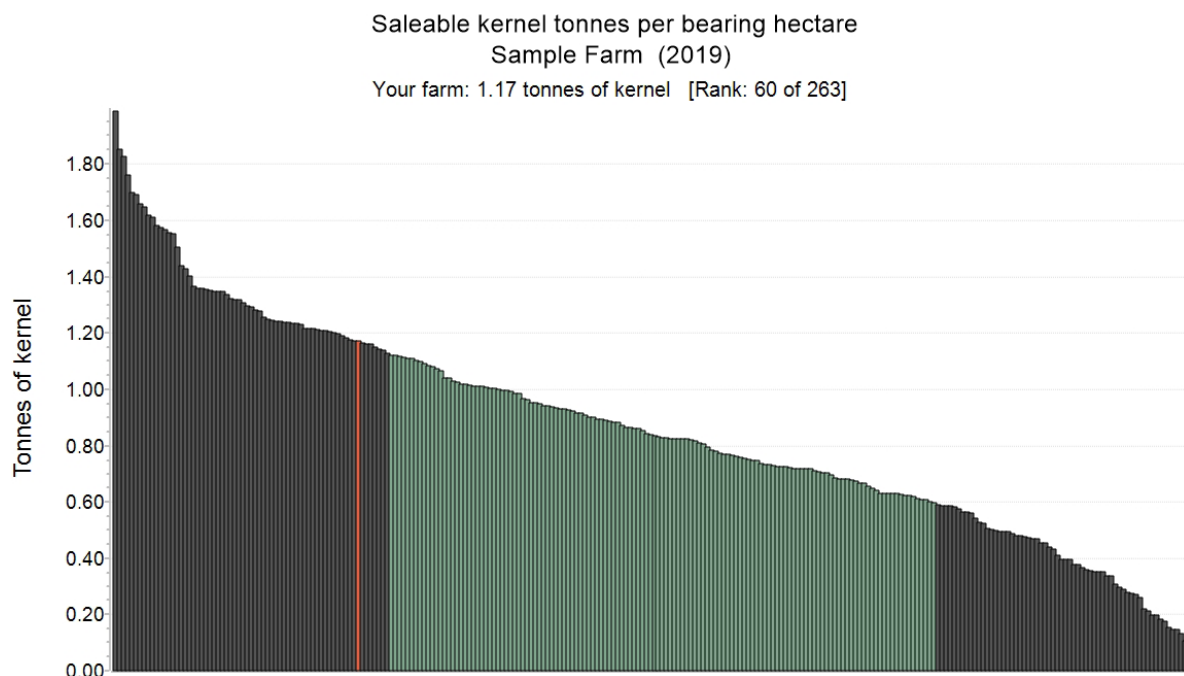


Figure 6: Saleable kernel tonnes per bearing hectare ranking for the 2019 season

Figure 7 shows your farm's ranking for saleable kernel recovery within the benchmark sample for the 2019 season. Your farm is shown as a red bar. The green shaded areas to the left and right of the chart show the top and bottom 25% of farms in the sample and the grey area shows the middle 50% of farms. Saleable kernel recovery is defined as the sum of premium and commercial kernel recovery.

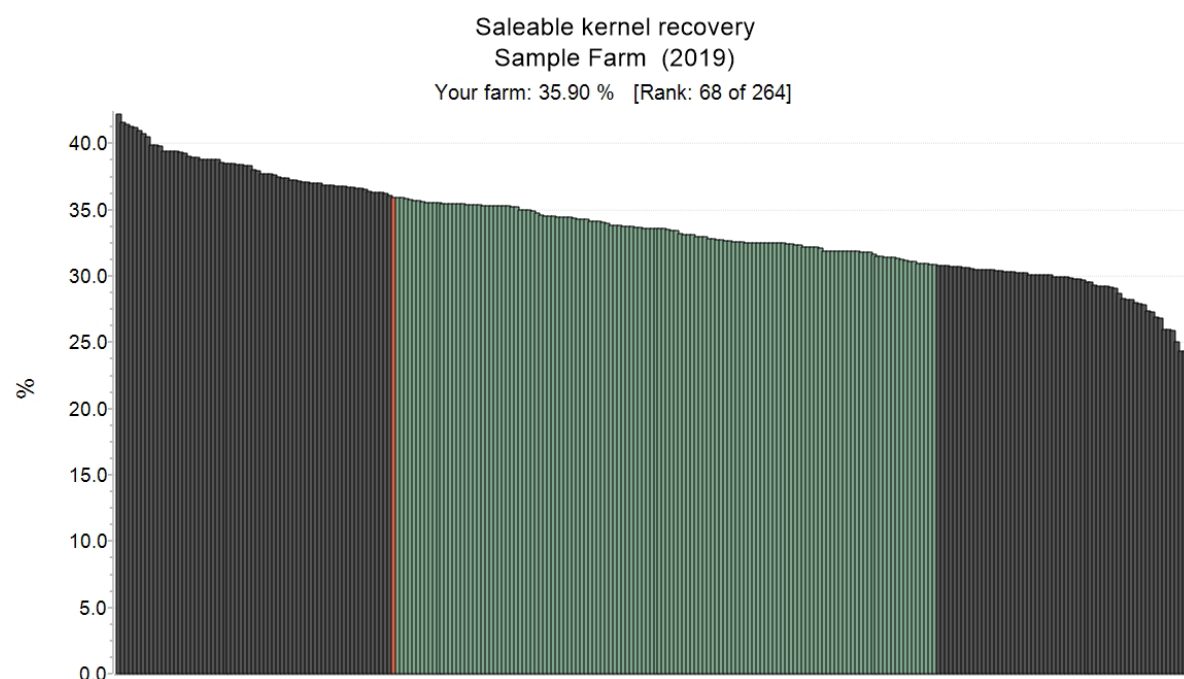


Figure 7: Saleable kernel recovery % ranking for the 2019 season

Figure 8 shows your farm's ranking (shown as a red bar) for reject kernel recovery within the benchmark sample for the 2019 season. The green shaded areas to the left and right of the chart show the top and bottom 25% of farms in the sample and the grey area shows the middle 50% of farms. As low reject levels are desirable the rank order of this chart is the opposite of saleable kernel recovery with lowest to highest reject kernel recovery displayed from left to right.

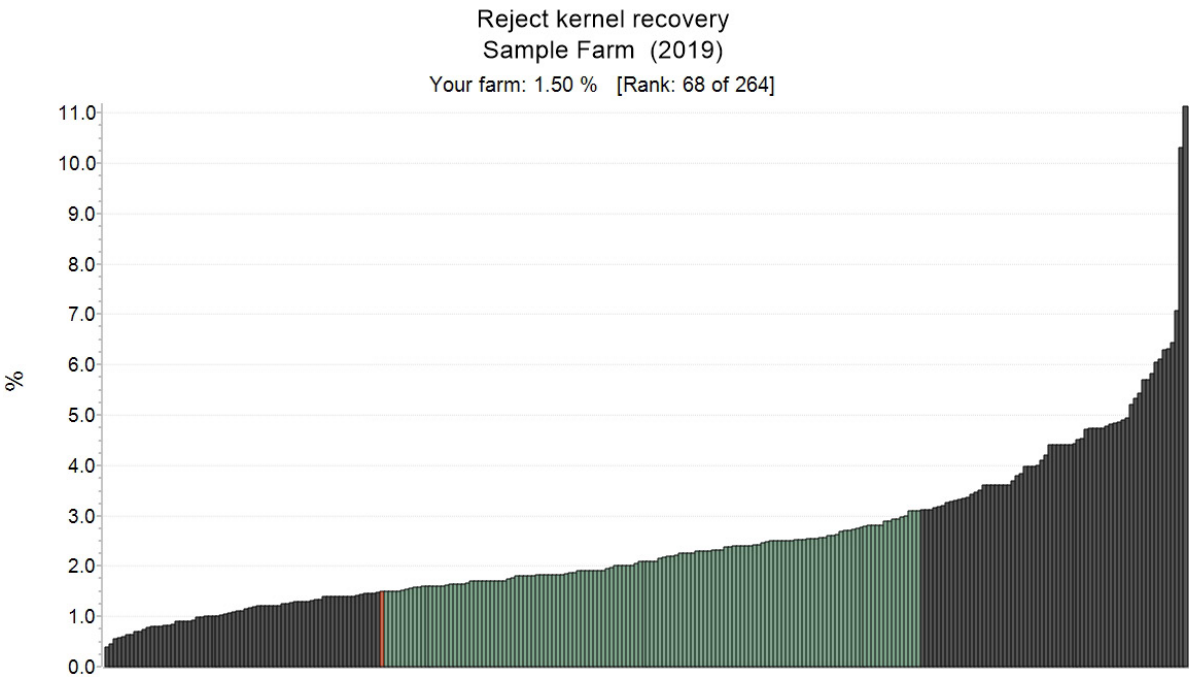


Figure 8: Reject kernel recovery % ranking for the 2019 season

Figure 9 compares your farm's 2019 reject analysis results with other farms in the benchmark sample. These results are based on standard consignment reject categories applied to all participating farms. These include insect damage, mould, discolouration, brown centres (internal discolouration), immaturity (shrivelled kernel) and germination (discoloured crest). Each reject category is represented by a different colour on the chart. The relative size of each colour section on the bars reflects the proportion of total reject that relates to each reject category.

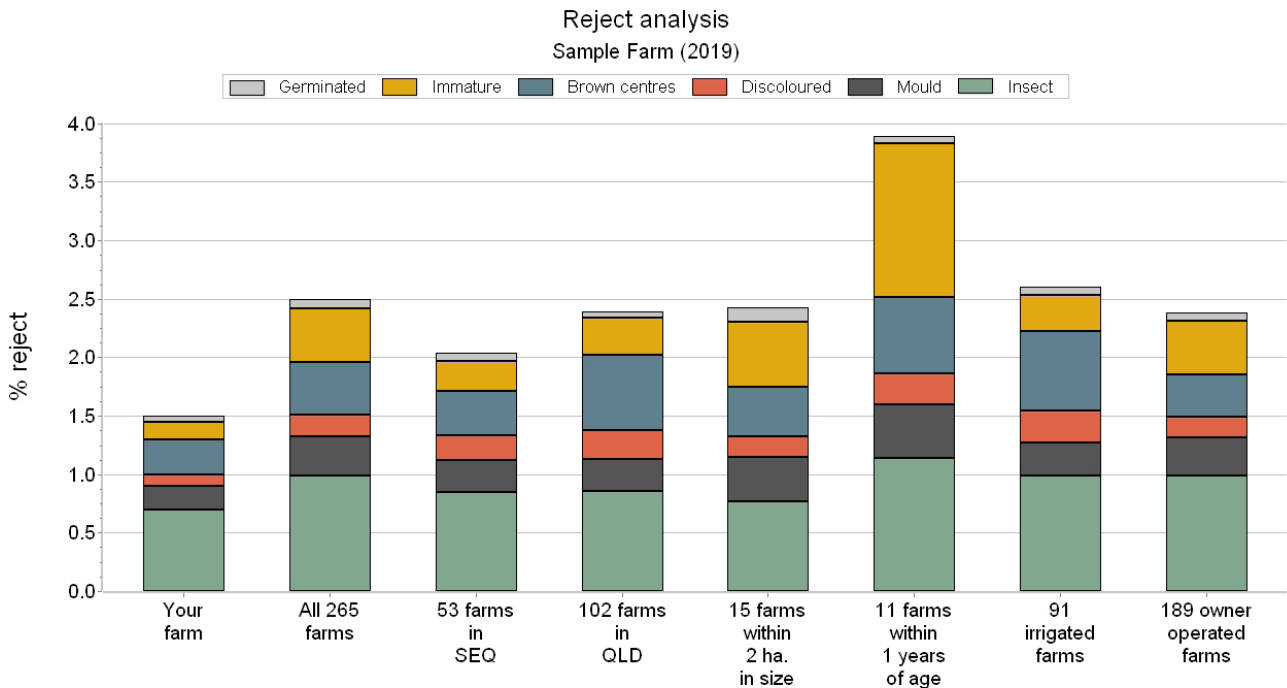


Figure 9: Reject analysis of major reject categories for the 2019 season

Figure 10 compares your farm's total costs per planted hectare (shown as a red bar) with other farms in the benchmark sample who supplied cost of production data for the 2018/19 financial year.

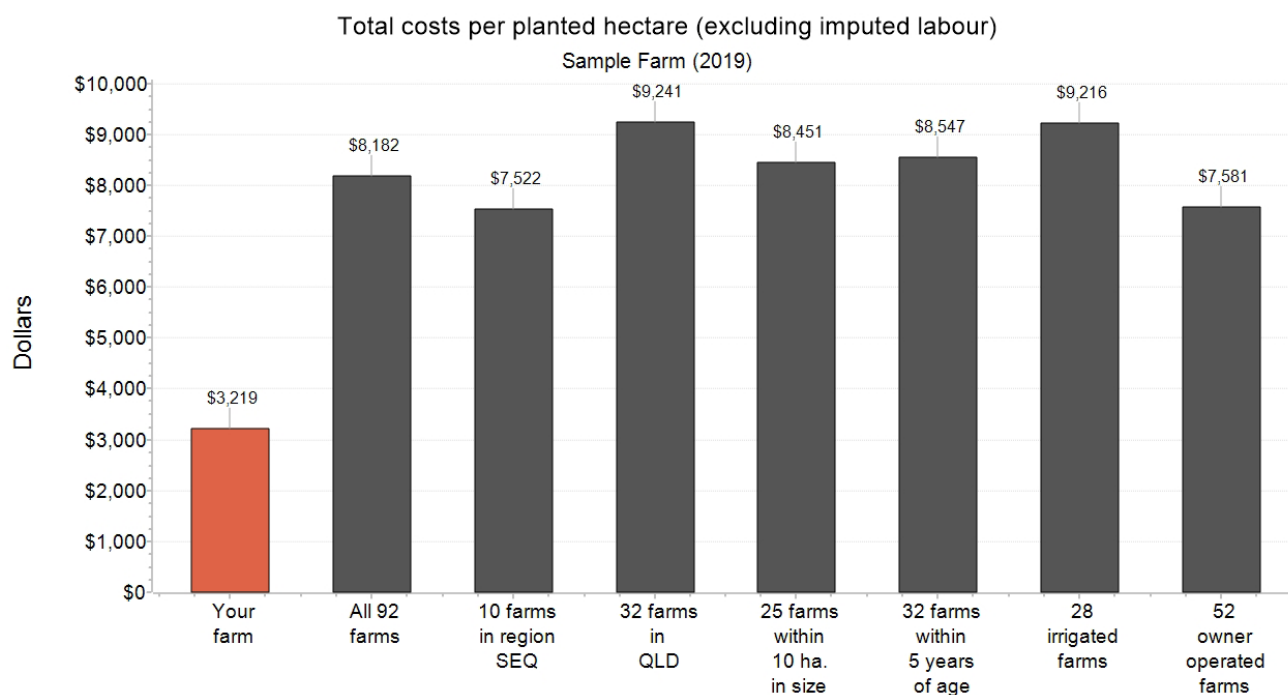


Figure 10: Total costs per planted hectare comparison for 2019

Figure 11 compares your farm's costs per tonne of saleable kernel (shown as a red bar) with other farms in the benchmark sample who supplied cost of production data for the 2018/19 financial year.

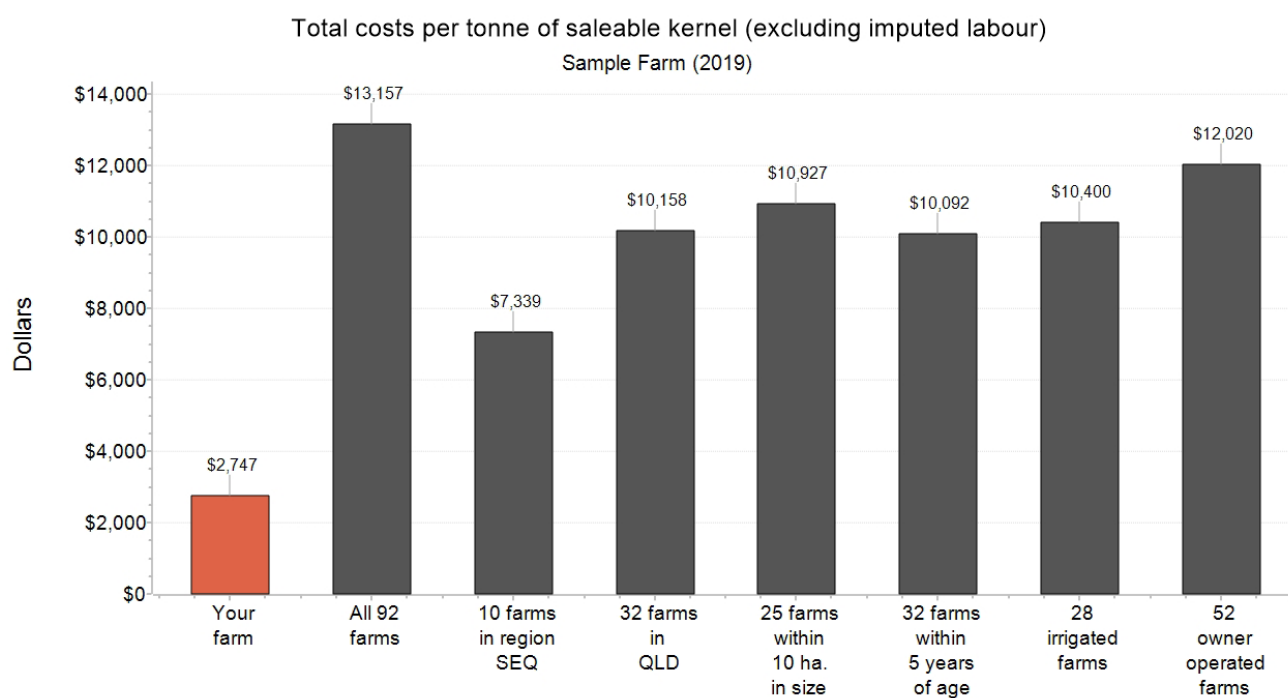


Figure 11: Total costs per tonne of saleable kernel comparison for 2019

Figure 12 below shows your farm's ranking in 2019 for costs per planted hectare within the sample of farms that provided cost data. Your farm is shown as a red bar. The green shaded areas to the left and right of the chart show the top and bottom 25% of farms in the sample and the grey area shows the middle 50% of farms.

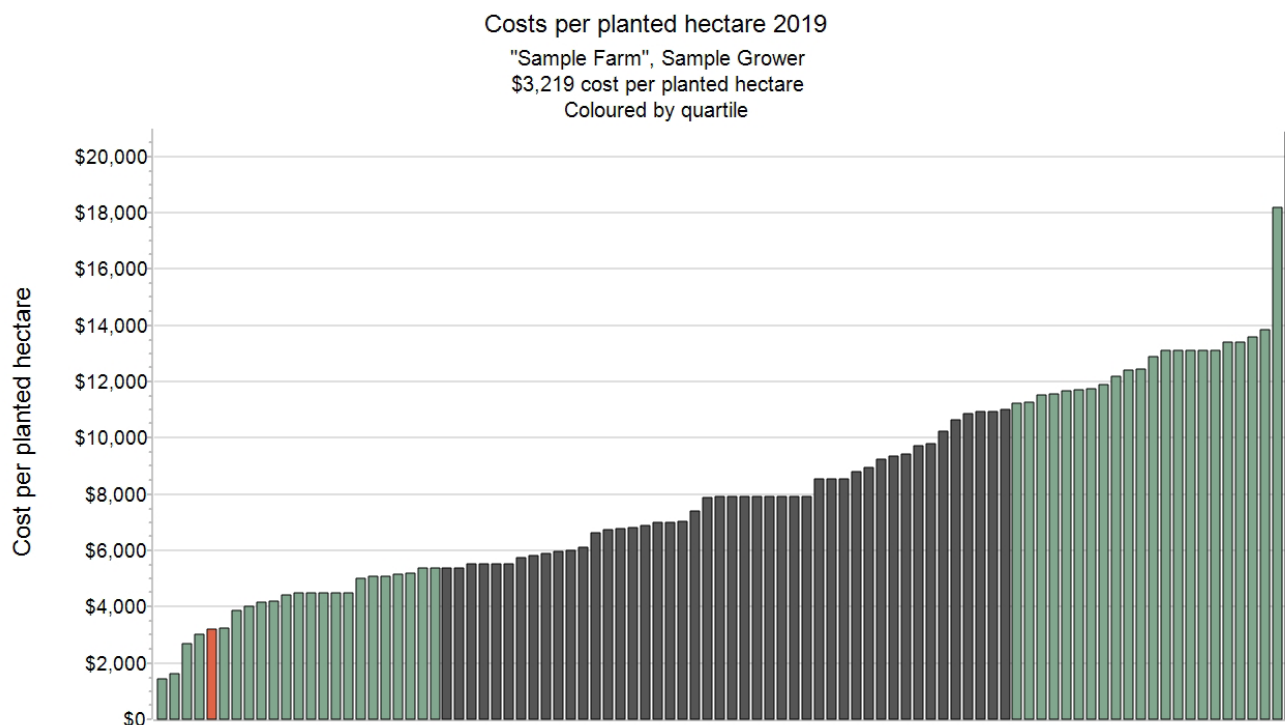


Figure 12: Costs per planted hectare ranking for 2019

While Figure 12 relates your costs to planted area, Figure 13 below shows your expenditure in relation to your production. Your farm's ranking is based on your costs per tonne of saleable kernel compared with other farms that provided cost data for the 2017/18 financial year. Your farm is shown as a red bar.

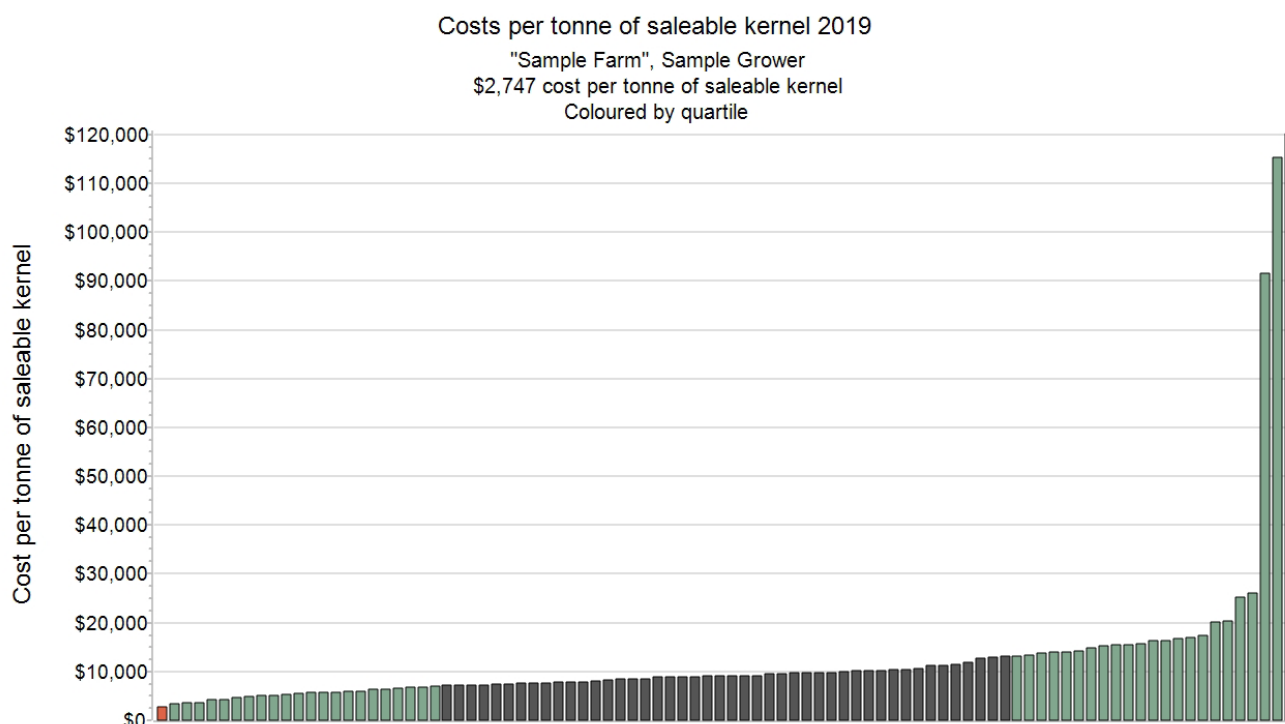


Figure 13: Costs per tonne of saleable kernel ranking for 2019

Results for your farm for all seasons

This section shows average productivity and quality for all seasons in which farms have participated in benchmarking. Your farm's average performance is ranked both within your region and across the benchmark sample. This provides insight into long-term farm productivity. Please note that only farms that have participated in benchmarking for four or more seasons are included in this section.

Figure 14 shows average annual saleable kernel productivity by region for all participating farms for 2009 to 2019. If you have participated in benchmarking for at least four years your farm will be shown as a red bar.

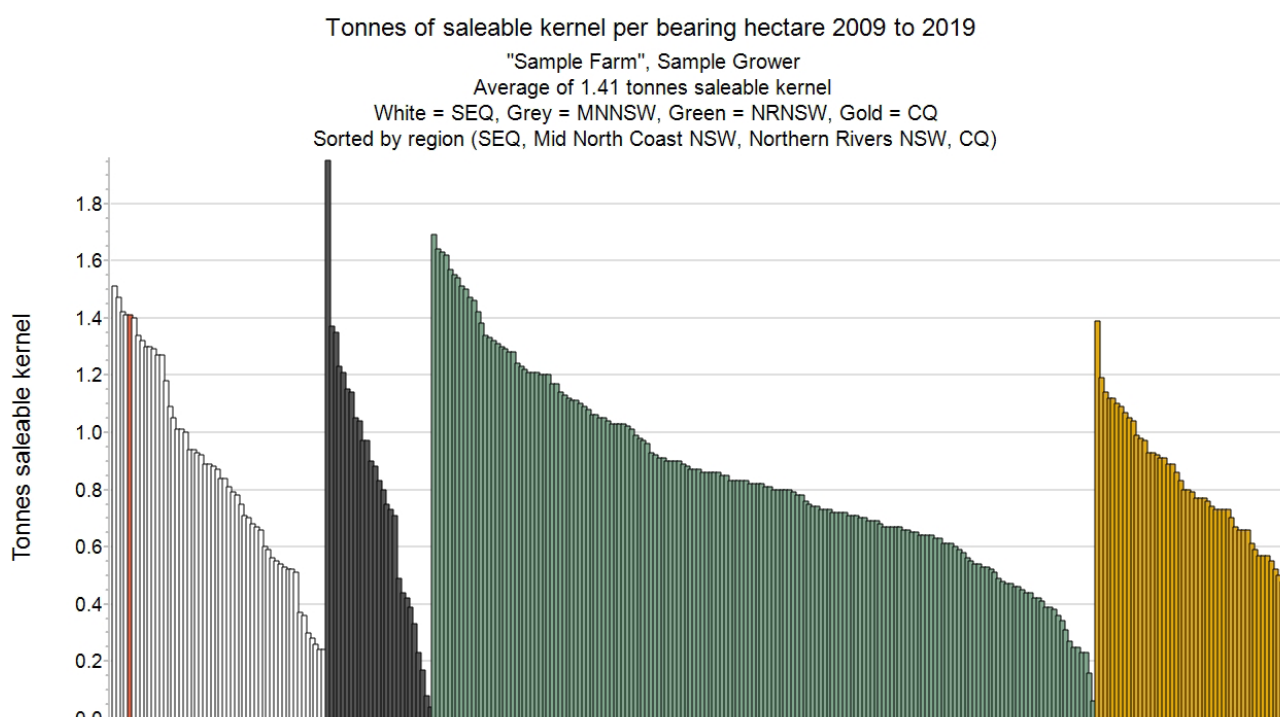


Figure 14: Average saleable kernel per bearing hectare for 2009 to 2019, grouped by region

Figure 15 shows average annual saleable kernel productivity for all participating farms for 2009 to 2019. If you have participated in benchmarking for at least four years your farm's rank will be shown as a red bar.

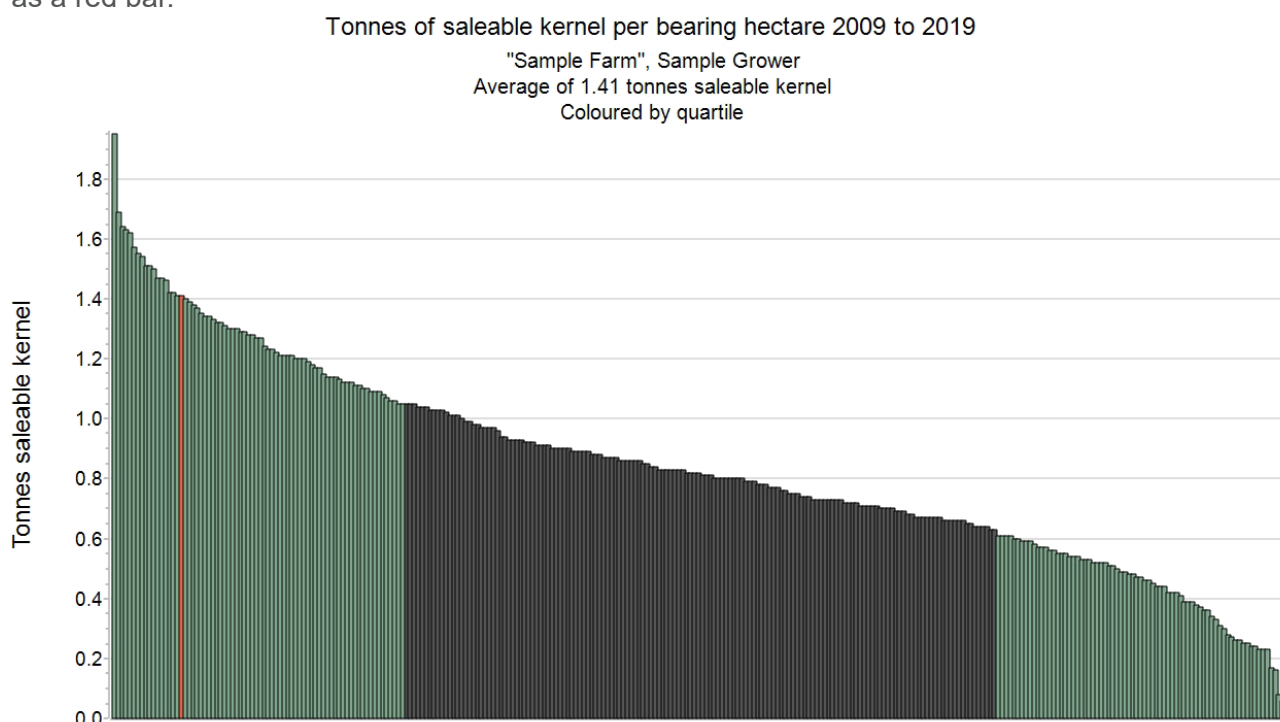


Figure 15: Average saleable kernel per bearing hectare for 2009 to 2019

Figure 16 shows your farm's average total costs per planted hectare for all seasons in which you have supplied cost data (shown as a red bar). This is compared with the averages of other farms in the benchmark sample who supplied cost of production data. These include farms within your locality, region and state. Your farm is also compared with farms of similar orchard size, average tree age, management style and use of irrigation.

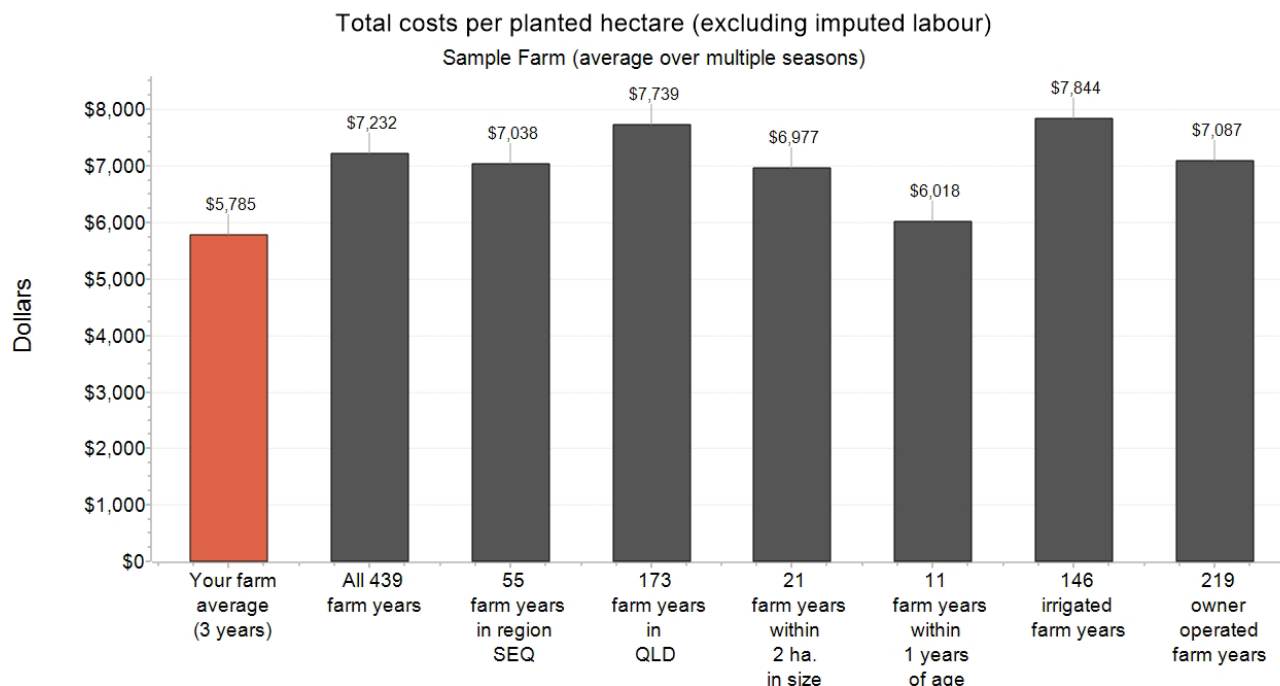


Figure 16: Comparison of total average costs per planted hectare over multiple seasons

Figure 17 below shows average farm production costs for the six years from 2012/13 to 2018/19 inclusive. The chart ranks only the most significant heads of expenditure rather than all costs. The industry averages are based on a total of 444 farm years, or an average of 63 farms per year. Your farm's average expenditure is also shown for all years in which you submitted data (red bars).

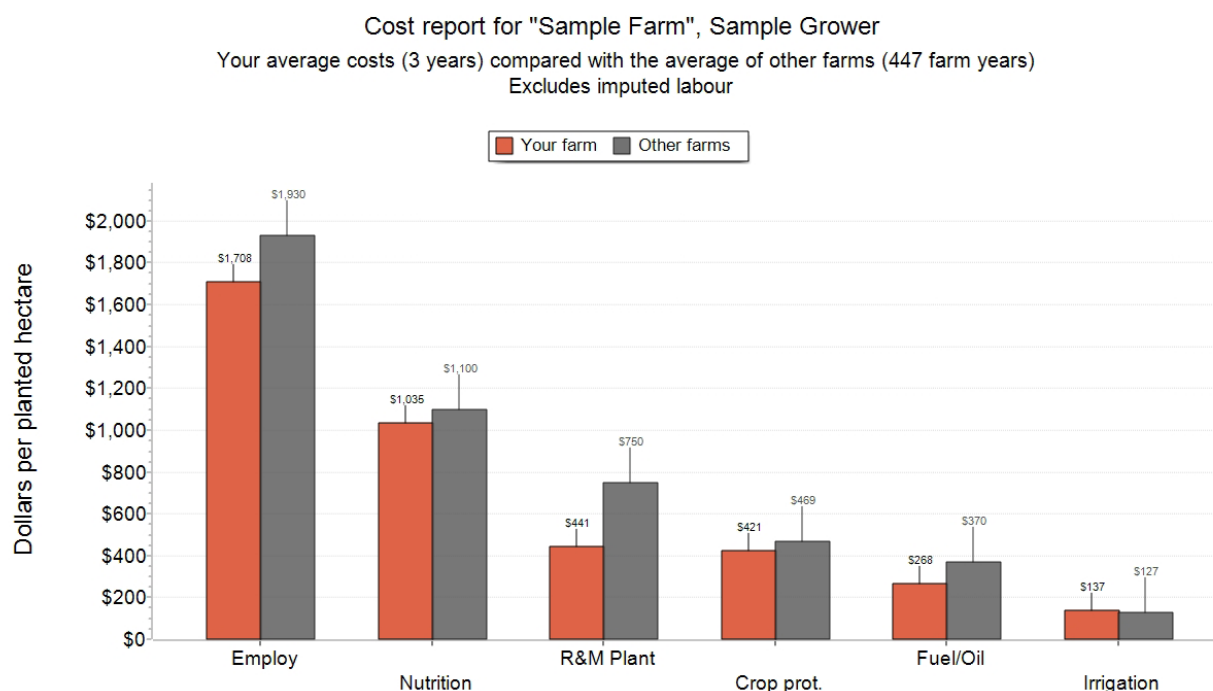


Figure 17: Heads of expenditure costs averaged over multiple financial years

This section shows annual yield and quality trends over multiple seasons. This provides insight into farm performance and variability from season to season. Yield trends include both nut-in-shell and saleable kernel per bearing hectare. Saleable kernel recovery, reject kernel recovery and rejects by category are also provided.

Figure 18 shows your farm's annual productivity (nut-in-shell and saleable kernel per bearing hectare) and kernel recovery (saleable and reject) for all seasons in which you have participated in benchmarking.

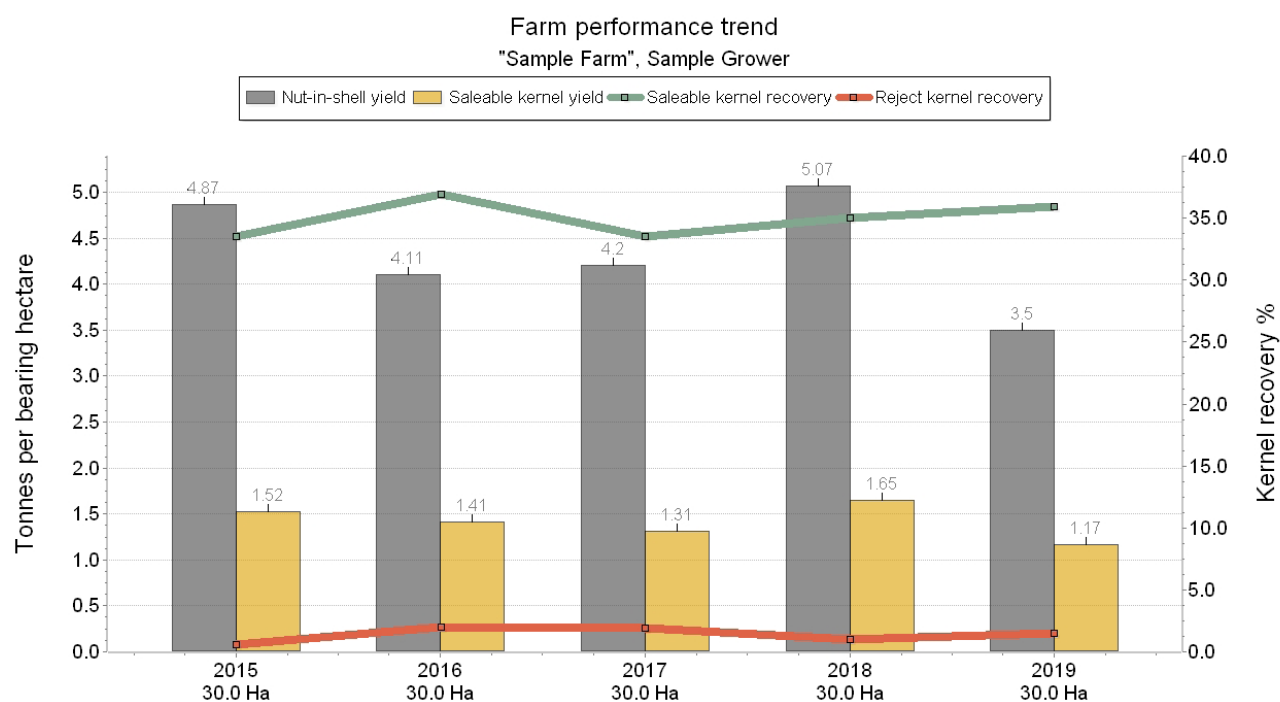


Figure 18: Your farm's annual yield and kernel recovery over multiple seasons

Figure 19 shows your farm's annual productivity (nut-in-shell and saleable kernel per bearing hectare) and a breakdown of rejects by category for all seasons in which you have participated in benchmarking.

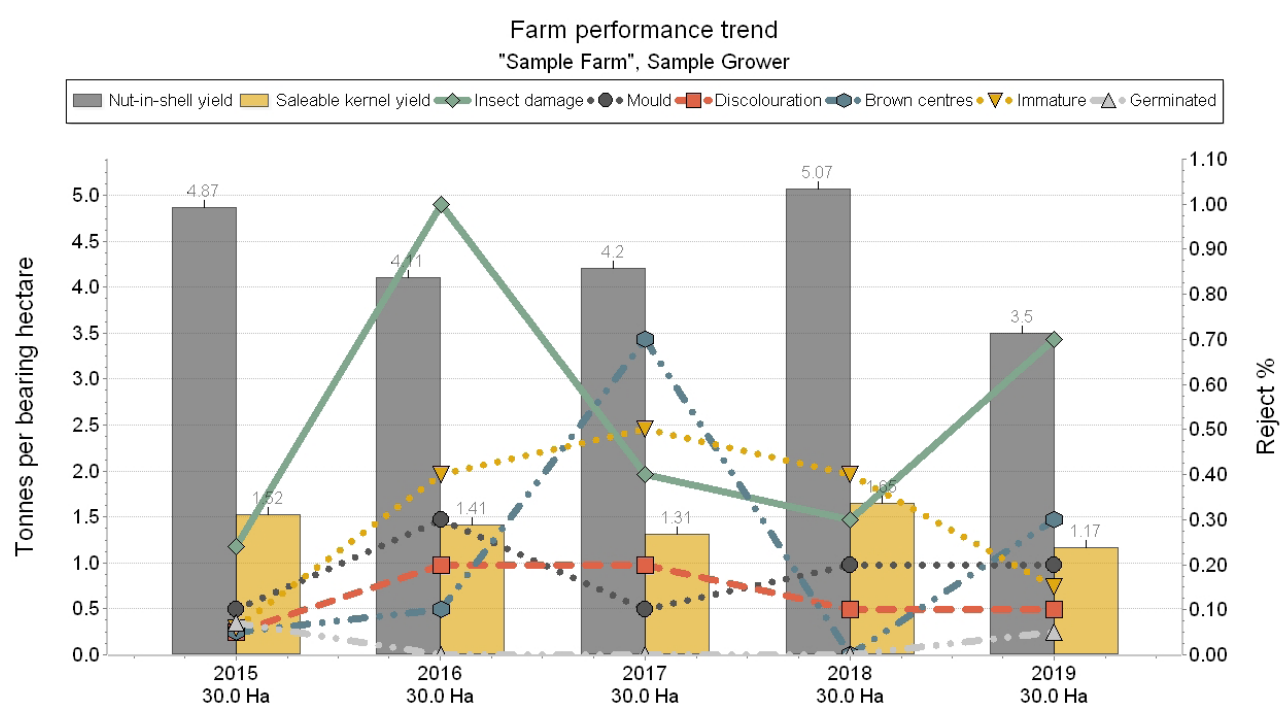


Figure 19: Your farm's annual yield and percentage reject by category over multiple seasons

Figure 20 below shows your farm's annual productivity (nut-in-shell and saleable kernel per bearing hectare) and your farm's costs per planted hectare for all seasons in which you have supplied data.

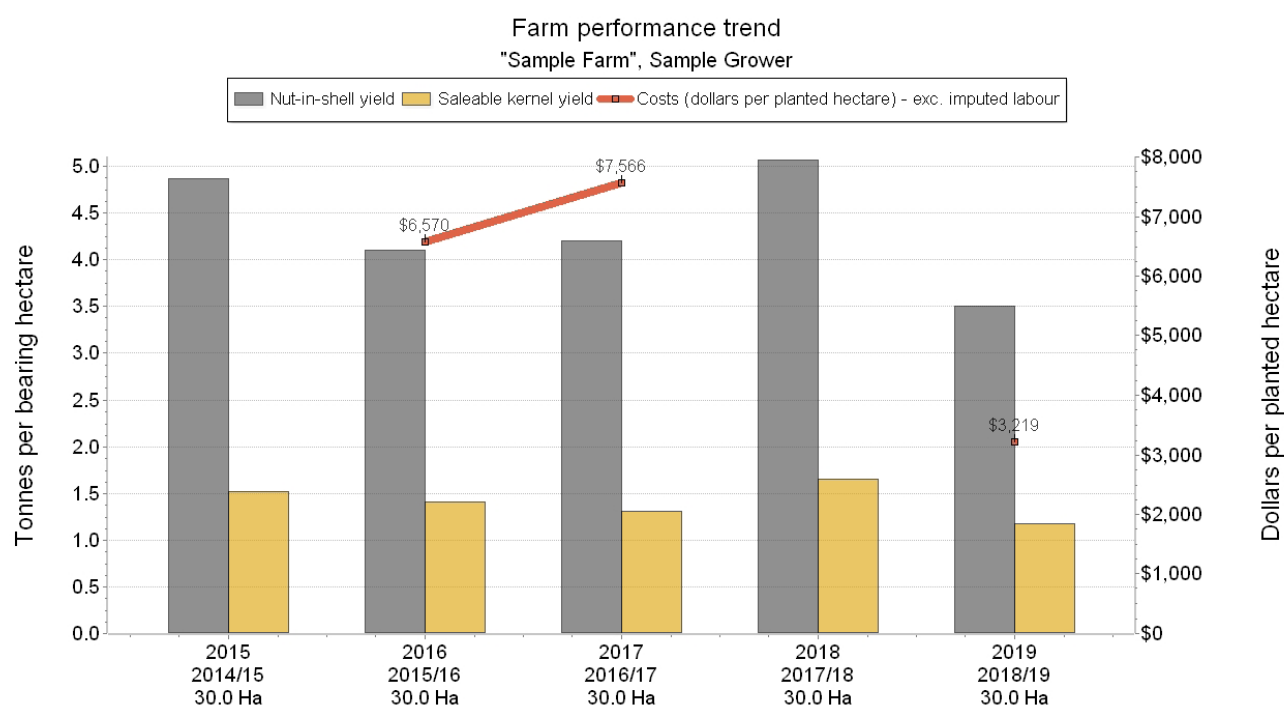


Figure 20: Your farm's annual yield and costs per planted hectare over multiple seasons

Figure 21 shows average annual productivity and kernel recovery trends for all farms in your region. By comparing with Figure 20 you can see how your farm compares with the average of all participating farms in your region.

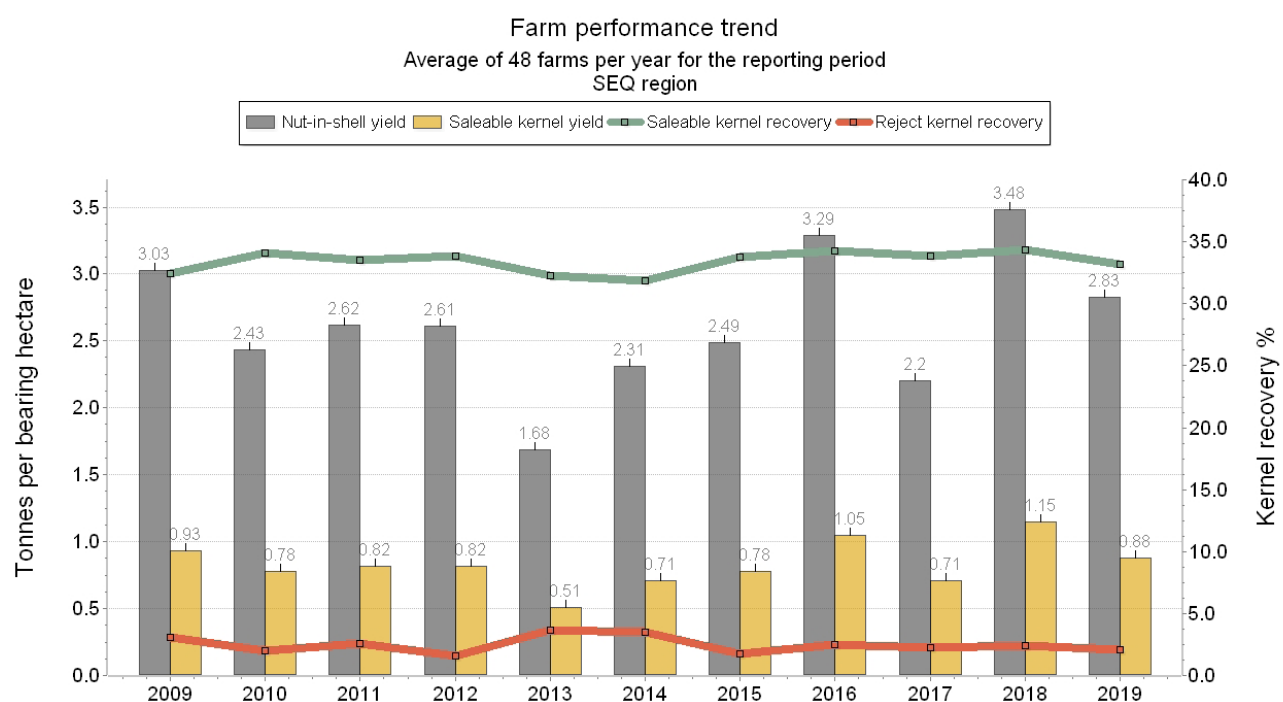


Figure 21: Annual yield and kernel recovery trends for all farms within your region

Figure 22 shows average annual productivity and kernel recovery trends for all farms participating in benchmarking. By comparing with Figure 20 you can see how your farm compares with the average of all farms in the benchmark sample.

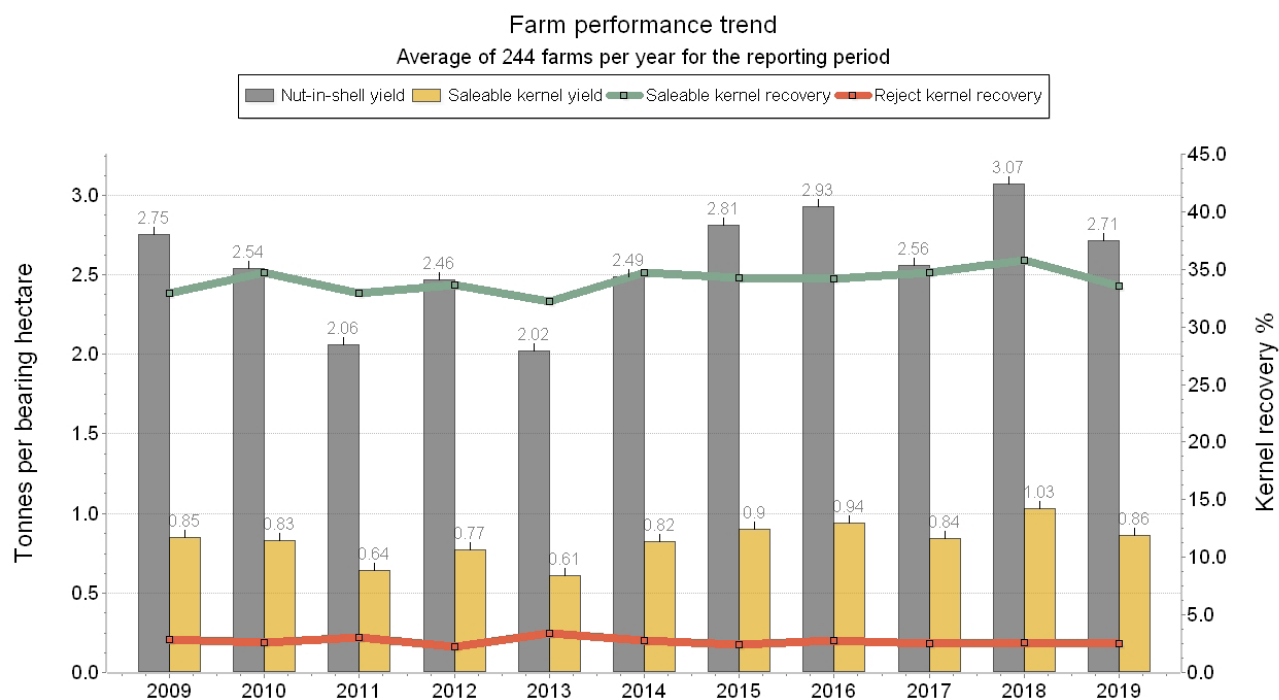


Figure 22: Annual yield and kernel recovery trends for all farms within the benchmark sample

Figure 23 shows average annual trends in productivity per bearing hectare and costs per planted hectare for all farms participating in benchmarking. Note that production results are based on an average of 444 farms per year and cost of production results are based on a smaller sub-sample average of 63 farms per year. By comparing with Figure 20 you can see how your farm compares with the average of all participating farms in the benchmark sample.

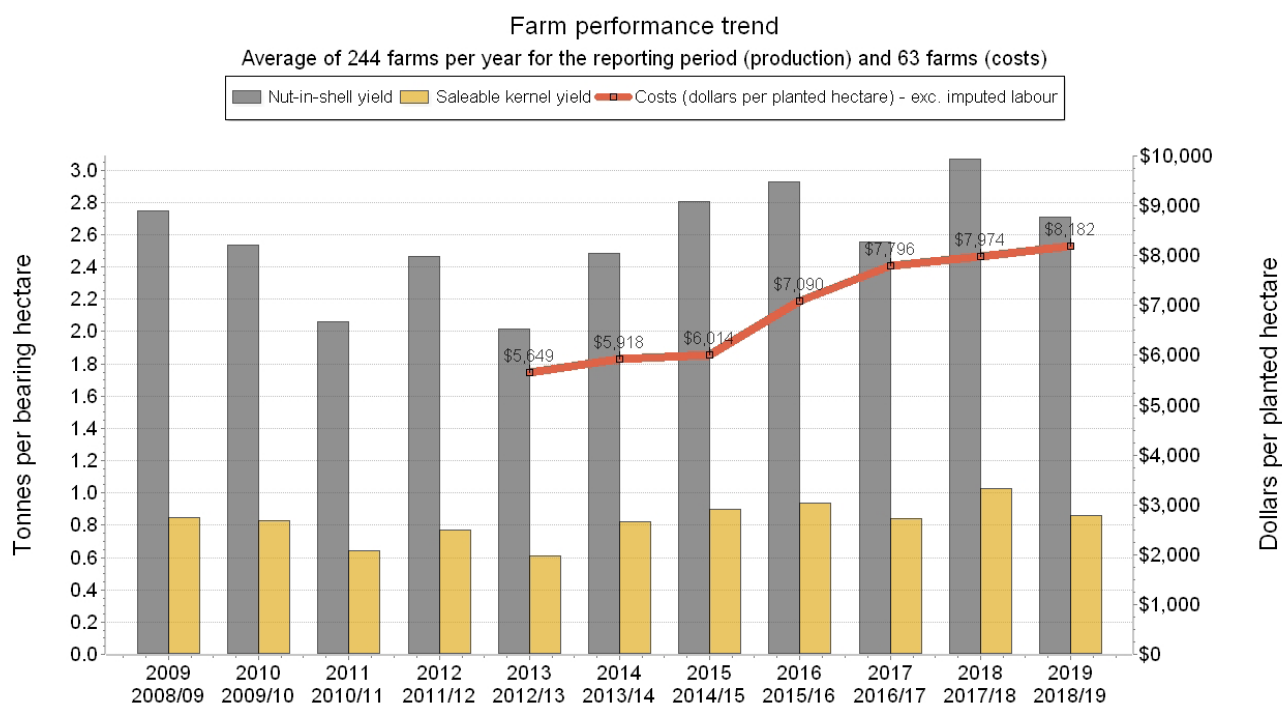


Figure 23: Annual yield and cost trends for all farms within the benchmark sample

Summary of data submitted for benchmarking (2019 season)

Grower and farm details

Grower name Mr Sample Grower

Company Sample Farm

Grower address 10 Macadamia Lane ELIMBAH QLD 4516

Contact e-mail macman@daf.qld.gov.au

Farm ID 332 Irrigated ☒ Partial / supplementary only ☐

Farm name Sample Farm

Farm address 10 Macadamia Lane ELIMBAH QLD 4516

Consignment details for this farm

NIS tonnes	105	Insect %	0.7
Consigned MC %	18.5	Mould %	0.2
Premium KR %	32.5	Discoloured %	0.1
Commercial KR %	3.4	Brown centres %	0.3
Reject KR %	1.5	Immature %	0.15
Whole kernel %	60	Germinated %	0.05

Planted areas as applied to the current season

Total hectares 30

Bearing hectares 30 *

* Note that trees must be aged 5 years or older to be considered bearing

Planting details recorded for this farm (Please update or add information as required)

Planted	Trees	Spacing	Variety	Hectares	Your notes
2000	9360	8 x 4 m	Mixed	30	
Totals	9360			30	

What you need to know about the data

Please consider the following points when interpreting results in your report:

- Averages are based on data from a minimum of ten farms to safeguard the confidentiality of individual farm data.
- Average farm performance over multiple seasons is derived only from farms with data for a minimum of four seasons, to minimise the impact of seasonal variability on long-term averages.
- All weights presented are based on the industry standard moisture content of 10% for nut-in-shell and 1.5% for kernel.
- Plantings less than five years of age are generally excluded from estimates of bearing hectares for consistency across the benchmark sample.
- The sum of reject category values relates to the total reject kernel recovery percentage, rather than totalling 100%. This standard is applied across the benchmark study to ensure uniformity.
- Unless otherwise stated, all averages presented are unweighted. This means that all farms in the sample exert equal influence on the average regardless of their size.
- The term farm-year is used to describe data for an individual farm for a given year. Yield and quality data comprises 2665 farm-years from 2009 to 2019. Cost data comprises 444 farm-years from 2012/13 to 2018/19. Unless otherwise specified, averages spanning multiple seasons are derived from all available farm-years. Unless otherwise specified, averages spanning multiple seasons are derived from all available farm-years.
- Unless otherwise stated, all farm costs per hectare are based on total planted hectares. This may include non-bearing hectares for some farms as most businesses do not separate costs by tree age within their accounting systems.
- Unless otherwise stated, costs per tonne of saleable kernel for a given season are calculated by relating that season's production (e.g. 2019) to costs in the preceding financial year (2018/19).
- Heads of expenditure presented in this report are derived from a standard chart of accounts developed in conjunction with Rutherfords Accountants and Financial Advisers as part of the previous levy funded project "On-farm economic analysis in the Australian macadamia industry" (MC03023). This chart of accounts is used to ensure consistent interpretation of costs across multiple farm businesses.

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Maintaining productivity in challenging seasons

Macadamia productivity can be affected by lack of rainfall, particularly during crucial nut development periods. Michael Cooper has been able to produce above average productivity even in dry seasons and shares how he has been able to achieve this on his orchards in the Glasshouse Mountains region.

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Benchmarking the macadamia industry
MC18002

What makes a top performing farm?



What makes a top performing farm?

High yield variability within the macadamia industry highlights opportunities to improve productivity. The benchmarking team takes a closer look at top performing farms to see what they have in common that helps them achieve sustained high productivity and quality.

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For all enquiries about benchmarking, contact:

The macadamia benchmarking team
Department of Agriculture and Fisheries
macman@daf.qld.gov.au
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