



Planting for bees a win for all

Early results from a three-year project co-funded by the Ministry for Primary Industries (MPI) indicate that planting strategically to feed bees can save landowners and beekeepers money. Not only that, it also benefits the environment and bee health, and improves bee colony productivity and performance.

Since 2012, NZ Trees for Bees Research Trust has planted 72,000 plants on 32 demonstration farms around New Zealand, with assistance from the Ministry for Primary Industry's Sustainable Farming Fund.

The Trust has released three case studies that demonstrate the significant impacts of planting bee forage. These studies include a beekeeper-landowner partnership, a landowner initiative and a beekeeper initiative.

"Malnutrition and starvation in bees is a big problem in New Zealand as there aren't enough pollen and nectar sources for them throughout the year and bees are threatened by pests and diseases," says Dr Linda Newstrom-Lloyd, one of the key researchers on the project.

The number of beehives in New Zealand has grown from 350,000 hives to almost one million over the past seven years, driven by the growth in demand for mānuka honey. However, food supply for the bees hasn't increased to match, meaning beekeepers need to provide

supplementary feed at certain times of year.

"By encouraging strategic bee forage planting we're trying to turn that around and support the beekeepers economically, as well as support the bees' health because bees need fresh pollen and nectar resources for good health. And we need the bees for our survival too – most of the fruit and vegetables that add important nutrients to our diet are pollinated by bees."

Strategic planting creates balance by ensuring that there are sufficient plants flowering throughout the year, especially in critical times of pollen deficits in spring and autumn. Strategic plantations are also targeted, making sure that there are no competing plants that would distract the bee's attention away from the crops or clover that farmers want the bees to pollinate.

The Strategic Bee Plantations project commenced in 2016 and was the group's third Sustainable Farming Fund grant. The implementation work was led by Dr Angus McPherson, the Trust's farm planting adviser.

The Trust has developed three online resources which are available via the Trees for Bees website: the Bee Flower Catalogue, the New Zealand Bee Pollen Catalogue and the New Zealand Willow Identification Key. It has also published the Handbook for Mānuka Plantations and Farms and

the Riparian Planting Handbook.

"Our vision for New Zealand is that there's no corner where there isn't a good strategic bee plantation, so that the community that lives there gets the benefits of the bees for pollinating pastures and crops and the beekeeper gets the benefits of the bees for their livelihood," says Dr Newstrom-Lloyd. "It would do so much good if everyone just knew what to plant – it doesn't take that much money and it can be included in multi-functional planting that the landowner is going to do anyway."

The Trust received a new Sustainable Farming Fund grant in July. This will enable the researchers to develop training material on how to design strategic bee plantations.

"By the time our three years of this new project are up, it's going to be possible for farmers, growers, gardeners, land managers and public parks planners to take our handbooks, training guides and online tools, and watch our videos and go do it – that's what we want."

Steve Penno, Director Investment Programmes at MPI, says the NZ Trees for Bees Research Trust's bee planting programmes may be one of the most comprehensive programmes of its kind in the world. "We're proud to support this programme, which is practical, and economically and environmentally sound, with clear benefits to New Zealand."

NZ Trees for Bees Research Trust has planted 72,000 plants on 32 demonstration farms around New Zealand.



Crab apple (*Malus sieboldii*) has excellent pollen with up to 39% protein content. It is used in shelterbelts, riparian planting and for amenity. Photo: Jean-Noël Galliot©Trees for Bees NZ.

Case study 1: A beekeeper-landowner partnership

A beekeeper partnered in a joint venture with two local landowners to plant trees. The beekeeper put aside a certain percentage of the beekeeping income every year that would have gone into buying supplementary food for the bees and put that into planting bee forage on the apiary sites instead. He paid for some of the plants and helped with the planting and the farmer paid for the rest. The beekeeper's initial one-off investment is already paid back in full, because he no longer needs to buy the supplementary feed. He also no longer has to travel so often to feed the bees. In turn, the farmer has plantations that help with erosion control, riparian protection and shade and shelter.

Case study 2: A landowner initiative

A sheep and beef landowner joined the project as a co-funder. Planting included a shelterbelt of magnolias and camellias to provide shelter from the road dust of logging trucks. In the past the beekeeper who had hives on this property had to remove the bees in winter and drive them 100km to wintering sites where the bees would have enough floral resources to get through the winter. Now he doesn't have to do that. Last year he had 24 hives and this year he plans to increase to 32 hives because there are more flowers every year as the plants grow larger.

Case study 3: A beekeeper's initiative

A large beekeeping operation set up a small farm for a bee yard to raise queens. In the beginning they had issues providing enough pollen and nectar for the bees. Now, after 5 years of planting, the number of queens raised and nucleus hives started has increased, and it's working so well that they even bring weak hives in from other apiary sites to build them up. The increase in bee forage from strategic planting has allowed them to successfully over-winter more hives on the farm. This helps address the critical issue of overcrowding on wintering sites in their region, and ensure that their hives are in the best possible condition for spring build-up, ready for pollination services.

MPI's Sustainable Farming Fund and Primary Growth Partnership have now been replaced by Sustainable Food and Fibre Futures (SFF Futures). SFF Futures supports problem-solving and innovation by co-investing in initiatives that make a positive and lasting difference to New Zealand's food and fibre sectors. www.sff-futures.mpi.govt.nz