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Page 1 of 3

Monday March 2, 2009

Apple grower taps into tree health

West Australian apple grower Jason Jarvis has discovered that nutrition-based organic production is successfully competing with conventional farming systems on cost and productivity.

By Catherine Norwood

Just as doctors use blood tests to check the health of their patients, West Australian orchardist and Nuffield Scholar Jason Jarvis uses sap tests to check the health of his apple trees and identify nutritional deficiencies in the tree.

It is part of the nutrition-based farming system at the Donnybrook orchard he operates in partnership with his parents, which focuses on improving soil health and giving trees the right food and nutrients so their own good health will make them more resistant to pests and diseases.

The Jarvis family is in the process of gaining organic certification and Mr Jarvis used his Nuffield scholarship to look at organic production systems that would allow him to maintain yields and quality in his orchard during and after the changeover period, as well as marketing strategies to maximise the profitability of organic produce.

His scholarship was sponsored by Apple and Pear Australia Limited and Horticulture Australia Ltd and took him to 10 countries in 12 weeks and his findings are applicable to other growers looking to convert to organic farming. However, he says, while there is a growing awareness around the world of nutrition-based 'biological' farming systems he is using, the majority of commercial organic producers still operate under 'conventional' organic principles where chemical inputs such as insecticides and fungicides are replaced with natural equivalents.

Yet even 'natural' products used to combat disease can be harmful to tree health and result in reduced productivity, Mr Jarvis says. Some apple varieties, for instance, are sensitive to sulphur, which is used as an organic treatment to combat apple scab and powdery mildew, and begin to suffer well before the 15 to 20 treatments required to control the disease are completed.

During his travels Mr Jarvis visited operations on the east and west coast of the US and found one company, Ca. Tree Ripe, in California, marketing organic fruit as not just tree-ripened but as having greater nutritional value. Mr Jarvis says because of the biological-organic production system the company's growers use and the focus on timing crop availability to specific nutrient levels, the produce is more mineral-dense than other conventionally or organically grown fruit. He points to this company as an innovator and industry leader but says the success of the biological farming techniques being used appears to be ahead of the available scientific evidence on their value.

When Mr Jarvis visited researchers at Pennsylvania State University, Washington State University and Maryland State University in the US, the East Malling Research Centre in the UK and the Horticulture Research Centre in New Zealand he found many of the research projects were being conducted in isolation, without considering the inter-relationships between tree health, nutrition and susceptibility to pests or disease. For example, he says an entomologist testing products for insect control was unconcerned that apple trees in his test orchard were visibly suffering from manganese deficiency.

Mr Jarvis says the horticulture industry has a number of well-established tests including Brix tests for total soluble solids including sugars, which are used in the fruit and wine industry to identify fruit maturity. However he could find little scientific peer-reviewed research on using sap pH or Brix as indicators of nutritional deficiencies as an alternative to expensive tree tissue sampling. He believes sap testing has the capacity to revolutionise organic production systems, allowing growers to readily monitor plant health and adjust their orchard management accordingly.

The Jarvis family has been using biological techniques for the past four years and hopes to achieve organic certification for the 2012 harvest. In the process of converting from traditional farming systems, Mr Jarvis says the family has emphasised soil nutrition. Money that would otherwise have been spent on chemicals has gone into nutrition designed to improve soil and tree health, including trace elements, kelp, highly available calcium, humic acid, molasses and compost. To date, production and quality have been maintained through the change over.

“In the US, in Washington State, I’ve seen that growers can operate organic systems for the same cost of production and yield as conventional systems,” Mr Jarvis says. “At the moment they earn a premium for organic produce but even if the premium collapsed for some reason these businesses would remain viable.

“They also achieve a higher percentage of fruit suitable for fresh food markets from their cold storage than comparable non-organic systems, so the profitability is definitely there. Organics is big business in countries like the US, Italy and in New Zealand. It’s not a niche industry with backyard operators. One of the orchards I visited in the US had more than 200 hectares of organic apple trees.”

Mr Jarvis says he has returned from his Nuffield travels with plenty of new ideas to try in terms of nutrition for his trees, marketing strategies and value-adding options for his crops. Dried fruit and fruit juices are possible avenues for fruit that doesn’t quite make the fresh market grade.

Once organic certification is achieved he plans to concentrate initially on local and eastern states supply, but expects to return to export as local demand is met. In the past 15 years Mr Jarvis has overseen the development and operation of an export-licensed packhouse as part of the family’s operation, packing all types of fruit, for other producers, for local, interstate and export markets. The packhouse is currently underused. It has an average annual throughput of 2000 tonnes but has the capacity to handle 5000 tonnes of fruit a year.

“One of the most important lessons I learned while travelling is that you have to play to your strengths. In Washington State they have a climate well-suited to organic production and plenty of water. In West Australia we have the advantage of no fire blight, codling moth or apple scab, which are the three main problems faced by apple growers around the world. In terms of market opportunity, we have a counter-season with the UK, where the Pink Lady™ (Cripps Pink variety), which was developed in West Australia, is one of the most popular apples in the market.”

Mr Jarvis says his research has increased his confidence in the farming methods he is using and also in the future of the organics industry. He is planning to continue renewing and

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expanding the family's 15 hectare orchard. He has established markets in the UK, and identified potential future markets for value-added products in Japan and possibly China.

General Manager of Apple & Pear Australia Limited Tony Russell says he is keen to extend the key learnings from Mr Jarvis's scholarship to other industry participants to help improve the industry's global market competitiveness.

Mr Jarvis will present the findings of his research in Cairns during Nuffield Australia's four-day Autumn Tour from April 16 to 19, as will nine other Nuffield Scholars. Their study topics include regional branding, the export beef marketing chain, cooperative marketing, product distribution chains, approaches to water policy, reducing farm inputs, biofuel opportunities and managing stock to improve rangeland environments.

The Nuffield Autumn Tour is open to anyone interested in attending and more information is available from the Nuffield Australia website, www.nuffield.com.au or contact Nuffield Australia chief executive officer Jim Geltch on (03) 5480 0755.

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A high resolution photograph of Mr Jarvis can be downloaded from the photo gallery link at the Nuffield Australia website, www.nuffield.com.au

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