

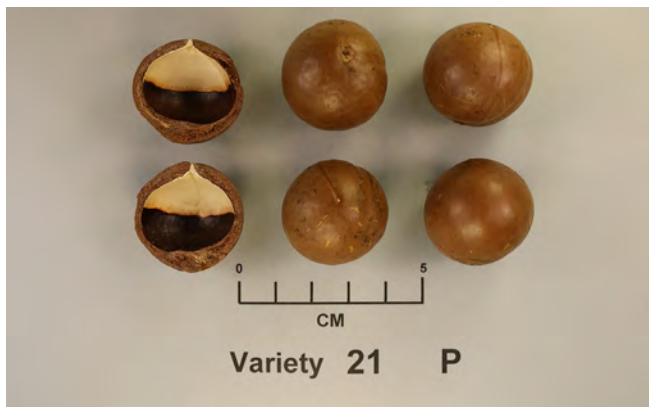
Variety P, or MIV1-P, is one of four new elite macadamia varieties released after thorough testing for nine years by the Queensland Department of Agriculture and Fisheries in regional variety trials.

It is an early producing *Macadamia integrifolia* variety with a very thin husk. Trial results over the nine years showed a mean total kernel recovery of 38.5% (average over three years at Bundaberg) and whole kernel recovery in the mid-range of varieties.

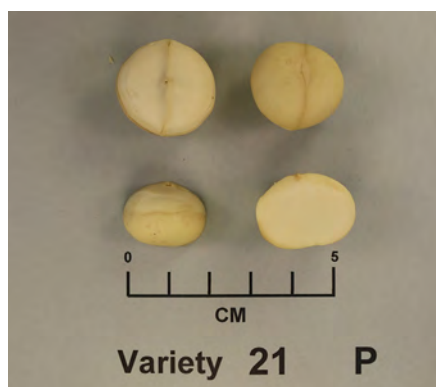
### Performance

At Bundaberg, P was ranked Number 9 out of 30 varieties in overall kernel yield and was second for kernel canopy efficiency. At Alstonville (a site without irrigation), P was the fifteenth most productive variety, and cumulative kernel yield was much better than for varieties 344 and 741, but not as good as for 246 or 816.

Using a nut-in-shell (NIS) value of \$4/kg, total kernel yield per hectare over the nine-year trial period was \$53,935 at Bundaberg, and \$50,826 at Alstonville (cumulative NIS yield x percentage kernel recovery). This is for 312 trees per ha. Please note that the average NIS price over the past 11 years is \$4.72 per kg.



Shell and kernel size,  
Variety P



Variety P growing at Bundaberg. It is a smaller tree that is being planted at higher density.

Significantly higher yields for P have been recorded in commercial high-density plantings. This smaller variety is suited to these types of plantings as it is an early bearer, has good structure, the canopy is open for spraying, and branches tend to be shorter and not elongated.

P has found a niche in higher density plantings (550+ trees per hectare). Please see attached article from the AMS Bulletin where trees at 4.4 years of age were estimated to produce 3.75 tonnes of NIS per hectare in a Bundaberg orchard.

### Growth habit

Variety P is a short, round tree with a small, slightly dense canopy. It is an early bearer and nut-drop pattern is consistent with a late peak. Nut clustering is variable on long flower racemes. Husks are very thin, and mean total kernel recovery in trials has been recorded at 38.5%. Kernels are of medium size and the variety has a mid-range percentage of whole nut recovery. It has few sticktights.

### Nut drop

Figures 1 and 2 (over page) show nut-drop pattern in 2016 for Variety P at the trial sites at Bundaberg and Alstonville. These patterns were consistent over the nine-year trial period so provide a good indication of nut-drop.

### Pest and disease resistance

Variety P had an abnormal vertical growth (AVG) score of zero when grown at a susceptible site at Bundaberg. At Alstonville, it had 2.33% of nuts infected with husk spot and scored zero at Bundaberg. It has low susceptibility to husk rot, scoring a zero rating at both Alstonville and Bundaberg (on a 0 to 2 scale). Its mean percentage fruitspotting bug damage at Alstonville was 0%.

# Fact Sheet :: VARIETY P

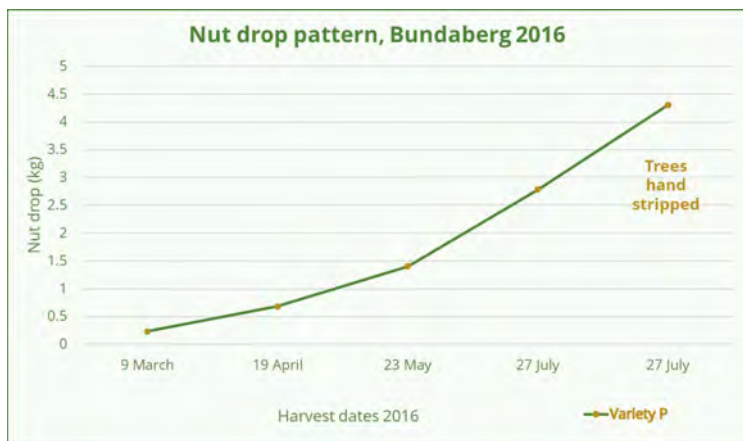


Figure 1. Nut-drop pattern for Variety P at Bundaberg, 2016. Note that the two points for 27 July reflect the fact that nuts were harvested from the floor and stripped from the trees on the same day (highest point).

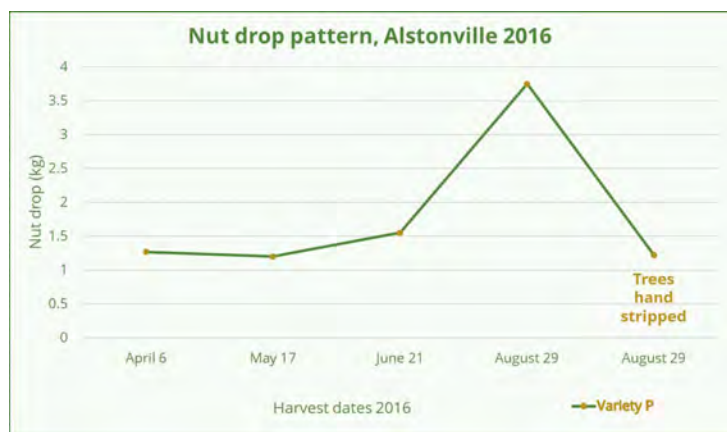


Figure 2. Nut-drop pattern for Variety P at Alstonville, 2016. Note that the two points for 29 August reflect the fact that nuts were harvested from the floor (highest point) and stripped from the trees on the same day.

## Project funding

The project Macadamia Regional Variety Trials Series 3 Phase 2 was funded by Hort Innovation using the macadamia research and development levy and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture.

## Regional suitability

It is well suited to the Bundaberg region and is well worth evaluating on the shallow coastal soils of northern New South Wales.

## Extended testing

This variety has been carefully assessed for 21 years - nine years of regional variety trials and, before that, 12 years in progeny blocks.

## Disclaimer

Information for this Fact Sheet has been sourced from long term Regional Variety Trials conducted by DAF, and funded by Hort Innovation. Commercial nut producers have also provided feedback. Variety performance will vary in different locations, soil types, environments, planting densities and especially with different orchard management practices. Australasian Plant Genetics (APG) provides the above information as a guide only and accepts no responsibility for its accuracy and for on-farm performance.



This fact sheet was produced by the Australian macadamia industry communications project using the macadamia research and development levy and contributions from the Australian Government.

This testing extends to trees used as budwood sources, which have been DNA tested for trueness to type. Blocks of trees have been planted as future sources of budwood for grafting in both Queensland and New South Wales. Australasian Plant Genetics (APG) will make every effort to provide budwood for grafted trees and large amounts of P variety budwood is now available.

## Availability

Variety P has Protection under the Australian Plant Breeders' Rights Act (PBR Act) and is currently licensed to 14 nurseries, distributed from New South Wales to Mackay.

A royalty of \$4.00 (plus GST) will be added to tree price and purchasers will be required to sign a non-propagation agreement before collecting grafted trees. Part of the royalty collected (less management fees) will be passed back to the Australian macadamia industry to be used for RD&E projects, which are determined by the industry and Hort Innovation.

Please note that there are significant royalty discounts to \$3.00 per tree (plus GST) for large orders of more than 5,000 trees and also for high density plantings.

## Test on farm

Variety P commercialisation is managed by APG. While APG is confident that Variety P will perform well in Bundaberg and other growing areas, it recommends that its suitability to local conditions and to individual farm management systems be tested by growers by planting trial plots. Trees can be ordered from nurseries licensed by APG - see <https://macadamiainnovation.com.au/> for details. Crop inputs need to be matched to expected higher yields.



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# Promising NIS yields from high-density planting of cultivar P at Bundaberg

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High density planting of the cultivar P at Bundaberg at 625 trees per hectare resulted in an anticipated yield of 3.75 t/ha NIS from the four-year-old trees in 2023. In this article, Roger Broadley takes us through the details.

In January 2023, we visited a high-density orchard of P cultivar at Moorlands, a few kilometres north of Bundaberg, courtesy of Macadamia Farm Management (MFM). The trees were planted at 8 x 2 m spacings (625 trees/ha) in August 2018, making them just 4.4 years old at the time of the visit.

Each tree was bearing around 6 kg of nut-in-shell, making the estimated yield about 3.75 t/ha NIS, a good result for such young trees. Harvesting was scheduled to start in the second week of February 2023. P trees are precocious, as demonstrated by the fact that this block was harvested in 2021 with a yield of 1.56 t/ha NIS recorded.

## An efficient performer

P is a smaller tree than average, with good yields shown in the Bundaberg area by the Department of Agriculture and Fisheries (DAF) Regional Variety Trial 3 (RVT3) trial results over a nine-year period, and a kernel recovery of around 38.9%. Original yield data in the RVT3 trials were based on a tree density of roughly 316 trees a hectare.



*P trees in high-density Moorlands block managed by Macadamia Farm Management.*

P is also an efficient cultivar in terms of the amount of kernel produced per cubic metre of canopy. It is characterised by long flower racemes and an ability to set clusters of nuts.

Previously, while we had always thought that yields might be higher when P cultivar trees were planted in a higher density situation, we did not have the detailed field data to recommend this. While it is still early days, with good nutrition and water management, we expect these early high yields at MFM's Moorland block to continue. The plan for the orchard is to remove every second tree at some time in the future.

## View from the orchard

According to Scott Allcott, Managing Director of MFM, which currently manages 4000 ha of macadamia orchards mostly in the Bundaberg growing regions, cultivar P has potential for high density due to its compact, small nature.

"It does also have good side branching with nearly 90-degree branch angles often observed. With parents such as A16 and 814, I do feel that the cultivar will perform for many years due to its overall size. The kernel quality appears to be of good overall appearance," he said.

MFM has plans to use P cultivar in more high-density orchards.

Very low NIS per kilogram prices have been noted for the 2023 season. This means it is important for trees to start bearing early and to produce high kernel yields per hectare (a combination of NIS yields and percentage kernel recovery of each variety). P cultivar appears to have the capacity to do this.

## Budwood availability

Over the past few years, it has taken some time to build up significant amounts of budwood of G, J, P and R, but we are now at a stage where budwood availability is not a limiting factor for future plantings. You can find nurseries that are licensed to supply trees in NSW and Queensland on website <https://macadamiainnovation.com.au/nurseries/>.





Nearly mature nuts on trees in high-density P trees, January 2023



The P cultivar has long flower racemes (photo credit Michael Cameron)

**Good news for growers planting high-density orchards**

The IP owner of industry cultivars G, J, P, and R, the State of Queensland through its Department of Agriculture and Fisheries, has capped the royalty rate for plantings greater than 350 trees/ha, rather than charge on a per tree basis. For growers who wish to plant at normal densities up to 350 trees/ha, the existing royalty rate per tree will apply.

The royalty fee is discounted for growers who buy more than 5000 trees at one time (any combination of one or

more G, J, P and R cultivars). This means that if trees are planted at high density (> 350 trees/ha) and more than 5000 trees are ordered, the total royalty cost will be as little as \$1,050/ha.

**Acknowledgment**

The macadamia breeding and cultivar evaluation program has been funded by CSIRO and Hort Innovation using the macadamia research and development levy, with co-contributions from the Queensland Government through its Department of Agriculture and Fisheries and funds from the Australian Government. We are extremely grateful to all macadamia nut producers who have trialled, collected data on, and given feedback on the varieties being tested. This has helped us make more informed and better commercial judgments.

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