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Improving farm productivity and competitiveness in the Australian macadamia industry - supported by the Queensland Department of Agriculture, Fisheries and Forestry, New South Wales Department of Primary Industries, University of Southern Queensland, Australian Macadamia Society, and Horticulture Innovation Australia.

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BENCHMARKING NEWS: FARM PRODUCTIVITY ON THE UP

Average productivity on Australian macadamia farms improved again in 2015. The industry on-farm benchmarking project showed that the average yield per hectare of both nut-in-shell (NIS) and saleable kernel increased significantly in 2015 compared with both the 2013 and 2014 seasons.

Other key findings from analysis of the 2015 season include the following:

- average farm productivity was the highest recorded since benchmarking began in 2009
- average regional farm productivity increased in Central Queensland, South-East Queensland and the Northern Rivers but decreased slightly in the Mid North Coast of New South Wales from 2014 to 2015
- average saleable and reject kernel recoveries were slightly lower in 2015 compared with 2014
- insect damage increased in all regions to become the most significant cause of reject kernel
- average immaturity was much lower compared with the previous season, particularly in Queensland.

A total of 269 farms participated in the benchmarking for the 2015 season. These farms covered about 10,400 planted ha and represented 57.6% of the industry's total production in that year, based on the industry NIS estimate of 48,300 t. They also represented a cross-section of farms in the Australian macadamia industry for location, farm size, tree age and management structure.

An average of 229 farms per year participated over the seven seasons, with increasing numbers each year. It is important to note that there was significant variation between individual farm results during this period.

Figure 1 shows the yield and reject trends for all farms participating in benchmarking from 2009 to 2015. The bars on the chart show NIS and saleable kernel yields as tonnes per bearing hectare. Saleable kernel includes both premium and commercial kernel.

The lines on Figure 1 show average reject levels expressed as a percentage of NIS. Seasonal trends are shown for each of the major reject categories, including insect damage, mould, discolouration, brown centres, immaturity and germination. Some processors may use different terms for these

reject categories, e.g. immaturity is sometimes referred to as shrivelled kernel and germination is often known as discoloured crest.

Average yield per hectare of both NIS (2.8 t/ha) and saleable kernel (0.9 t/ha) were higher in 2015 than in each of the previous years since the benchmarking began in 2009. This was due to improved growing conditions leading up to the 2015 crop and an increased level of management on many macadamia farms. Higher NIS prices in recent years have given some growers the confidence to undertake major orchard work to improve soil, tree and crop health and many report that they are beginning to see improved productivity as a result.

There has also been a significant decrease in average reject kernel recovery in the benchmarking sample over the last two seasons. Reject kernel recovery fell from 3.4% in 2013 to 2.7% in 2014 and 2.4% in 2015. This was largely driven by lower levels of kernel immaturity in South-East and Central Queensland.

Lower immaturity levels were partially offset by a significant increase in average insect damage levels (0.93% in 2015 compared to 0.73% in 2014). Average percentages of insect damage loss were higher than all other reject categories in all of the major production regions in 2015.

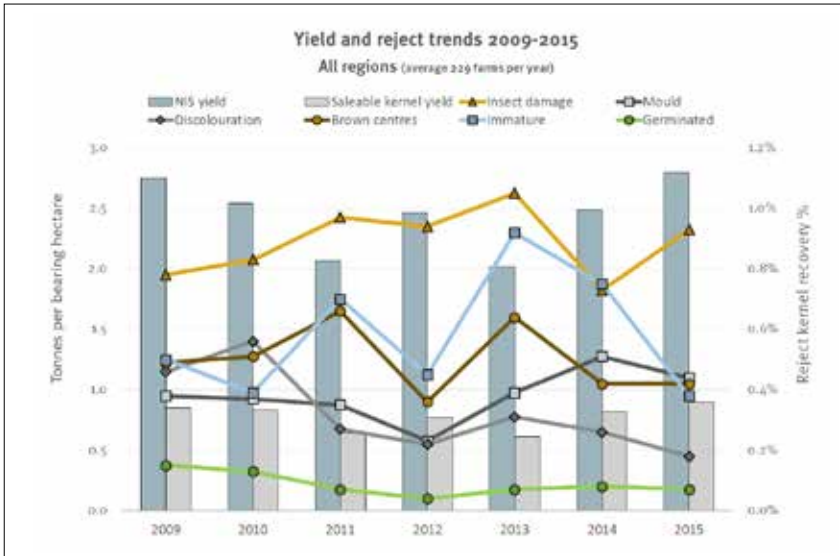


Figure 1. Industry yield and reject trends (2009-2015).

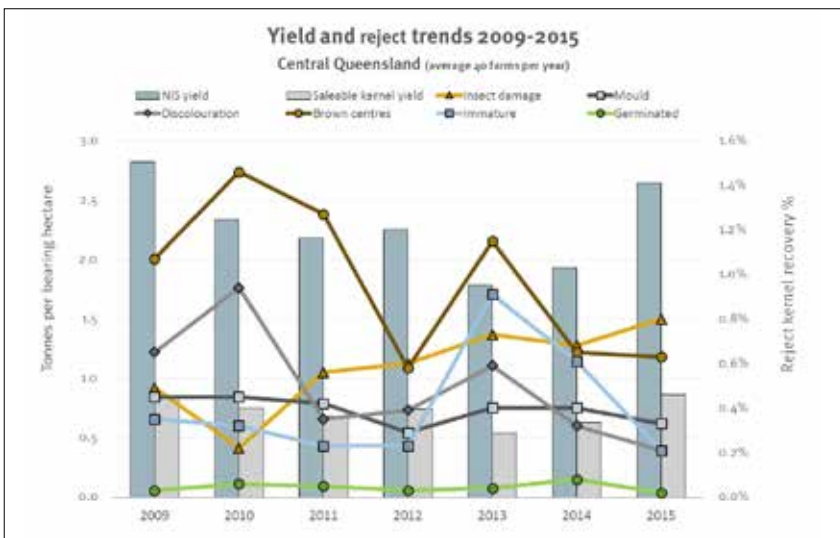


Figure 2. Central Queensland yield and reject trends (2009-2015).

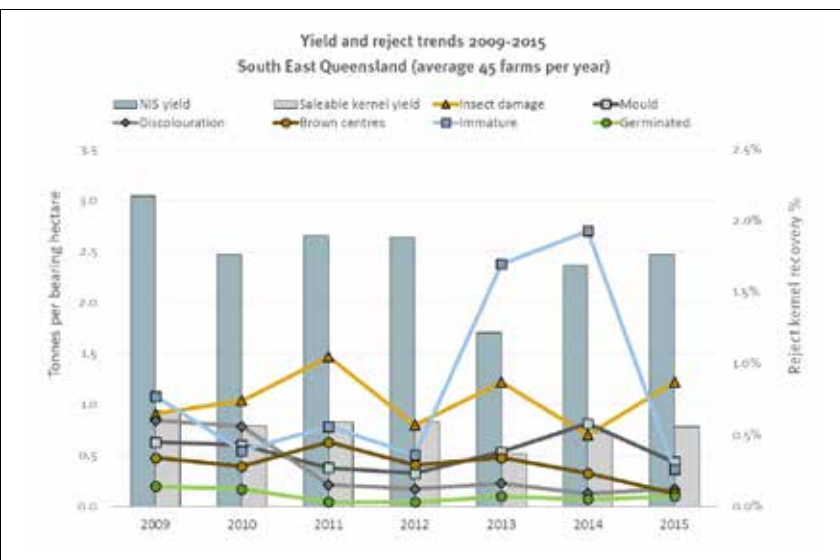


Figure 3. South-East Queensland yield and reject trends (2009-2015).

Central Queensland regional farm trends

There were significant differences in yield and reject trends between regions. Figure 2 shows 2009 to 2015 yield and reject trends for participating farms in the Central Queensland region. This includes farms in the Bundaberg, Childers, Gin Gin, Rockhampton, Emerald and Mackay districts.

An average of 40 farms from the region participated per year with increasing numbers each year. Central Queensland farms are, on average, much larger and younger than farms in the other three production regions.

The average yield per hectare of both NIS (2.65 t/ha) and saleable kernel (0.86 t/ha) for Central Queensland farms were much higher in 2015 than in 2013 and 2014. Average saleable kernel per hectare for these farms in 2015 was the highest since the benchmarking began in 2009.

Average reject kernel recovery for Central Queensland farms in 2015 (2.2%) was substantially lower than in 2013 (3.77%) and 2014 (2.72%). This was largely driven by lower levels of brown centres and immaturity over this period. This was partially offset by an increase in insect damage in 2015 (0.8%). Insect damage was the most significant cause of reject among Central Queensland farms in 2015.

South-East Queensland regional farm trends

The South-East Queensland region includes farms in the Glasshouse Mountains, Sunshine Coast, Gympie and Maryborough districts. Figure 3 shows yield and reject trends for participating farms in this region from 2009 to 2015. An average of 45 farms per year participated in benchmarking in the region.

The average yield per hectare increased slightly for South-East Queensland farms in 2015 for both NIS (2.47 t/ha) and saleable kernel (0.78 t/ha). This follows a substantial increase in 2014. As with the other regions, individual results varied significantly between farms, with some farms experiencing major losses due to problems such as feral pigs.

Average reject kernel recovery decreased significantly for South-East Queensland farms in 2015 (1.76%) compared with 2013 (3.56%) and 2014 (3.41%). This was largely due to lower immaturity in 2015 (0.26%) compared to 2013 (1.68%) and 2014 (1.95%). This reduction was mainly due to improved moisture availability during nut development and oil accumulation in the 2015 crop.

As with other regions, insect damage was responsible for the highest average percentage of rejects in 2015 (0.87%).

Northern Rivers regional farm trends

The Northern Rivers region stretches from the Tweed district south to Grafton, with the main concentration of farms in the Lismore, Alstonville, Dunoon and Bangalow districts. Figure 4 shows the yield and reject results for participating farms from 2009 to 2015. An average of 121 farms from this region participated each year.

The 2015 season was the most productive for Northern Rivers farms since benchmarking began in 2009. The average yield per bearing hectare in 2015 of NIS (3.05 t/ha) and saleable kernel (0.98 t/ha) was higher than in each of the years from 2009 to 2014.

The average reject kernel recovery in 2015 (2.56%) was similar to that in 2014 but much less than in 2013 (2.98%).

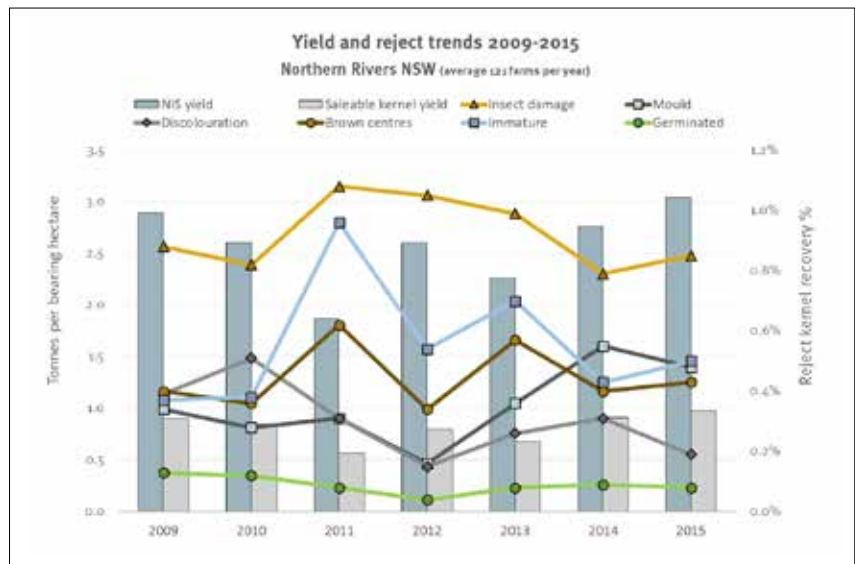


Figure 4. Northern Rivers yield and reject trends (2009-2015).

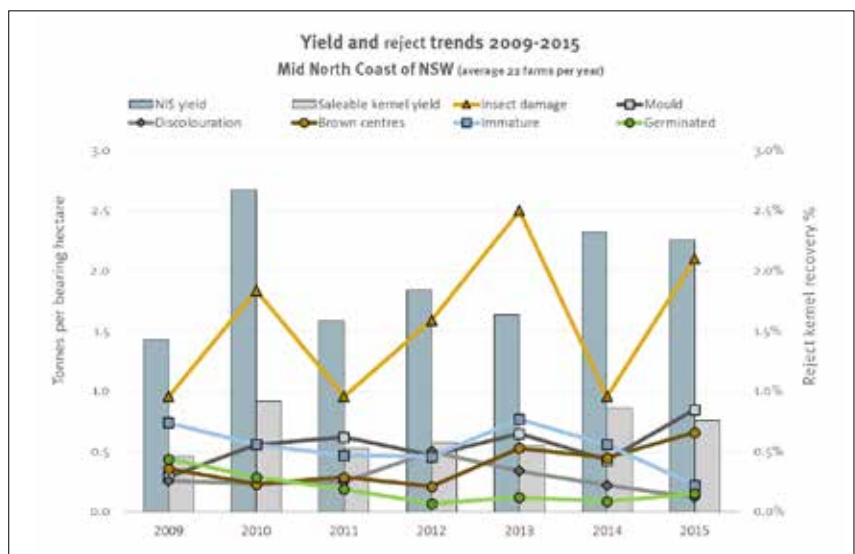


Figure 5. Mid North Coast of New South Wales yield and reject trends (2009-2015).

Insect damage was the most significant cause of reject damage among Northern Rivers farms in 2015, as it was in all other seasons since benchmarking began in 2009. After a substantial reduction in average insect damage rejects in 2014 (0.79%), levels increased slightly again in 2015 (0.85%).

Mid North Coast regional farm trends

The Mid North Coast region of New South Wales stretches from Grafton south with the major concentration of farms in the Nambucca district. An average of 22 farms per year

from this region participated in benchmarking.

Figure 5 shows average yield per hectare fell slightly in 2015 for Mid North Coast farms for both NIS (2.26 t/ha) and saleable kernel (0.76 t/ha). This followed a substantial increase in 2014.

There was also a large increase in average reject kernel recovery among Mid North Coast farms in 2015 (4.1%), following a significant decrease in 2014. This was mostly due to high insect damage in 2015 (2.1%) compared to 2014 (0.96%). As with Northern Rivers farms,

insect damage was, on average, the major cause of reject losses on Mid North Coast farms in each year of the benchmarking study.

Information about benchmarking

Participation in the industry on-farm benchmarking project is free and confidential. Each participant receives customised, confidential reports comparing their farm's productivity and quality against industry averages. These reports provide growers with an opportunity to identify where they can improve their farm productivity and nut quality.

The next round of benchmarking will start at the end of the 2016 harvest season. Contact one of the following members of the benchmarking team if you would like more information about participating.

- Queensland: Grant Bignell, DAF Queensland, phone 07 5453 5800
- New South Wales: Jeremy Bright, NSW DPI, phone 02 6626 1346 or 0427 213059
- Email macman@daf.qld.gov.au.

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