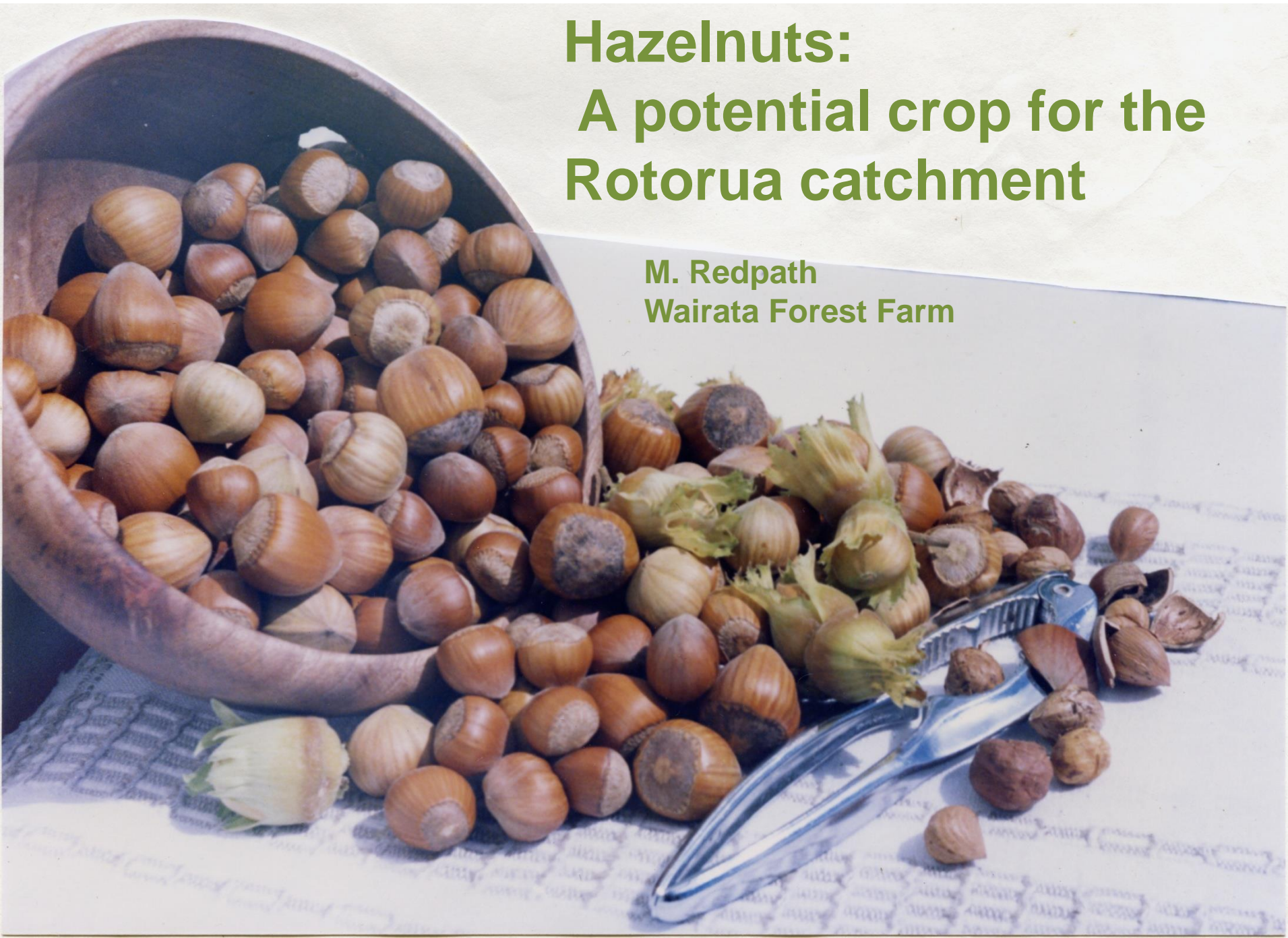


Hazelnuts: A potential crop for the Rotorua catchment

M. Redpath
Wairata Forest Farm



Introduction



3 key questions:

- Can hazelnuts be successfully grown commercially in the Rotorua area?
- Will a land use change to hazelnut growing result in a reduction in nitrogen leaching?
- Is hazelnut production an economically viable land use?

Ideal site requirements for hazelnut production

- Mild, humid climate
- Ideally 800 to 1200 mm rain annually, well distributed through the growing season.
- Well drained soil, pH 5 to 7
- Must have shelter for commercial orchards
- Land must be suited to mechanical harvesting.
- Research at Wairata Forest Farm can probably be applied to the Rotorua catchment.
- There is approx. 3000 ha. of Class 3 land used for livestock farming in the Rotorua catchment



Nitrogen requirements

- Nuts are 15% to 18% protein so require nitrogen to successfully develop high yields.
- Very little international research on nitrogen cycling in hazelnut orchards.
- Spring growth of hazelnuts relies on nitrogen stored in the roots and plant tissues.
- The most effective applications of nitrogen fertilizer are in the spring during the period of active growth.
- European research suggests that 50 to 75 kg N/ha/yr should be adequate to maintain high yields on sandy soils (Tous et al, 2005).
- The application of nitrogen to hazelnut orchards is **controlled**.
- It is estimated that converting all the Class 3 land out of livestock farming into hazelnut production could remove approx. 130 tonnes N year.

NZ hazelnut industry 2014

- Over 400 hectares in 2007 (Agricultural Census), most planted since 2000. Now possibly 350 ha.
- Almost 100% Whiteheart and pollinisers.
- Most growers are small block owners.
- Growers represented by Hazelnut Growers Association of NZ (HGANZ); 100 members (approx.)

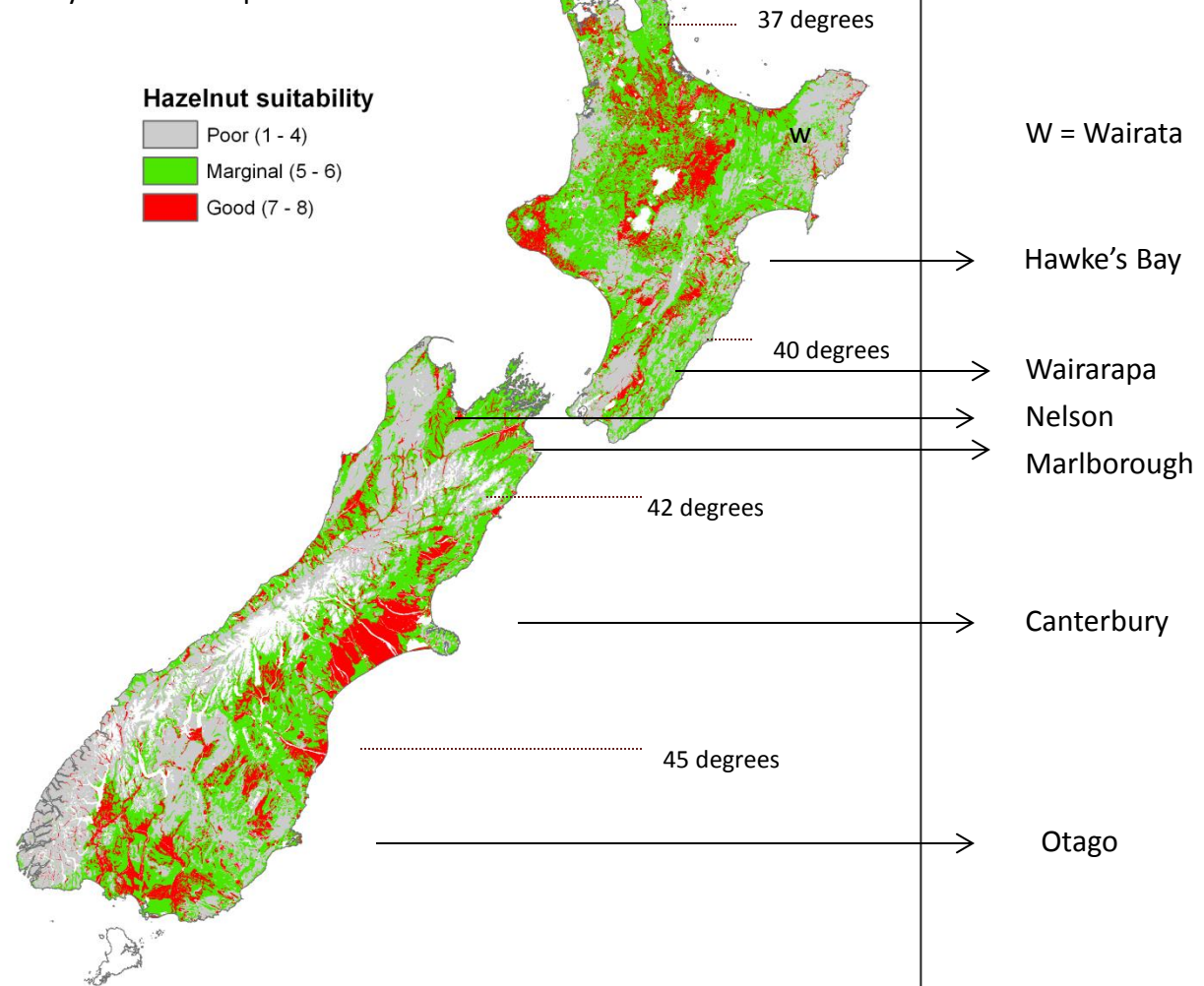
Processing plants

- The Hazelnut Company Ltd – a grower owned company with about 100 shareholders. Processing factory in Canterbury, the main hazel growing area.
- 8 – 10 smaller processors, selling at Farmers Markets and via internet

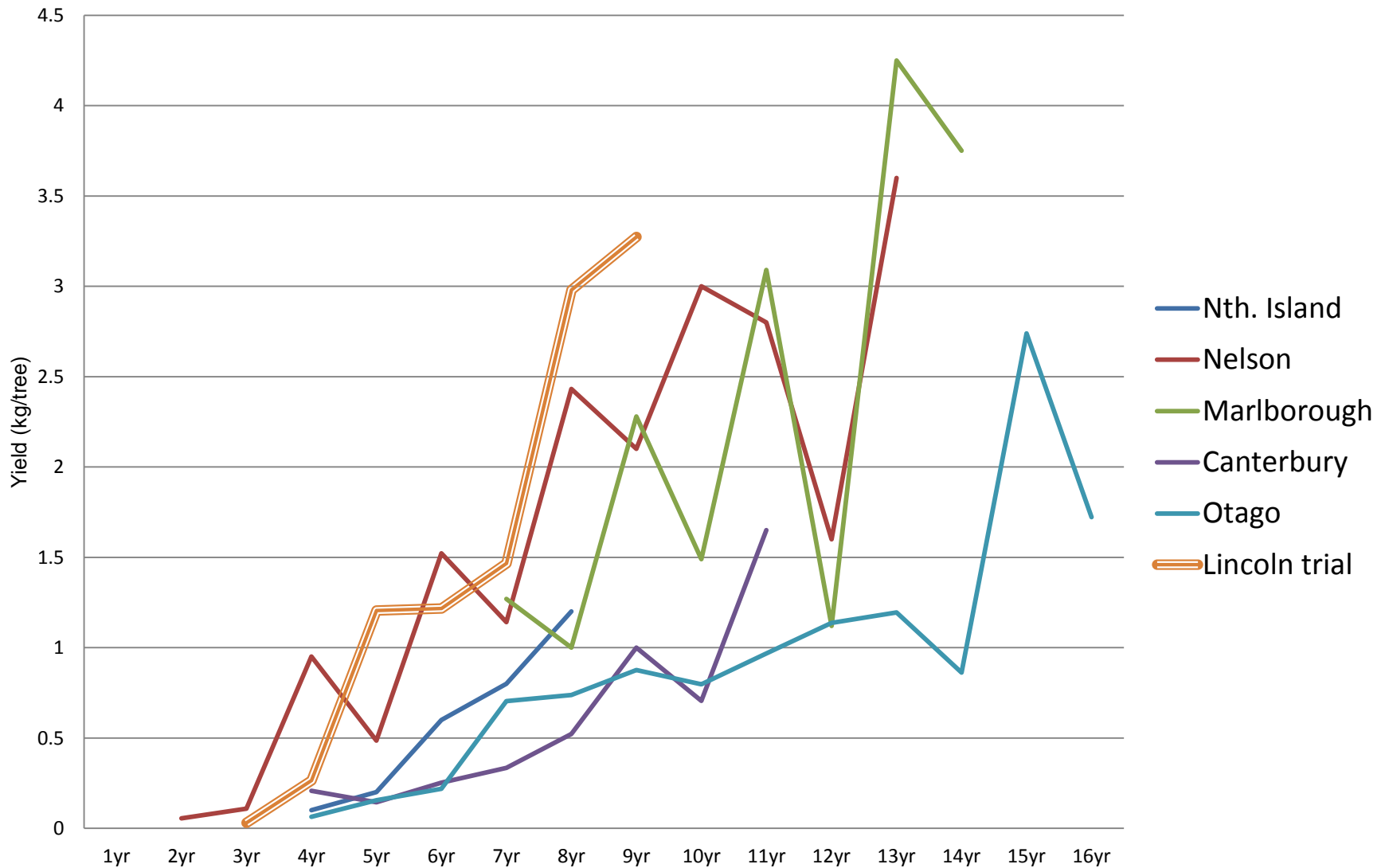


Areas suited to hazelnut growing in NZ

Most existing orchards are in Canterbury, Otago or Nelson. The areas with greatest potential may be Hawke's Bay and Wairarapa.



Regional difference in Whiteheart yields



10 year Whiteheart Orchard, Nelson (5x3)

2010 Crop = 2.1 kg/tree

This block has yielded almost 4 kg per tree or
over 2 tonnes/ha



10 year Whiteheart, Canterbury (4 x 2)
2010 Crop = 0.42 kg/tree
Reached 1 kg/tree in 2014



Effect of variety on canopy development and orchard profitability.

10 year Whiteheart Orchard, Marlborough (5x3)

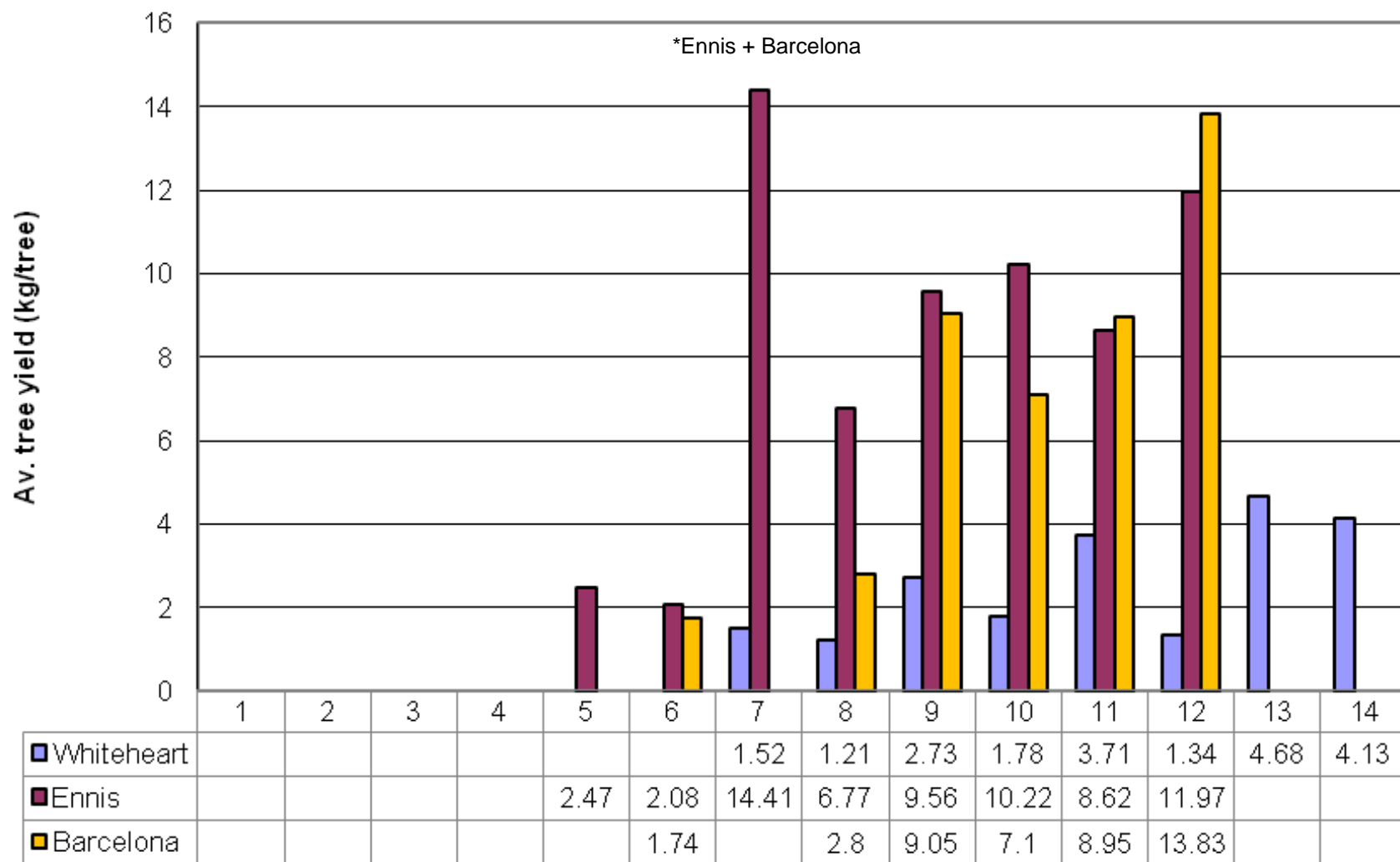
2010 Crop = 1.78 kg/tree



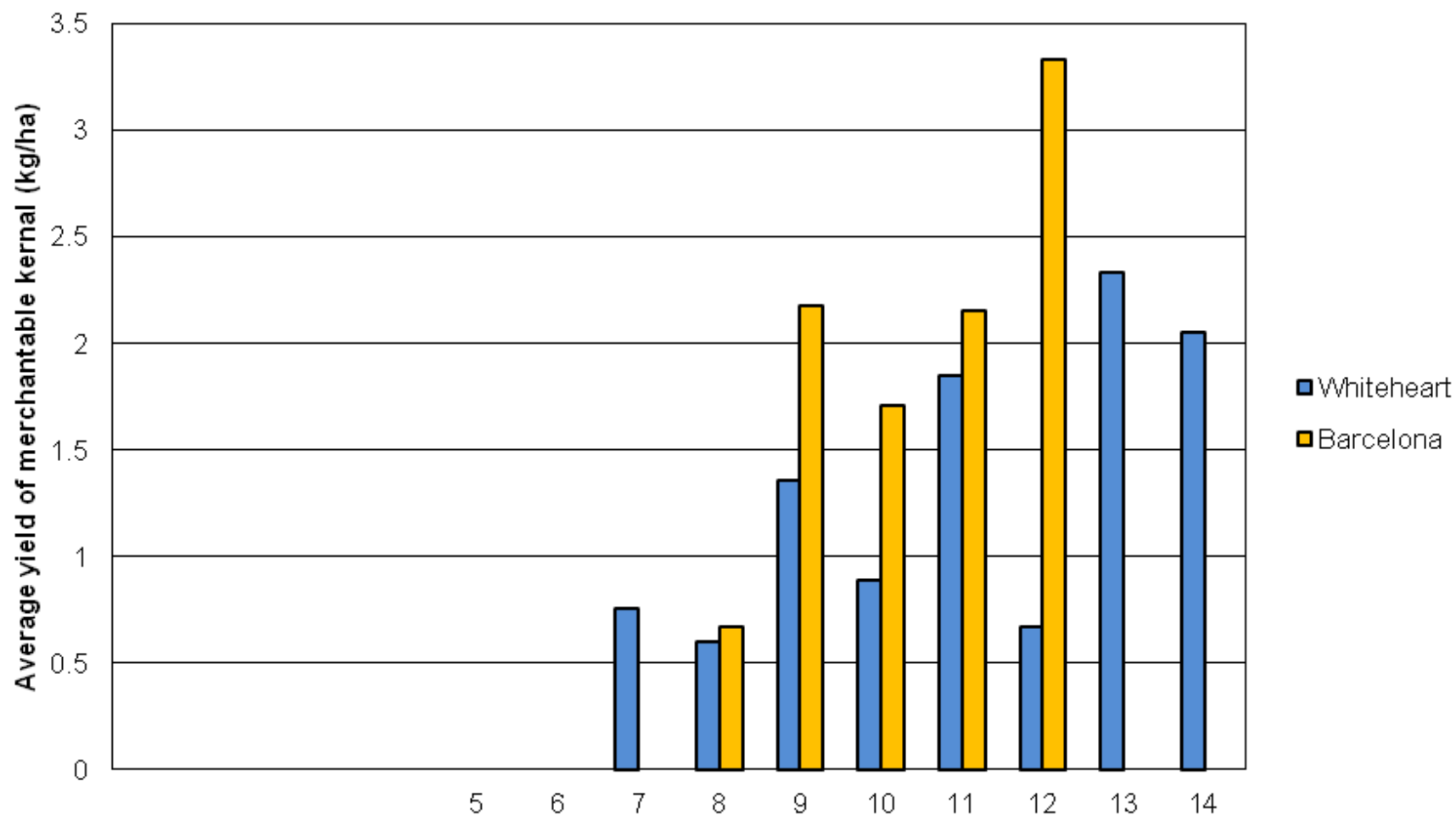
8 year Ennis Orchard, Marlborough
2010 Yield = 6.77 kg/tree



Marlborough Orchard No.1: Per tree yield (2007 - 2014)



Marlborough Orchard No.1: per hectare yield of merchantable kernal 2007 - 2014



Barcelona planted at 666 stems/ha., Whiteheart planted at 1000 stems/ha.

Nut quality: Turkish nuts

Raw



Blanched



Nut quality: NZ examples



2012 Tonda Romana blanched. Nelson (Waimea)



M.Redpath 2013

Barcelona blanched, Turangi, 2013. NB: Striped = s, insect damage = Ins



2012 Whiteheart blanched. Nelson (Waimea)

Economics

- Gross margin of \$4000 - 7000/ha
- Assumes high yielding varieties and an unirrigated, efficient Oregon –type industry
- Comparable with estimated returns in Australia, Italy, and Oregon.
 - Australia = \$4400/ha (Baldwin, 2010)
 - Oregon = \$4400/ha (Julian et al, 2008)
 - Italy = \$4300-5200 (USDA FAS, 2011)

BUT

There are no large processing facilities in the North Island

Table 6. Sensitivity analysis of gross margin (\$/ha) to crop price and yield

Crop price (\$/kg)	Yield of nuts in-shell (tonnes/ha)			
	1.5	2.0	2.5	3.0
\$2.50	\$1305	\$2480	\$3655	\$4830
\$3.00	\$2055	\$3480	\$4905	\$6330
\$3.50	\$3805	\$4480	\$6155	\$7830

Markets

- World market for nuts expanding at about 5.5%/yr (Calcigani, 2011).
- Driven by increased consumption in developing world (esp. China, India) and publicity about health benefits.
- Most kernels still used in confectionery or baking so potential exists for increased consumption in “healthy” products.
- Increased risk of adverse climatic events in existing growing areas due to climate change.
- Increased plantings in Chile, Australia, Bhutan, Serbia, Georgia, Oregon.



Thank you

Hazelnuts: Delicious, Nutritious and versatile

