

# Overview of MFNZ's High Performance Mānuka Seedlings –

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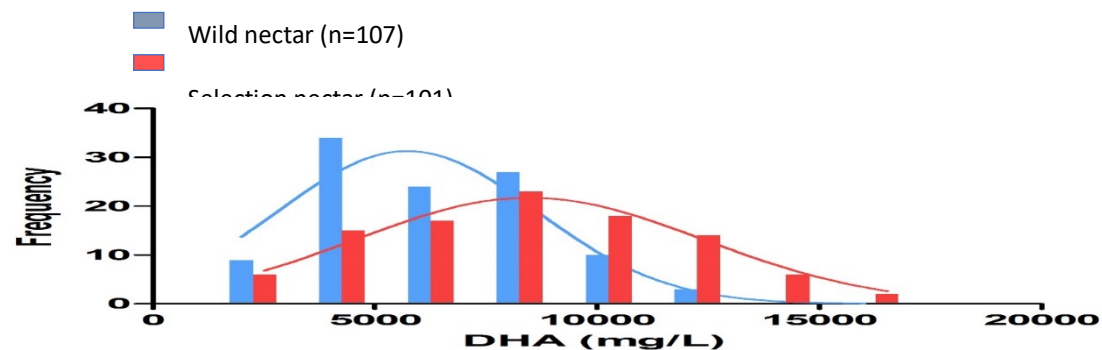
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### 1. Description of the Breeding Programme

Manuka Farming in association with MFNZ and Comvita have developed a range of seedlines that are suitable for plantation development. These seedlines have been shown to be field-hardy in a number of environments throughout New Zealand and have been selected for floral density and flowering times.

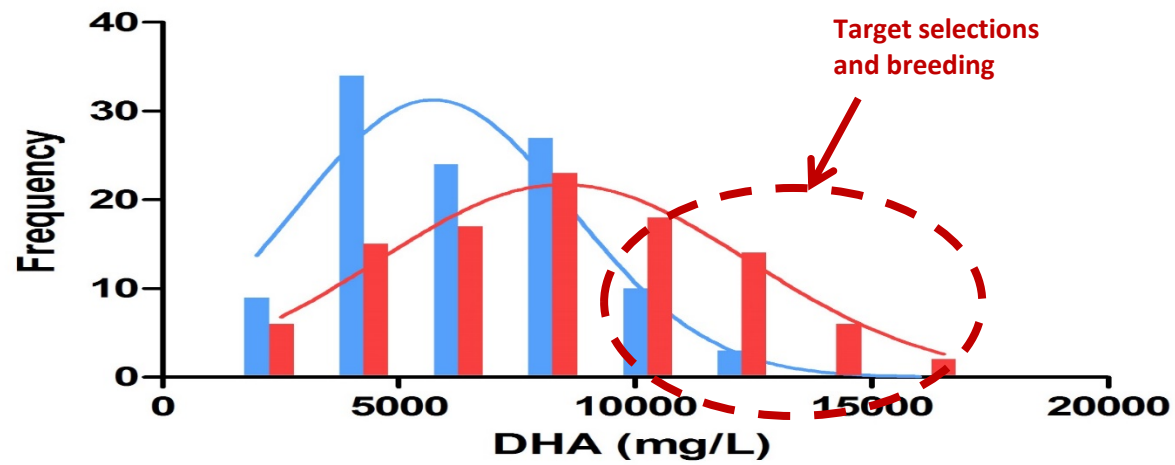
The initial selection of these genomes involved analysis of honey crops in areas that consistently yielded manuka honey with elevated UMF levels. Parent material was sourced from homogenous districts of *Leptospermum scoparium*. This parent material was subjective to a number of evaluations, including field adaptability and honey potential, and the best candidates were propagated to form trial plantation seed orchards.

These seed orchards have been further evaluated, poor-performing individuals have been removed, and the seed for CVT seedline is harvested from the remaining parents. Flowering time and geographic separation ensures that the CVT seedline parentage remains true to type.



## Selection Criteria for Breeding

- Field survival
- Growth rate
- Floral density
- Bee visitation
- DHA in nectar
- Manuka markers



## 2. CVT Descriptions

**CVT 1**

The initial parent material was selected from *L. scoparium* var. *incanum* populations. The CVT 1 seedline flowers early in September and is only suitable for warm sheltered environments where the honey bee can work in early spring. This variety is not adapted to summer-dry hill country, however will perform well given an appropriate environment.

**CVT2**

CVT 2 is a generalist seedline. The initial parent stock was sourced from *L. scoparium* var. *scoparium* which has a widespread distribution throughout New Zealand. CVT 2 typically flowers in October into November, and consequently is a prime candidate for honey harvest. This seedline is adaptable to hill country and the variety is encountered from Northland to the Marlborough Sounds and Nelson province.

**CVT 3**

The parent material utilised for the development of this seedline was a variant of *L. scoparium* var. *scoparium*. CVT 3 flowers in November into December and is well-adapted to exposed conditions and exhibits a high degree of drought-tolerance. Accordingly, this seedline is useful for ridgelines and exposed north facing slopes in plantation development.

**CVT 4**

The initial parent stock for this seedline was *L. scoparium* var. *linifolium*. CVT 4 exhibits a higher degree of cold-tolerance, and furthermore whilst is successful on moderate hill country is also adapted to a degree of water-logging. CVT 4 typically flowers in December during the start of summer and yields a robust honey crop.

**CVT 6 (new)**

The parent stock for this seedline is a number of PVR clones that display elevated beneficial characteristics, for example floral density and honey potential. This seedline flowers predominantly in October and can be used in lieu of CVT 2 where conditions are suitable.

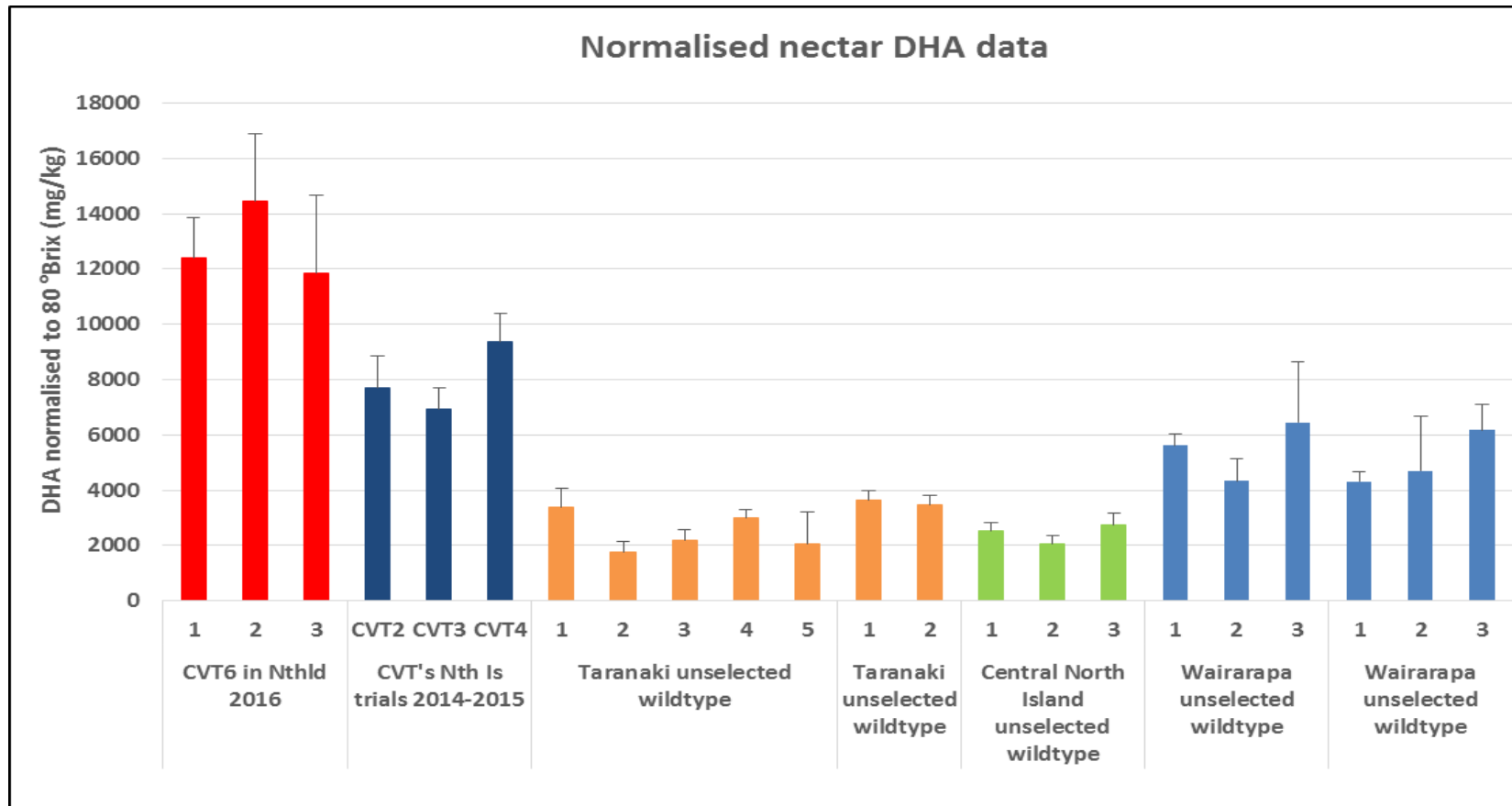
**CVT Overview Table**

Cultivar Ref	Origin	UMF Potential (based on DHA levels)	Hardiness	Peak Flowering Period	Generally Suitable for :		Generally Not Suitable For :
					Terrain	Region	
CVT 1	Northland	Mean DHA Level = 5500*	Low	Sept-Oct	<ul style="list-style-type: none"> <li>Warm sheltered environments where bees will work in early spring</li> </ul>	<ul style="list-style-type: none"> <li>These cultivars will generally survive in the North Island and the top of the South Island.</li> </ul> <p>However, if looking to plant for the production of honey, there are a range of other factors to consider including :</p> <ul style="list-style-type: none"> <li>Plantation Size</li> <li>Land use in adjoining areas</li> <li>Alignment with bee foraging activity</li> <li>And at least 3 other major factors</li> </ul> <p>Contact Manuka Farming NZ to discuss how we can help.</p>	<ul style="list-style-type: none"> <li>Very windy conditions</li> <li>Frosty</li> <li>Summer dry conditions</li> </ul>
CVT 2	Hokianga /Dargaville	Mean DHA Level = 8700	Moderate	Nov	<ul style="list-style-type: none"> <li>Hill country</li> </ul>		<ul style="list-style-type: none"> <li>Slightly intolerant to frosts</li> </ul>
CVT 3	Wairarapa	Mean DHA Level = 9500	High	Oct – Dec	<ul style="list-style-type: none"> <li>General hardy - good survival in summer and winter conditions.</li> <li>Steep country, exposed conditions, useful for ridgelines and exposed north facing slopes.</li> </ul>		<ul style="list-style-type: none"> <li>Very warm climate</li> </ul>
CVT 4	Waikato	Mean DHA Level = 9400	Moderate	Nov-Dec	<ul style="list-style-type: none"> <li>Moderate degree of cold/frost tolerance</li> <li>While successful on moderate hill country, is also adapted to wet conditions</li> </ul>		<ul style="list-style-type: none"> <li>Dry conditions</li> </ul>
CVT 6	Hybrid	Mean DHA Level = 12000^	Low to Moderate	Oct	<ul style="list-style-type: none"> <li>Similar to CVT 2 (and can be used to substitute for CVT 2) but is less hardy</li> </ul>		
<i>Wild Manuka</i>		<i>Mean DHA Level = 3900</i>					

\*CVT1 is a higher sugar variety, which manifests as a lower normalized DHA amount due to the calculation. Poorly sampled nectar can produce artificially high normalized DHA levels via the same calculation methodology. High sugar content is more attractive to honey bees.

^CVT6 has only been sampled in Northland during the 2016 season. The other CVTs have been sampled 2014-2018 across the North Island.

### 3. Normalised Nectar DHA



4. Flowering Period 2012 – 2017 for different CVTs (taken at Rangitatau (Wanganui/South Taranaki) plantation).

