

## **Benchmarking productivity and production costs for the Australian macadamia industry: Modelling integrated pest management outcomes using purpose-built financial analysis software (Financial Planner for Macadamia)**

G. Slaughter<sup>1</sup>, S. Mulo<sup>2</sup>, P. O'Hare<sup>2</sup>, G. Bignell<sup>2</sup> and I. Jenkins<sup>2</sup>

<sup>1</sup>University of Southern Queensland; <sup>2</sup>Department of Agriculture and Fisheries, Queensland  
[geoff.slaughter@usq.edu.au](mailto:geoff.slaughter@usq.edu.au)

Yield, quality, and planting data have been collected annually from macadamia farms throughout Australia since 2009. The data are provided either directly by growers or by processors on their behalf. The data represents a cross section of farms in the Australian macadamia industry for location, farm size, tree age, irrigation status and management structure for each season. Participation rates have steadily increased in each year of the study, rising from 144 farms in 2009 up to 269 farms in 2016. These farms covered approximately 10,025 planted hectares and represented 56.7% of total Australian macadamia industry production in 2016, based on the industry nut-in-shell (NIS) estimate of 52,000 tonnes at 10% moisture content.

Since the 2013 season a smaller subset of participating farms has also submitted data relating to the costs of production. An average of 48 farms per season have submitted cost data over the last four years. These farms covered over 2,300 planted hectares and represented approximately 14% of total Australian macadamia industry production in 2016.

While there is inherent production variability at a farm and industry level due to factors such as climate, analysis and comparison of seasonal agronomic and financial data provides objective insight into management practices that support greater efficiency and improve long term farm productivity and profitability. Using benchmarking data, this paper provides an overview of key relationships between the costs of production and productivity outcomes for comparable Australian macadamia farms, focussing on production costs and returns. Integrated Pest Management scenarios are explored using benchmark agronomic and cost data. While there is a significant body of literature on the economic impacts of IPM for other tree crops such as almonds, walnuts and pecans there is limited research on the costs and returns for macadamia production in Australia.

This analysis demonstrates how modelling of benchmarking data using purpose-built financial analysis software (Financial Planner for Macadamia) can provide objective insight into the expected costs and returns from employing integrated pest management strategies in macadamia.