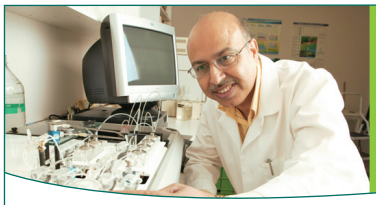

ADAPTING TO A CHANGING CLIMATE: CASE STUDY 9

BAY OF PLENTY KIWIFRUIT ORCHARD

Balancing climate concerns with market realities

THE FARM

- 12.1 hectares in Welcome Bay, Tauranga.
- 6.3 canopy hectares in kiwifruit, of which 2.4 hectares is planted in organic green (cv 'Hayward'), 2.1 hectares in conventional green, and 1.8 hectares in conventional gold (cv "Hort16a').
- Includes small plantings of organic plums and Tasmanian Blackwood timber trees.

THE FAMILY

- Peter and Gwen Ombler, who developed the orchard from scratch in 1987.
- Peter's industry training in horticulture provided a solid foundation when he later bought the orchard.
- Peter is current President of New Zealand Kiwifruit Growers Incorporated (NZKGI) and has been an Innovation Director of ZESPRI International.

A balanced approach summarises the Ombler's kiwifruit business. Peter balances profitability with genuine concern for the environment and for the future of the kiwifruit industry.

RESPONDING TO MARKET AND CLIMATE CHANGES

Profitability and environmental concern are reflected in the balance of organic and conventional production on the Ombler's orchard. While climatic changes are a concern, Peter Ombler's believes that market pressures will drive short-term changes to the orchard and kiwifruit industry.

"Kiwifruit growers are under significant pressure to produce high quality fruit for markets that are increasingly discerning about the whole environmental footprint issue," says Peter.

OBSERVED CHANGES IN CLIMATE

Peter explains local climate change as a general trend of the last decade that has become more marked in the last five years, and of "things happening when they shouldn't". His orchard is increasingly experiencing mild winters with cool spring periods.

"This is not a good combination for plants, particularly kiwifruit. Kiwifruit need proper winter chilling in order to break dormancy for the following spring. More often over the past five years, we have seen inadequate chilling to break dormancy properly."

The past ten years, in particular, has brought more uncertainty about spring weather. Average spring temperatures are quite different today, with more late frosts. This has become more of a concern because of the presence of gold kiwifruit, which breaks bud about four-to-five weeks earlier than green.

Cold weather in spring further delays budburst and growth. More isolated extreme weather events have been noted, especially during spring and early summer.

"We can't honestly say we're safe from frost until mid-November, and from hail – who knows?"

CLIMATE CHANGE AND KIWIFRUIT

The randomness of weather events will always be a problem. The main climate change threat to kiwifruit, particularly the green variety, is the consequences of the warmer winters expected.

Hydrogen cyanamide is presently used on many orchards to promote bud break and increase the number and size of fruit, however higher winter temperatures will make hydrogen cyanamide less effective.

Gold varieties of kiwifruit are less susceptible to the effects of winter's chill due to its natural propensity to flower.

Changes in pest pressures are also likely to affect kiwifruit growers, particularly with consumers demanding less chemical input as well as fewer pests on fruit. Peter explains: "Climate change could affect our business in terms of insect control and our ability to respond, given the conflict with this increasing awareness of chemical residues on fruit."

RESPONDING TO A CHANGING CLIMATE

Peter knows that different production and management systems work well on different scales. His focus is on a well-run horticultural system that is continually fine tuned. Accuracy is important for this approach.

Good wind shelter is vital for kiwifruit production.

SOIL MANAGEMENT: Peter follows organic principles across the entire property, which enables organic certification of just over half the green production area. In 2008, he considered withdrawing from organic production because of warmer winters and lower production, however his reluctance to do this motivated him to work out a better organic approach. The main difference between his organic and conventional blocks is the use of hydrogen cyanimide and some nitrogen fertiliser.

SHELTER: Good wind shelter is vital for kiwifruit production. It can be a challenge to find a balance between wind protection and allowing enough light and warmth into the orchard. "The main thing you can do for dry matter accumulation is to harvest light." Location (in terms of microclimate), block size and type, and the extent of shelter all come into play to find the optimum balance between crop protection and production.

IRRIGATION: Peter doesn't believe that kiwifruit need to be irrigated in the Bay of Plenty, although the region has some production areas on shallow soils that are irrigated. "You'd expect fruit quality and size to be the main casualties of a dry year, and yet we had one of the driest summers on record in 2007/08 and the biggest fruit profile I can ever remember. Kiwifruit are deep rooting plants in the right conditions once they are mature, so the dry doesn't bother them, and they like heat for fruit development."

FROST: Frost hasn't been a problem for Peter, but he believes that sooner or later it will be. With this in mind, overhead sprinklers have

Peter's focus is on a well-run horticultural system that is continually fine tuned.

FOR MORE INFORMATION

- The Sustainable Farming Fund supports rural communities to achieve sustainability. Resources, publications and reports are available at: **www.maf.govt.nz/sff**
- For a copy of a full report on this orchard search for *Adaptation – developing case studies in the kiwifruit industry* on **www.maf.govt.nz/climatechange**

been installed for frost protection on the gold variety plants.

NEW PLANTING: A new development on the orchard is conversion of an avocado block to gold kiwifruit with total enclosure of artificial shelter, including overhead shelter, to provide the vines from wind, hail, and frost. This level of protection is more about the variety of kiwifruit variety than any other factors, however Peter is mindful of changes that are happening. "You can never say you'll have a guaranteed crop but in this particular situation, this block should produce consistently from year to year."

INTO THE FUTURE: "It would appear that the future of gold is potentially brighter than the future of green." Over time, Peter will probably consider changing from green to new varieties – although not necessarily gold – that better suit a warmer climate. ZESPRI's plant breeding programme may develop new varieties and rootstocks, however it's a slow process. It can take 20 years to develop and commercially release a new variety.

WHAT NEXT?

Peter believes there is a need for the industry to proactively look at risks and opportunities associated with climate change, and he also sees a marketing opportunity.

"We need to be collating data on how good we are and package the information effectively as a marketing tool."

Peter would like a consolidated approach from growers into future proofing. Then the industry and growers could consider where they're each heading with planning to mitigate risks and maximise opportunities.

Peter believes there are three areas where growers need support to adapt.

- Plant breeding.
- Crop protection.
- Marketing, including risk mitigation and opportunities to increase market share.

"Climate change could affect our business in terms of insect control and our ability to respond, given the conflict with this increasing awareness of chemical residues on fruit."

Key points

1. **Peter believes that short-term change will be driven by market pressures, rather than climate change.**
2. **Climate change has occurred, most notably over the last five years, with milder winters and late spring frosts.**
3. **The main climate change threats Peter expects are pests and the effects of warmer winters and weather extremes .**
4. **Peter's focus is on continually fine tuning a well-run horticultural system, including maximising climatic benefits (such as heat and light) and minimising climatic risks (such as wind).**
5. **Higher temperatures provide opportunities to develop new kiwifruit varieties and achieve gain yield and quality benefits.**
6. **Peter believes the kiwifruit industry should focus on future proofing against future challenges, one of which is climate change.**

THIS IS ONE IN A SERIES OF CASE STUDIES CALLED *ADAPTING TO A CHANGING CLIMATE* THAT CAN BE FOUND AT WWW.MAF.GOVT.NZ/CLIMATE CHANGE

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