

## Effect of macadamia felted coccid on macadamia nut yields in Hawaii

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Macadamia felted coccid (MFC) (*Eriococcus ironsidei* (Williams)) was first detected in macadamia (*Macadamia integrifolia*) in Hawaii in 2005. This pest, introduced from Australia, can cause an array of symptoms including distorted leaves, new shoots, possible abortion of immature nuts, yellow spots on leaves, bleeding of branches, and eventual dieback of branches and reduced yields. Controlling this pest using insecticides can be difficult and expensive. There is a need to determine the effects of MFC on yields to develop an economic injury level and economic/treatment thresholds. Therefore, the objective of this study was to evaluate the effects of a range of densities of MFC on macadamia nut yield. This study was conducted from March 2016- March 2017 at three farms in the Kau district of Hawaii island. Treatments were the level of MFC crawler infestation on the tree. These were categorized as low (<50 crawler/in<sup>2</sup>), medium (50-100 crawlers/in<sup>2</sup>), high (>100 crawlers/in<sup>2</sup>) and compared to control trees that were being sprayed (<2 crawlers/in<sup>2</sup>). Five trees were assigned to each treatment based on MFC counts at the beginning of the study. At Farm 1 two varieties of macadamia were evaluated, '344' and '508'. At Farm 2 '344' was evaluated and at Farm 3 '508' was evaluated. MFC crawler density was monitored monthly. Two branches/tree were selected and double-sided sticky tape was placed for 1 week and the number of MFC crawlers in 1 in<sup>2</sup> of tape was recorded. Yields were harvested according to the grower's schedule, ranging from 3-4 harvests. Yields were recorded as total fresh wet in shell weight per tree for the season. Data were analyzed using SAS software to perform regression analyses and ANOVAS followed by Tukey tests for mean separation. MFC and yield resulted in a negative relationship for all locations and varieties of macadamia, with decreasing yields as MFC density increased. In '344' trees, all three MFC levels led to a lower yield than produced by the control trees. In '508' trees, yields in the high infestation were lower than the control and low level of infestation. These results suggest that in the '344' variety, a threshold of 50 crawlers/in<sup>2</sup> should be used to limit yield loss, whereas in the '508' variety, a threshold of 100 crawlers/in<sup>2</sup>, control measures should be implemented. Costs of treatments and market value will influence the actual economic injury level, which can be calculated as needed using current economic data.