Fungicides Provide Significant Financial Benefits to Australian Macadamia Producers

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Australia is the home of the macadamia nut. Australia accounts for about one-third of world production. Macadamias are grown along the eastern seaboard of New South Wales and Queensland. About 13,000 tonnes of kernels are produced in a normal year from 6 million macadamia trees on 18,000 hectares. Exports with a value of $120 million account for about 70% of Australian production.

Husk spot caused by *Pseudocercospora macadamiae* is a serious disease affecting macadamia in Australia. Husk spot has not been reported from any other macadamia producing nation. Husk spot has spread from Queensland where it was first reported in 1981 to all production areas in south-east Australia. [1]

The edible macadamia kernels are contained inside a hard shell surrounded by a fibrous husk. Infection of the husk by the fungus gives rise to characteristic tan-brown lesions on the surface. The spores adhere to the husk, germinate and penetrate the host through openings (stomata). In the absence of effective control, about 15% of the total annual value of macadamia production in Australia would be lost [3]. A major part of the economic impact is caused by premature fruit abscission from the tree when the kernels are still immature and of low oil content, making them unsuitable for processing and consumption [1]. Diseased fruit commonly abscise shortly after symptom expression which may occur 7-14 weeks earlier than the normal abscission of mature fruit.

In Australia, macadamia fruits are harvested from the orchard floor by mechanical harvesters following natural fruit abscission. When diseased immature fruit are harvested as a mixture with mature fruit, the lots are commonly downgraded at the processing stage, resulting in financial penalties [2].

Application of fungicide is currently the only effective method for controlling husk spot [3]. The current chemical control system is based on a total of four sprays at about four week interval, with the first spray applied when the fruit is at about 3 mm diameter[4]. Recent research demonstrated yield increases ranging from 11 to 33% when husk spot was controlled with fungicides [4]. Gross financial margins for fungicide treatments showed positive contributions of up to 20%. Benefit-cost ratios of up to 3.0 were measured comparing the value of the additional gross income to the cost of the fungicide sprays [4].

References