High Performance Manuka Plantations
John Burke
The Opportunity

Growing/insatiable demand for Manuka honey for culinary but also high UMF grade for medical & healthcare purposes
The Opportunity (continued)

- Estimated 1.14 Million ha of erosion prone hill country pasture land (70% located in North Island)
- Negative stumpage values on some Tree Forest Plantations
- Riparian Planting required to protect water quality

The need to provide an alternate economic land use on marginal land and riparian areas (Land & Environmental Plans)
Opportunity recognised by Comvita:
- Commenced Manuka Breeding Program in 2008
- First Manuka trial plantations planted in 2009

Manuka Research Partnership Ltd formed in 2011
Manuka Research Partnership Ltd – PGP Project

• $2.9 M Manuka Plantation PGP Research Project with Ministry of Primary Industries

• 8 Year Timeline - 2011 to 2018

• Massey University – Research Provider

• Comvita providing Manuka Plants to the Project from its Plant Breeding Program
The MRPL Co-investors

- Comvita New Zealand Ltd
- D and C Tweeddale
- Nukuahau Carbon Ltd
- Arborex Industries – Te Awaiti station, Wairarapa
- Landcorp
- Hawkes Bay Regional Council
- Te Tumu Paeroa (previously Maori Trustee)
Program Objectives

To develop the necessary Manuka Plantation husbandry knowledge to enable productivity gains resulting in a 16-fold increase in market returns from Manuka honey by doubling each of:

- Hives per ha
- Manuka honey yield per hive
- Manuka honey that meets medical grade
- Land area in Manuka economically accessible to beekeepers

Growth Target $1b Exports
Project Deliverables for Land Owners

- Prove financial Business Case for *Manuka Plantation* as a viable alternate land use on Marginal Land
- Services and Tools to assist Landowners with Manuka Plantation Establishment such as:
  - Financial modelling and decision support tools
  - Supply of High performance Manuka Seedlings from Comvita’s breeding program
  - Best Practice Plantation establishment & management advice
Commercial Manuka Plantation Trials

- 1,155ha planted from 2009 to 2015 including 25 commercial sized trials (approx. 20ha or greater)

- Includes 11 commercial trial sites totalling 469ha which are closely monitored by Manuka Research Partnership Ltd

- Sites have been chosen to provide a regional and environmental spread for collection of field data for the project

- 3 Commercial sized plantations are located in the BOP
Understanding variability of manuka

Assess:
- growth rates
- disease resistance
- floral density
- bee attractiveness
- flowering period
- DHA in nectar
- and hardiness
Early field trial, 2013 harvest

[Graph showing correlation between DHA in manuka honey (mg/kg) and % purity of sample. Different markers represent different types of manuka honey: Plantation manuka 2013, Plantation manuka theoretical harvest, Local manuka 2012, Local manuka historical.]
2013 harvest, predictions last year

- Plantation manuka theoretical harvest
- Local manuka historical

DHA increase
Purity improve

Flowering for this year's honey
Early field trial, 2014 harvest

- Plantation manuka 2014
- Plantation manuka 2013
- Plantation manuka theoretical harvest
- Local manuka 2012
- Local manuka historical

DHA in manuka honey (mg/kg) vs. % purity of sample
2015 Arrangement with Landowners

• Comvita Manuka seedlings at 45 cents per plant

• Planting and establishment advice

• 10 year Agreement to harvest honey and collect site data

• 30% share of apiary revenue from the plantation paid to the Landowner
Proving the Business Case is When “The Rubber Hits the Road”

<table>
<thead>
<tr>
<th>KEY VARIABLES (at Maturity)</th>
<th>Natural Reversion</th>
<th>COMVITA CULTIVARS LOW</th>
<th>MEDIUM</th>
<th>HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIVES PER HA</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>PRODUCTION PER HIVE (KG)</td>
<td>20</td>
<td>30</td>
<td>35</td>
<td>40</td>
</tr>
<tr>
<td>UMF RATING</td>
<td>5+</td>
<td>10+</td>
<td>15+</td>
<td>18+</td>
</tr>
<tr>
<td>HONEY VALUE PER KG</td>
<td>$16.00</td>
<td>$26.40</td>
<td>$42.40</td>
<td>$56.00</td>
</tr>
<tr>
<td>LAND OWNER REVENUE SHARE</td>
<td>15%</td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>CARBON INCOME $ PER TONNE</td>
<td>$6.00</td>
<td>$6.00</td>
<td>$6.00</td>
<td>$6.00</td>
</tr>
<tr>
<td>MANUKA ESTABLISHMENT PER HA</td>
<td>$2,500</td>
<td>$2,500</td>
<td>$2,500</td>
<td>$2,500</td>
</tr>
<tr>
<td>MATURE SURPLUS PER HA</td>
<td>$48</td>
<td>$286</td>
<td>$493</td>
<td>$720</td>
</tr>
<tr>
<td>LANDOWNER IRR</td>
<td>NA</td>
<td>7.7%</td>
<td>13.8%</td>
<td>19.0%</td>
</tr>
</tbody>
</table>
Economics of Farming Marginal Land

Beef & Lamb website Economic Farm Surplus for NI Eastcoast Class 3 Hard Hill country:

Last 5 years average $162 EFS per ha

2014/15 Forecast $177 EFS per ha

Note: Based a complete farm with a stocking rate of 7.6 stock units per ha
## Economics of Farming Marginal Land

<table>
<thead>
<tr>
<th>EXAMPLE FARM</th>
<th>TOTAL FARM</th>
<th>RETIREMENT</th>
<th>RESIDUAL FARM</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFFECTIVE AREA HA</td>
<td>1,000</td>
<td>100</td>
<td>900</td>
</tr>
<tr>
<td>STOCK UNITS</td>
<td>10,000</td>
<td>400</td>
<td>9,600</td>
</tr>
<tr>
<td>SU/HA</td>
<td>10.0</td>
<td>4.0</td>
<td>10.7</td>
</tr>
<tr>
<td>GROSS REVENUE</td>
<td>1,274,000</td>
<td>36,160</td>
<td>1,237,840</td>
</tr>
<tr>
<td>PER HA</td>
<td>$1,274</td>
<td>$362</td>
<td>$1,375</td>
</tr>
<tr>
<td>PER SU</td>
<td>$127.40</td>
<td>$90.40</td>
<td>$128.94</td>
</tr>
<tr>
<td>FARM EXPENDITURE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIXED PER SU</td>
<td>$158,000</td>
<td>$6,320</td>
<td>151,680</td>
</tr>
<tr>
<td>$/SU</td>
<td>$15.80</td>
<td>$15.80</td>
<td>$15.80</td>
</tr>
<tr>
<td>FIXED PER HA</td>
<td>$394,000</td>
<td>39,400</td>
<td>354,600</td>
</tr>
<tr>
<td>$/HA</td>
<td>$394</td>
<td>$394</td>
<td>$394</td>
</tr>
<tr>
<td>TOTAL FARM EXPENDITURE</td>
<td>552,000</td>
<td>45,720</td>
<td>506,280</td>
</tr>
<tr>
<td>PER HA</td>
<td>$552</td>
<td>$457</td>
<td>$563</td>
</tr>
<tr>
<td>ECONOMIC FARM SURPLUS</td>
<td>722,000</td>
<td>(9,560)</td>
<td>731,560</td>
</tr>
<tr>
<td>PER HA</td>
<td>$722</td>
<td>(96)</td>
<td>$813</td>
</tr>
<tr>
<td>MARGINAL LAND INVESTMENT COMPARISON</td>
<td>PASTORAL USE</td>
<td>PLANTATION MANUKA</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-------------</td>
<td>-------------------</td>
<td></td>
</tr>
<tr>
<td>AREA HA</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>CAPITAL OUTLAY (EXCL LAND)</td>
<td>$40,000</td>
<td>$250,000</td>
<td></td>
</tr>
<tr>
<td>ECONOMIC FARM SURPLUS/(DEFICIT)</td>
<td>(9,560)</td>
<td>49,300</td>
<td></td>
</tr>
<tr>
<td>PER HA</td>
<td>(96)</td>
<td>$493.00</td>
<td></td>
</tr>
<tr>
<td>MARGINAL INVESTMENT RETURN (IRR)</td>
<td>NEGATIVE</td>
<td>7.7% - 19.0%??</td>
<td></td>
</tr>
</tbody>
</table>

**At maturity**
Take Home Messages

- MRPL project is work in progress – 2018 completion date
- Initial results are very encouraging
- New generation of Manuka hybrids in the pipeline
- Comvita looking to expand its Plantation program and are keen to talk to Owners wishing to retire land
- Consider “Trees for Bees” integration into planting
Plantation Manuka - Benefits to Rural NZ

- Potential
- alternative land use for marginal land in NZ
- Macro environmental & economic benefit – Pure NZ Story
- Flow-on benefits of wealth creation through honey industry
- Capability development – new beekeepers & cadets