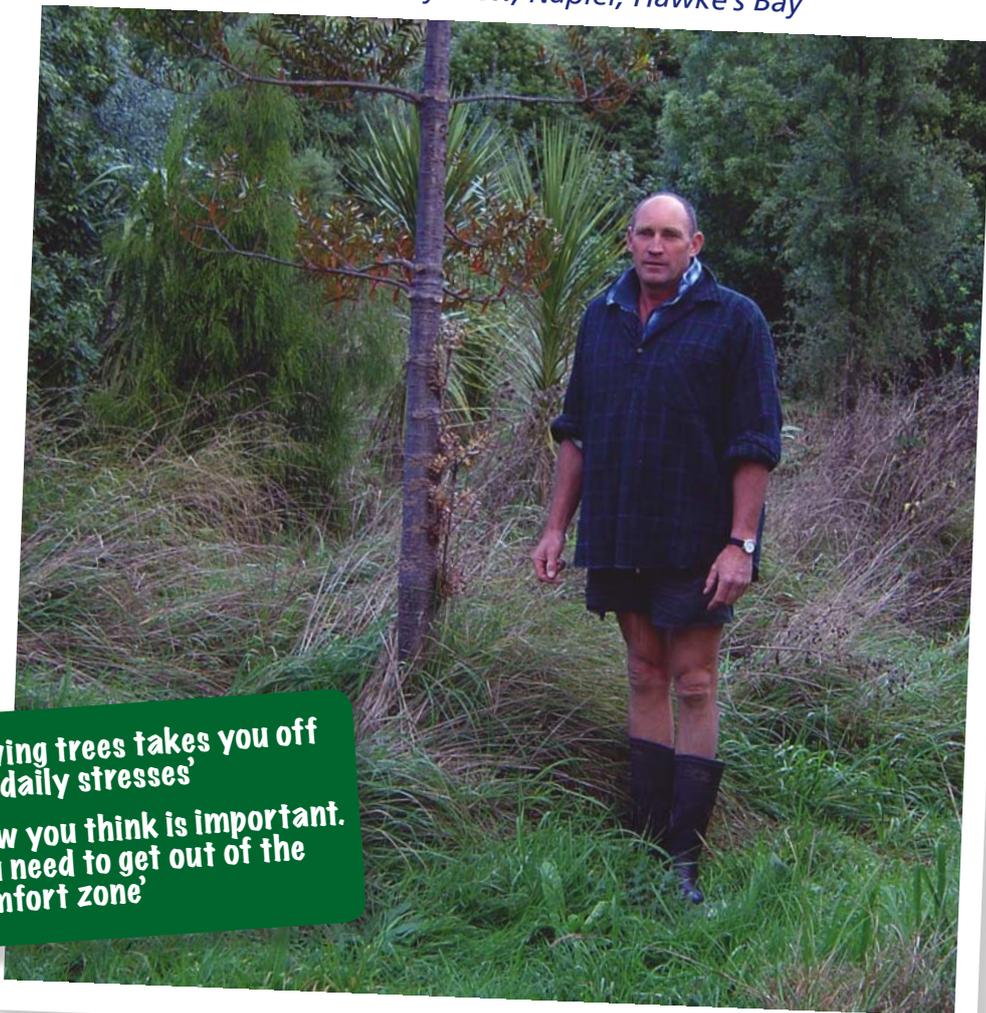


## CASE STUDY 4



**Philip and Robyn Holt,**  
*Maraetara, Bay View, Napier, Hawke's Bay*



**'Having trees takes you off  
the daily stresses'**  
**'How you think is important.  
You need to get out of the  
comfort zone'**



## Key facts

**Farm size and type:** The farm is predominantly coastal dry hill country and covers about 1000ha in total, which includes a couple of blocks not connected to the main farm.

**Production focus:** Intensive sheep breeding, beef breeding and finishing, commercial forestry in problem areas, goats, many different stock classes to give more flexibility in a drought; a small area in carob production that has potential to be developed further.

**Soil type:** On the main farm there are eight different soil types, but predominantly Crownthorpe sandy loams.

**Climate:** Average rainfall, based on 50-years (1953 to 2003) of on farm records, is 883mm. The wettest year was 1971 (1428mm) and the driest was 1994 (538mm). Temperature variations can be extreme.

**Water:** Water is the BIGGEST limiting factor. In an average year, streams dry up in October and don't flow again until March.

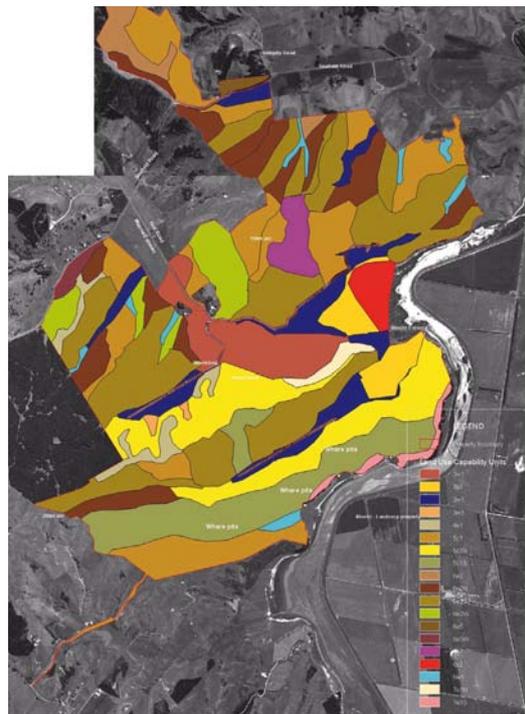
**Social:** The whole family is involved in farm planning. The benefit of involving the children at a young age is that Philip and Robyn have been able to delegate responsibilities to them as they have got older. Robyn is a full-time teacher, which gives economic flexibility. Philip is actively involved in the Hawke's Bay Branch of the Farm Forestry Association and is frequently welcoming visitors on to his farm.

## Main climate features and challenges

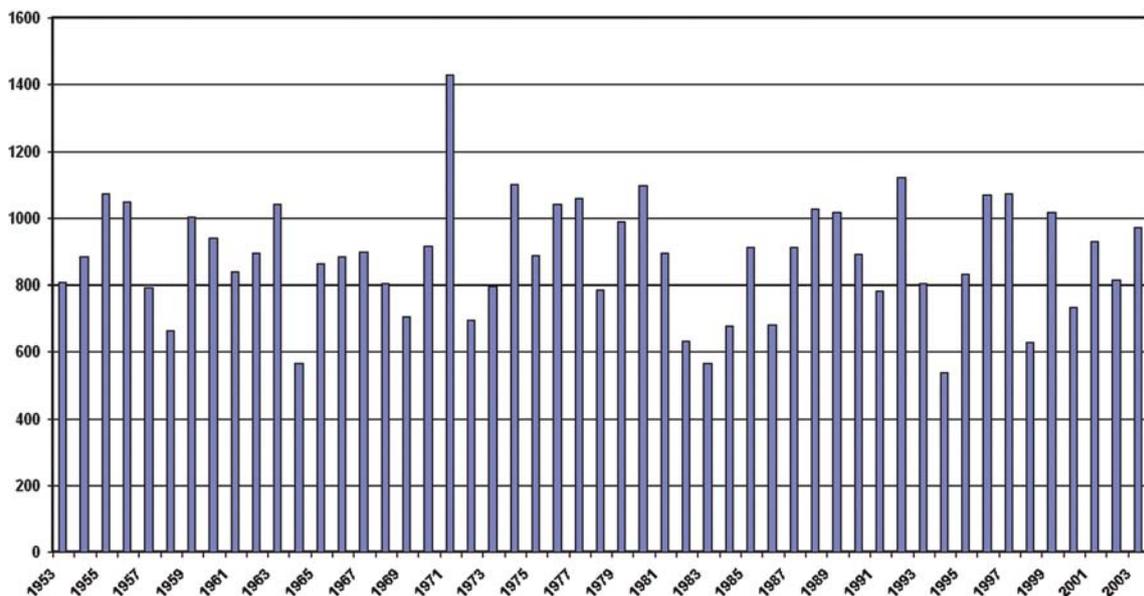
**Rainfall amount:** Mostly they don't have enough rainfall. Large amounts can cause trouble. Philip believes they are well overdue for another cyclone.

**Wind:** Loss of trees from strong winds can cause damage to farm infrastructure and takes time to clear.

**Temperature and moisture:** Animal health problems such as eczema, flystrike, internal parasites.

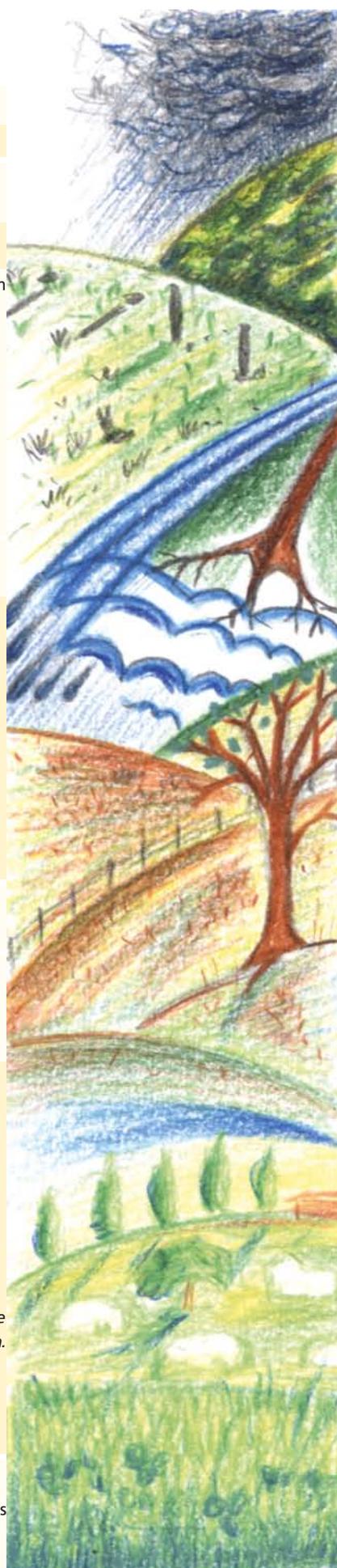


Maraetara Rainfall, 1953 to 2003, Annual



## Historical development and influence of climate and weather extremes

Period	Production focus and major changes <i>Climate and weather effects</i>
1930s	<p>The flats used to be under the sea. They were uplifted with the 1931 earthquake.</p> <p><i>Major flood 1938</i></p>
1940s	<p>Philip's father was away at war. He took on the farm in 1948. There were few inputs to the farm during the war. Gorse, blackberry and rabbits were rife.</p>
1950s	<p>Post gorse, production was good. The focus was on sheep production. Thousands of rabbits were poisoned. The swamp in the flats was drained in the mid 1950s. Rushes were chipped out in another valley. From the mid 50s onwards there was a lot of cultivation and spraying of gorse. The first amenity tree plantings were made in the 1950s.</p>
1960s	<p>They continued with clearance of gorse. Philip's father made the first pine plantings at this time.</p> <p><i>Farmed within the climate at this time.</i></p> <p><i>1963 flood (Queen's birthday weekend, 1963). 18 inches (450 mm) of rain fell in 48 hours.</i></p> <p><i>There was over 1 metre depth of flooding on the flats fed by the Wairoaiti stream (the catchment for this stream is off-farm).</i></p> <ul style="list-style-type: none"> <li>- <i>Silt on the flats</i></li> <li>- <i>Fencing and track damage</i></li> <li>- <i>Erosion throughout the farm. Erosion scars are still evident today (40 years later).</i></li> </ul>
1970s	<p>The situation began changing around the mid 70s, partly driven by climate.</p>
1980s	<p>They have implemented a whole new system of farming, with a shift to more flexible stocking policies since the 1982 drought. SMPs also came off at this time, which had a big economic impact.</p> <p><i>There was a series of droughts in the 1980s. The 1982 drought was the worst.</i></p> <ul style="list-style-type: none"> <li>- <i>Before the drought hit they had their best lambing ever, had high stocking rates, and no flexibility with their stock (all breeding cows and ewes, no trading stock).</i></li> <li>- <i>Lack of water, lack of infrastructure on some farms (inability to get feed to where it was needed).</i></li> <li>- <i>Huge economic and social impacts. The fabric of the district was broken. A hard core stayed but people were pretty much on their own. This time was a turning point for the district, a lot of family farms changed hands. The pressure of droughts and high interest rates, along with other factors, took their toll.</i></li> </ul>
1990s to present	<p>On-going review of farming systems within the limits of the climate. Involvement in discussion groups and input from a farm consultant.</p>



## Adaptations to develop the resilience of the farm

The principal focus for the Holts is harvesting water and reticulation, tree planting, along with changes in stock management.

Over the last 50 years the Holts have created a comprehensive farm development strategy to cope with the limits of climate. Philip's father was a pioneer tree planter in Hawke's Bay, which established the foundation for an ongoing and evolving tree planting programme. The 80s brought major challenges which required a change in thinking. Water is the biggest on-farm issue, and with limited natural water on the farm the Holt family is continually working outside the square to meet the challenges posed by their environment.

Two key factors to the evolving resilience of Maraetara are the family working together and the capacity to change their thinking.

With the prospect of climate change, along with other pressures (eg, rural subdivision), the focus would be on improving and refining the considerable work that has already been done on the farm.

### Forestry/trees:

About 20 percent of the farm has been planted in trees, of which 10 percent is commercial forestry and the remainder is for multiple purposes (farm timber, stock shelter and shade, amenity, fodder, bee

food, erosion control, spiritual well-being, family food). Commercial forestry is predominantly *P. radiata* at present, but evolving towards other species (eg investing in cedars as a longer-term species). They also have a native forestry block.

With possible warmer and drier conditions, and more extremes, the following changes would be considered:

Reduce stocking rate of trees in commercial forestry plantings (planted to a maximum of 15 percent of the farm), down to 200 trees per hectare or less;

Ongoing planting of tree species that are doing well, for soil erosion and shelter and shade benefits. Some species won't make it

Cedars



Kurrajongs



with warmer, drier, conditions so the focus would be experimentation and selection of more tolerant species; Would love to plant more fodder trees – including feijoas (stock love the fruit), gleditsias, more carobs, seedling apricots. Even cabbage trees and kurrajongs can provide a source of fodder.

The ultimate goal is for the whole farm to be planted with adequate shelter and shade. The greatest constraint is the need to balance tree planting with the need to make a living from the farm. Costs involved include double fencing, possum control, time, blackberry control.

**Benefits:** There are multiple benefits including biodiversity enhancement, commercial trees provide financial diversity, amenity values, extra food for stock (eg during a drought), microclimate changes – pasture holds up better during a drought, soil benefits.

**Information/support:** Self-learning (eg, reading), trialling a lot of different species (some are now considered to be weeds, eg tagasaste). The Farm Forestry Association (there is a very active branch in Hawke's Bay). Valuable information on tree planting in Hawke's Bay, drawn from the knowledge of farm foresters, has been collated in a new resource book *Guide to Successful Farm Forestry: A Hawke's Bay Perspective*; published in March 2005 by the Hawke's Bay Branch of the New Zealand Farm Forestry Association.

**Constraints/barriers:** Attitudes - how you think is important, need to get out of the comfort zone; Climatic - try to adapt planting of trees to the site, plant smaller tree seedlings – they're cheaper and have a better chance of surviving.

**Water:** This is the BIGGEST issue on the farm. They recently purchased another block in a higher rainfall zone to give more options

and flexibility. They are still working on the water situation on the main farm. A lot of work has gone into on-farm catchment protection and this is ongoing. They have brought their five-year plan forward and recently made two large water-harvesting dams with a capacity of more than 7,000,000 litres.

**Constraints:** They are constrained by lack of water. Water into the farm is influenced, in part, by the management of neighbouring catchments. Two important catchments are both in pines, one of which has recently been cleared and is likely to be subdivided. The presence of pines offers some protection against flooding. The downside is lower water flows into the farm. There is also a lot of pressure from neighbours (many lifestyle subdivisions) drawing water.

Options for the future include collecting water from roof catchments (eg, the woolshed) into a holding pond, strategic fencing and tree planting (natives and commercial trees) in on-farm catchment areas to give clean, filtered water that is then stored in dams. This latter policy is already being implemented with plans to extend it to other on-farm catchments. A plan to create a large water storage dam is now being implemented, with stage one completed in April 2005.

**Diversification:** (see above) Carobs are a minor diversification. Options are limited by lack of water. No horticulture is possible on the flats because of the lack of salt-free water and the flood risk.

**Soil:** They are not consciously building up the soil at present. The principal focus is to protect the north faces from over-grazing, with the fencing along ridgelines as described below.

**Pasture management:** There has been



a big focus on fencing along ridgelines between north and south slopes. Pasture composition and moisture status of the grass, and therefore management needs, are very different between the two. The northern slopes have a predominance of native grasses such as ratstail, and clover has struggled to survive since the 80s droughts.

They're using the Farmax computer programme to build up a picture of their pasture management with the aim of being a lot more targeted in matching stock management to feed supply.

**Stock management:** A more flexible stock policy was developed in the 1980s as a response to droughts experienced at that time. Goats have been on the farm for 50 years but are now farmed more intensively.



They're shifting more to Angus cattle, which are hardier, and are looking to change their sheep breed. They want a breed that is hardier and more productive under dry conditions.

**Benefits:** Diversity and flexibility give more options, and the ability to respond quickly when a drought comes.

**Information:** Consultants were used for information, which included the development of a beef-finishing system. Lessons were learnt from the droughts in the 1980s and economic changes that also occurred then. There is ongoing involvement with discussion groups, reading, visiting monitor farms and using consultants.

**Infrastructure:** There is a very strong emphasis on good infrastructure.

## Meso connections

There is a lot of pressure from neighbours, particularly relating to the drawing of water in dry years. There are two important catchments feeding into the farm and how these are managed has a big influence on the farm in terms of water availability in dry years (most common situation) and flood risk. There are very few local people who recall the 1963 flood, with houses now being built in areas that were under water at that time.

Wairoaiti Creek



The Regional Council is very supportive of this dry area. The tensions arise when Hastings District Council allows subdivision. Title to the land gives the right to draw water for domestic and stock use. When neighbours (who have increased in number with subdivision) draw water from bores or directly from the creek, this impacts directly on the water available to the farm. The Wairoaiti Creek has never dried up until the last few years – this is seen to be a consequence of subdivision in the catchment and forestry development. There is need for better communication between the District Council and Regional Council.

Water will continue to be the greatest challenge for the Holt farm, which is strongly influenced by off-farm developments. Ongoing subdivision will also increase the rating pressure on the farm. Hastings District Council has recently approved re-zoning of the Avery and Seafield Roads area to allow for more rural subdivision.

On a positive note, Maraetara has become widely recognised as a model farm for east coast, dryland conditions. There is a lot of support from, and interaction with, the Regional Council, and a regular flow of visitors from within New Zealand and abroad. It is a huge asset to the region and an invaluable example of how to farm with drier, water-short, conditions that could become more prevalent in future with climate change.

