

Sustainable Beekeeping by and for Maori Landowners

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INTRODUCTION

Naati Beez, a māori group of beekeepers, is conducting a sustainable beekeeping research project in Rangitukia, near Tikitiki on the East Coast north of Gisborne, co-funded by the MPI Sustainable Farming Fund, GNS Science, Eastland Community Trust and Ngati Porou.

AIM

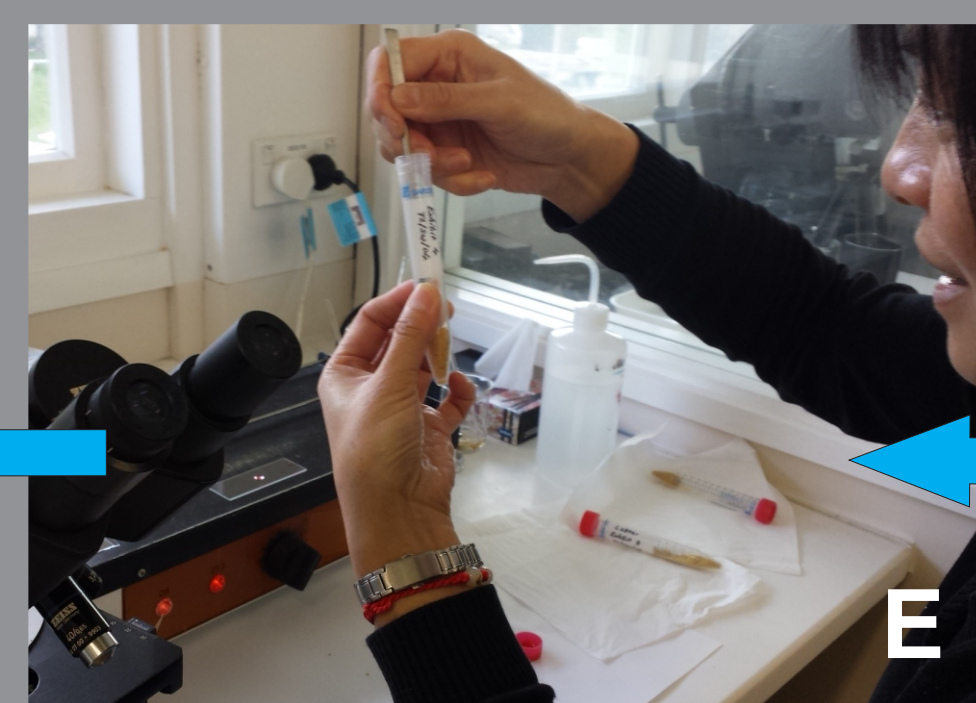
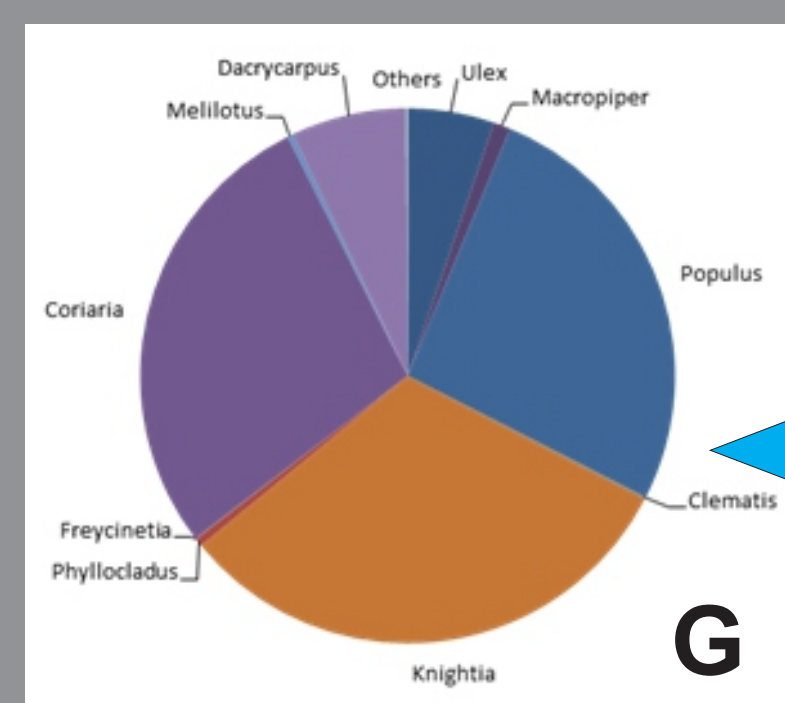
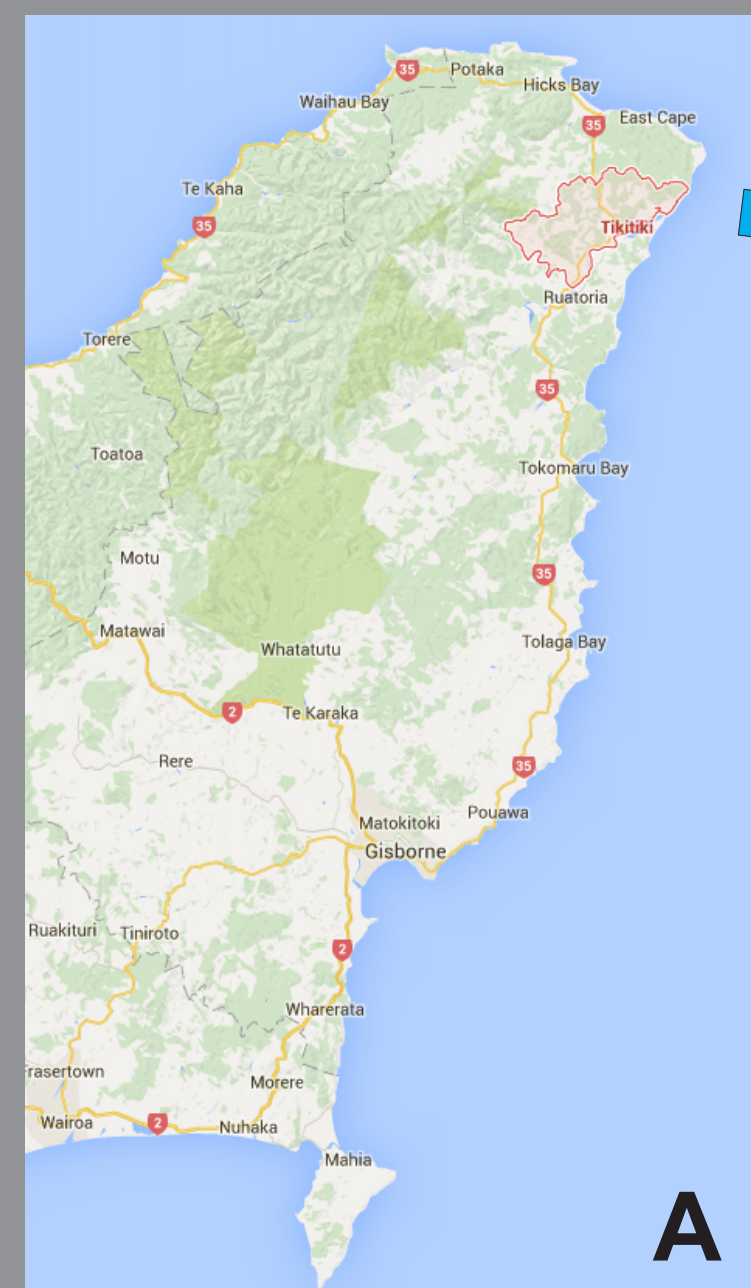
The aim is enable local beekeeping operations to become residential and sustainable in harmony with the natural environment primarily dominated by native plants, by providing more natural pollen from locally-sourced native plants.

BENEFITS

Avoid cost of moving hives to external pollen sources

Avoid cost of artificial pollen products.

Improve health of bee colonies through better local pollen and nectar resources.



FIELD AND LAB METHODS

A, B: A one year pilot study mid-2015 to mid-2016 using a small trial apiary in a forest-margin regrowth area of mainly mixed mānuka and gorse was designed to trial methods which can be applied elsewhere.

C: Pollen pellets were collected from hive traps at fortnightly (late winter-spring) and monthly intervals (summer-autumn). Different trap designs have been trialled. Honey samples were also taken, and regular observations made of plants in flower.

D: Pollen was sorted for identification and nutrient analysis, and volumes recorded.

E: Pollen in pellets and honey was prepared for microscopic identification.

F: Pollen was identified and statistical counts made for honey and bulk pollen samples.

G: Relative abundances were calculated.

EARLY RESULTS

A. Pollen sources through the year

The preliminary pollen calendar at right shows major (H), moderate (M), and minor (L) pollen sources. In any trap period, pollen collection varied between hives, and trace quantities of pollen from other plants also occurred. Many of the major sources are at present introduced plants, but we want to increase the role of natives.

During the late winter to early spring interval, pollen results confirmed the importance of *Ulex* (gorse) but the role of *Pinus* and *Nothofagus* was unexpected.

A great diversification of pollen plant sources occurred during the late spring interval. Important native sources included *Knightia*, *Coriaria*, *Pittosporum*, *Macropiper*, *Hedycarya*, *Dodonaea*, *Dacrycarpus* and *Clematis*.

During early to mid-summer pollen from herbaceous plants became more prominent. *Clematis*, *Cordylina* (cabbage tree) and *Rhopalostylis* (nikau) were the most important natives.

The summer pattern of pollen in bee pellets continued into late February. Among native plants, *Rhopalostylis* remained important, and *Schefflera* (patē, seven-finger) appeared. *Ulex* (gorse) reappeared at this time, and became the predominant pollen source in autumn, similar to the late winter/early spring pattern. Native pollen sources in autumn included *Schefflera*, *Hoheria*, *Metrosideros* (rata) and *Vitex* (puriri).

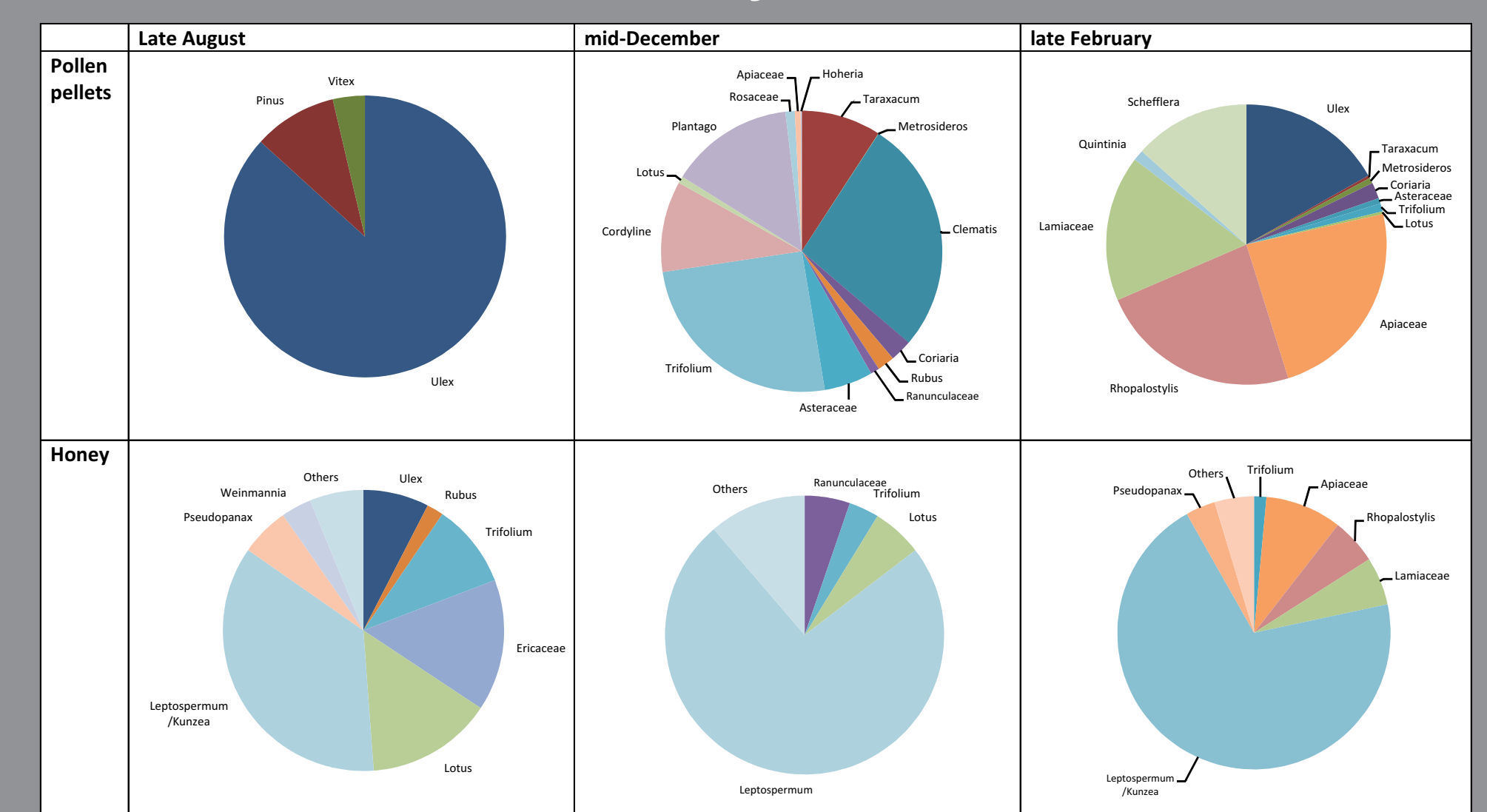
	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
<i>Ulex</i>	H	H	M				H	H	H	H
<i>Pinus</i>	L	M								L
<i>Vitex</i>	L									
<i>Nothofagus</i>		H								
<i>Salix</i>		L								
<i>Populus</i>		L	H				H			
<i>Cytisus</i>			H							
<i>Knightia</i>			H							
<i>Coriaria</i>			H				M			
<i>Pittosporum</i>			H							
<i>Macropiper</i>			M							
<i>Hedycarya</i>			M							
<i>Dodonaea</i>			M							
<i>Dacrycarpus</i>			M							
<i>Phyllocladus</i>			L							
<i>Freycinetia</i>			L							
<i>Coprosma</i>			L							
<i>Clematis</i>				M	M					
<i>Asteraceae</i>				M	L	L	L			
<i>Trifolium</i>				H	M	M	L			
<i>Pelargonium</i>				L	M					
<i>Cordylina</i>				L	L	L	H	L		
<i>Taraxacum</i>				L	M					
<i>Plantago</i>					M					
<i>Apiaceae</i>						H	H	H		
<i>Rhopalostylis</i>						M	M	L	L	
<i>Lamiaceae</i>						L	M	L		
<i>Schefflera</i>							M	H	M	
<i>Lotus</i>							L			
<i>Vicia</i>							L			
<i>Hoheria/Plagianthus</i>									L	
<i>Metrosideros</i>									L	

B. Comparison of pollen and nectar sources

Honey recovered during late winter-early spring was initially partly old honey retained in the brood comb from the previous season, but in part also reflects some nectar gathering from *Ulex* and *Calluna* (Ericaceae) which were flowering at this time. Honey recovered in late spring shows a variety of nectar sources, including the onset of manuka/kanuka nectar gathering.

Honey sampled during summer was mainly from manuka and kanuka. It is notable that neither in late spring nor in summer was manuka/kanuka pollen found in the bee pollen pellets.

Late summer and early autumn honey continued to be derived mainly from manuka/kanuka, but with a greater proportion of other nectar sources than in early to mid-summer.



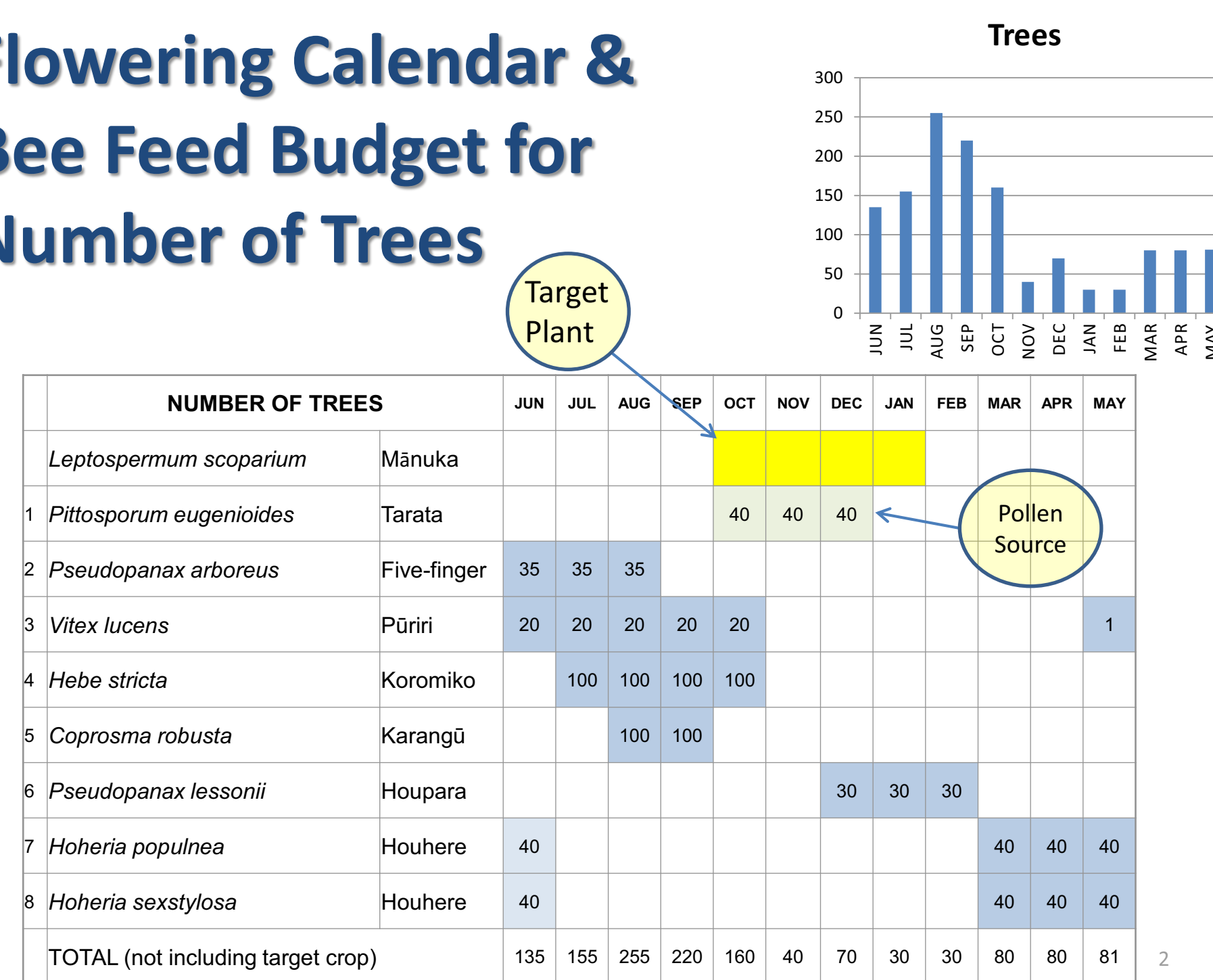
APPLICATION

The work includes creating a flowering calendar, a local bee plant catalogue, and planting designs for bee feed plantations that supply plentiful pollen and nectar for the 9 to 10 months of the year when mānuka is not flowering.

Based on pollen and honey results, the best plant species that are high performance pollen and nectar producers can be propagated and planted out.

An interim guide for May planting was created for plants donated by Native Garden Nursery of Gisborne.

Flowering Calendar & Bee Feed Budget for Number of Trees



NAATI BEEZ:



SPONSORS:

Ministry for Primary Industries
Manatū Ahu Matua
Sustainable Farming Fund

