



Sound environmental management is good business

CAWTHRON MARLBOROUGH ENVIRONMENT AWARDS

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JUDGES' REPORT

BUSINESS INNOVATION

PINOLI PREMIUM PINE NUTS

INTERVIEWED

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JUDGES

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INTRODUCTION

Establishing Pinoli Premium Pine Nuts has been an exercise in patience and problem-solving which is now paying off in a high quality, low-waste product ideally suited to Marlborough's dry conditions.

The company has created a new industry in New Zealand, based on extensive research and developing their own stock of the European stone pine (*Pinus pinea*).

As well as producing nutritious, natural nuts, Pinoli have created a business that has sustainability at its core – all of the raw product is used, negligible water is required, and energy use is efficient and based on renewable sources.



What started as an operation to produce pine nuts has evolved into a wider agroforestry system that also sequesters carbon, controls erosion, provides grazing for stock and prunings for mulch and firewood.

GENERAL INFORMATION

Directors Andy and Barbara Wiltshire started Pinoli in 1997 and run it in partnership with general manager Lee Paterson and sales manager Zoe Thompson. There are four fulltime staff and a crew of RSE workers for pruning and harvest.

The first trees were planted in 1998 and they now have 550 hectares of orchards. The largest properties are at Wairau Valley and Cape Campbell, with other sites in the Waihopai, Avon Valley, Grassmere, Brancott and Oamaru.

After researching different overseas varieties and corresponding with growers, Andy chose the stone pine from the Mediterranean area because of the similarity in climate and growing conditions to Marlborough. The European pine nut also has longer kernels and a richer taste than those grown in China and Asia.

Pinoli imported seed for trials just two years before this was prohibited for biosecurity reasons. But this gave them the time they needed to develop plant stock with a wide genetic base.

It takes about eight years for trees to provide their first crop and they reach peak production at 40-60 years. They come to the end of their productive life at about 100 years, when the trees will be logged and used to make furniture.

It has taken a lot of experimentation and patience to get from planting the trees to selling the packaged nut.

Planting: Stone pine seedlings are planted on well-drained terraces and hillsides with enough room for their extensive root systems to travel deep and wide. This allows growth in dry conditions without irrigation. Herbicide (Round Up) is used at the planting stage to allow the trees to establish. Sheep and cattle graze the grass once the trees are established and they also benefit from the shade.

Pruning: Trees are pruned and thinned to facilitate harvesting. Trimmings are mulched and spread back into the soil and larger branches are sold as firewood.

Harvesting: It takes three years for cones to mature for harvest. Each cone holds about 120 kernels (the "nuts" for eating) and harvesting is late winter/early spring. A very long pole with a hook on the end is used to hand-harvest cones from younger trees, while a mechanical tree shaker gets the crop off trees more than 15 years old.

Drying: Cones dry in the sun for six months in wooden crates and are then put through a solar-powered kiln to further encourage them to loosen the individual seeds that house the pine nut kernels.

Processing: The cones are fed into a machine that crunches and shakes them to release the shells that hold the seeds. Pinoli has invested millions of dollars in designing and building a state-of-the-art factory to extract the kernels from the seed and clean them. The seeds are fired under air pressure to hit a metal plate until all the kernels are released. The kernels are dried and polished then washed with recirculating water before being dried again and cooled.



Sorting and packing: An automated sorting machine separates the darker kernels from the creamy ones that are then packaged and labelled by hand. Stock is held in a chiller before distribution and has a use-by date of 10 months.

It is a long and labour-intensive process to harvest and extract the nuts, which is reflected in the price. Pinoli pine nuts are sold throughout New Zealand and exported to Europe.

The entire operation, including building the factory, is privately funded.

The Cape Campbell property is an Outstanding Natural Landscape, where horticulture is a permitted use. It includes four Significant Natural Areas covering 16 ha which have weed and predator control. The company has added a 30 ha buffer zone around these sites for natural regeneration.

THE JUDGES WERE IMPRESSED BY

- *Land management:* Pinoli is an excellent example of the environmental benefits of matching land use to land capability. The European stone pine provides a productive use for marginal land. It is a versatile tree with zero irrigation required, disease resistance (therefore no chemical spraying), adaptation to drought conditions and root systems ideal for erosion control. Unlike other pine plantations there is no wilding spread as the seeds are too heavy.
- *Climate Change awareness:* The 100-year-life span of the trees provides superior carbon sequestration. Waste product is being used as biofuel, reducing carbon emissions from coal. The company is committed to solar generation to achieve self-sufficiency in power for their whole operation. They sold 4 ha of orchard land to Kea Energy, who has installed a massive 1.85MW solar array of PV panels for power generation. Pinoli has an option to buy some of this power to run the factory.
- *Use of waste streams:* Pruned branches are mulched and spread on site, saving on transport and dumping costs. Larger logs are sold as firewood. What is left of the cones and shells is sold to PH Kinzett Ltd to fuel their tomato glasshouses as an alternative to coal. A fine dust by-product is captured and used as mulch in the orchard and a neighbors' organic vineyard. Rather than a cost for disposal, Pinoli waste products provide other income streams.
- *Investing in the Business:* There is a commitment to invest wisely and not cut corners. A lot of work goes into getting the right equipment to treat the product with care to derive top quality. Investment applies to staff too, such as installing windows in the factory for natural light and a better working environment.
- *Staff management:* Pinoli has a tight team that has been working together for more than 20 years. They registered as a Recognised Seasonal Employer in 2013 and bring in their own staff from Fiji and Tonga. RSE workers have a modern house on site, are paid well and are appreciated for their efforts.
- *Continuous improvement:* Andy and Lee both have long careers in forestry management, which is reflected in their data-driven approach. They have two



trials under way to compare artificial fertilizer with regenerative farming techniques; and testing the spacing of trees per hectare to find the optimum balance between tree numbers and cone production. Future plans include using prunings in a biomass energy unit to dry cones and generate electricity. The aim is to eventually convert the factory, all vehicles and the tree shaker to electric power.

PROBLEMS AND HOW THEY HAVE BEEN TACKLED

- *Lack of local knowledge:* As a new industry for New Zealand, Pinoli have not had local experience or research to draw on. Their ability to adapt and innovate based on overseas practice has required time and curiosity to find solutions. This ranges from trialing for the best genetic material to finding a Scandinavian forestry machine that walks up steep slopes to harvest the cones.
- *Threat of fire:* Climate change and increasingly hot nor 'westerly days has increased the risk of forest fire. European stone pine is a fire-adapted species that provides its own insulation with 80mm thick bark.
- *Need to be patient:* Everything in the pine nut industry takes time, including the 8-10 years before the trees start producing. Patience was also needed to perfect pruning and harvesting techniques and the processing operation. The growth of the business has been carefully planned and budgeted, based on funds available. Government funding has not been sought because Pinoli wants to ensure their independence and ability to adapt.
- *Emissions Trading Scheme:* The ETS allows landowners to earn money by planting forests that absorb carbon dioxide as their trees grow. However under the Kyoto Agreement trees that produce fruit and nuts are excluded from the ETS. This appears to be an anomaly when pine nut trees are in the ground sequestering carbon for at least 100 years, compared with *pinus radiata* that is clear-felled every 30 years. Attempts to lobby Government to get this changed have not gained traction.
- *Biosecurity threat:* Pests are not an issue at this stage but biosecurity at the border is critical. The western conifer seed bug which has caused serious issues for pine nut producers overseas is a particular concern.

SUMMARY

Pinoli Premium Pine Nuts is a business that shows good things take time. It has taken more than 20 years to reach current production levels but each step has been thought through to create an operation that is financially and environmentally sustainable.

Innovation and problem-solving is at the heart of Pinoli Premium Pine Nuts and has resulted in providing a natural, healthy product that adds to Marlborough's reputation for quality food. They have also developed a product that addresses key environmental issues in the region, including waste management, erosion and water use.

SUGGESTIONS

- Invite Climate Change Minister James Shaw to visit the orchard and hear your concerns about not being eligible for the Emissions Trading Scheme.
- As funding allows, prioritise the mechanisation of the packaging end of the operation. This would minimise handling and ensure portion control per pack.

- Investigate capturing and storing rainwater from the factory roof for fire-fighting. One option may be sprinklers mounted around the guttering of the factory.
- You have a great story to tell – it is worth developing a PR strategy for regular and consistent story-telling. Consider reaching out to magazine and radio media as a way to expand marketing and also spread the word about the environmental benefits of your operation and connection to Marlborough. Eg, the story of Andy climbing trees to pick pinenuts at local vineyards is a great illustration of his passion and drive.
- There's great value in highlighting your sustainability (using all waste streams, renewable power, low water use, etc) on your website and in marketing material. You are welcome to put this judging report on the website.
- Your informative website would benefit from photos especially of the orchards, harvesting and processing facility.