

Figure 1- 4 : Craigmore. Mark Cox Presentation slides



Figure 2

## Land and Water Workshop

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- **Background**
- **Challenges**
  - **Blackcurrants**
  - **Sheep Milking**
- **Success Stories**
  - **Post PSA Kiwifruit development**
  - **Kerikeri – dairy to kiwi**
  - **Springhill – sheep, beef and Cropping to Apples and Grapes**



Figure 3

## Thoughts on Future Crops in Canterbury

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- Apples
- Grapes
- Hops
- Sheep Milking
- Alternative Milks/Protein
- Solar Farming
- Berries



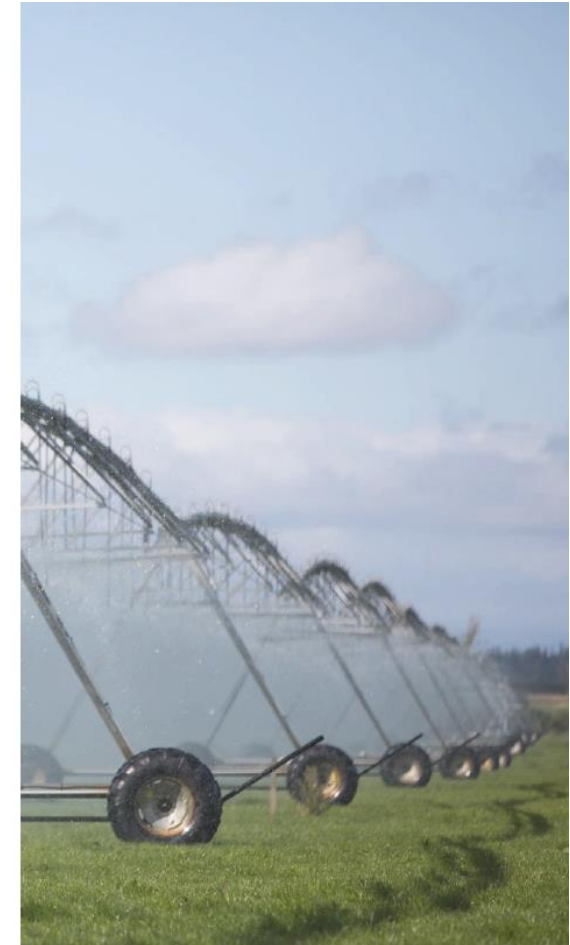


Figure 4

## Summary

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- Is the new product internationally competitive or can we see how it can be.
  - IP protection
  - Better yield
  - Cheaper production delivery to market
  - Better Story than competitors
- Be determined but not stupid.
- Scale will help the market access so collaboration is often a key but not what we Kiwis do well
- We have been successful at mono culture last 30 years but prior mixed was the key. Perhaps we need to go back to this as we transition.
  - Mgmt skills
  - Industry preparation (Variety research, product and market development)



## Key takeaways from presentation

- Research is key for successful development of products /cultivars/genetics
  - NZ typically under resource research and development
  - Research needed not only into product cultivars but also markets competitors etc
  - The NZ story only goes so far – blackcurrant example where NZ produce the best quality but Sth America can vastly out produce and out compete against other producers on cost of production and product.
  - Research into product/ production/ market are a fundamentals of profitable enterprise.
- Having a well organised industry with clear strategy and goals and vision and discipline to follow through is key – kiwifruit example of no compromise on only absolute quality fruit going to market.
- Need fundamentals of climate growing base to match requirements of the product.
- Collaborative approach across district/region/ NZ is key. Too small in industry scale and ability to produce to be successful individually.
- Leverage of collective knowledge and resources
- When on knees if fundamentals are right then be prepared to reinvest and persevere - kiwifruit example green vs gold. Uncompromising

Figure 5 - 7: Farm summaries

## Larundel Dairies

- 351ha
- 95% area irrigated with VRI capable pivots
- Silt Loam soils
- Springheads
- Existing biodiversity plantings
- System 4 Dairy Farm and Dairy Support unit
- Modern Dairy Infrastructure incl. feed pad
- Proactive investment in environmentally beneficial technology

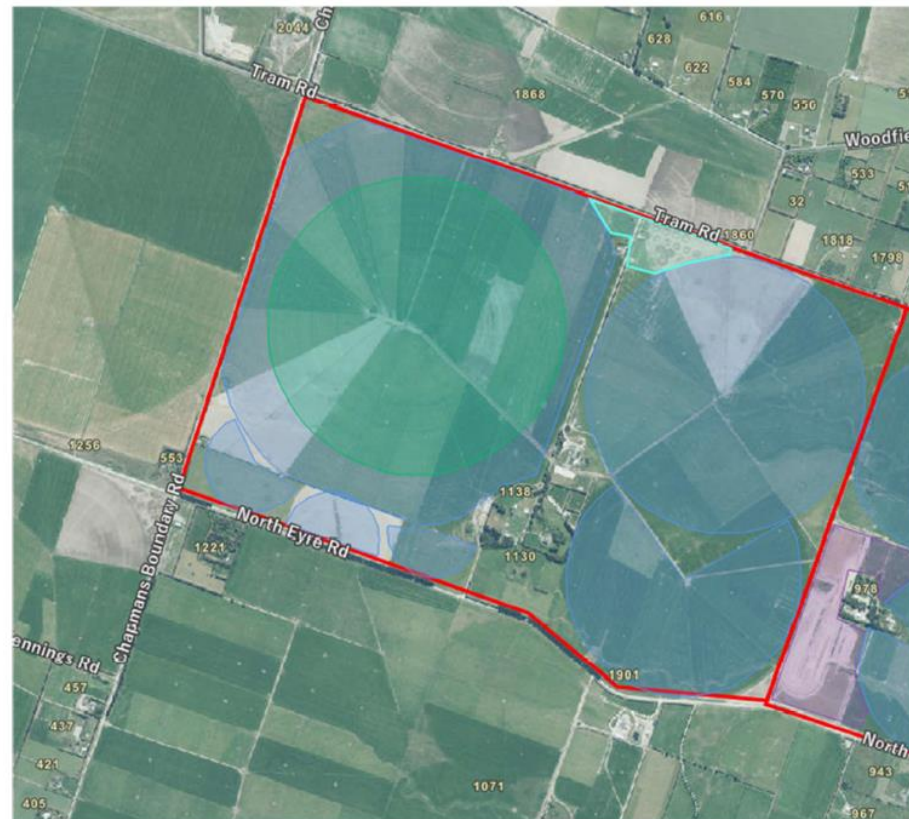


Figure 6

# The Grange

- 640ha + Lease Block
- 385ha Pastoral Land
- Dryland
- Silt Loam Soils
- Summer safe
- Streams, Forestry and Natives
- Sheep and Beef unit
- Forage Crops and Diverse Pastures
- Tourism Income

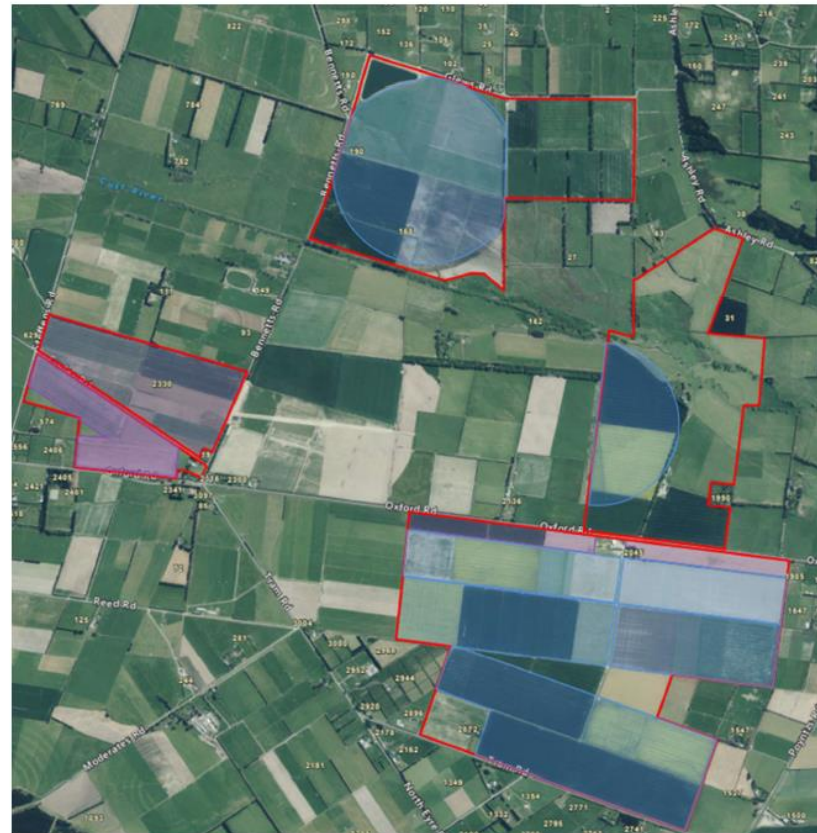




Figure 7

# Taggart Farms

- 747ha
- 75% Irrigated
- Diverse Soils incl Peat Soils
- Arable and mixed cropping
- Cust Stream
- 60+ neighbours
- Separate blocks
- Cropping infrastructure (Silos, drying shed, spreading/spray gear)





*Figure 8&9: Land use options presented to workshop for decision.*

# Opportunities

1. Native landscapes driving income
2. Tree nuts, truffles, pine nuts, sunflower seeds
3. Tourism
4. Alternative uses for fibres (wool, flax)
5. Kanuka oil extraction
6. Alternate dairy
7. Riparian Margins driving income/Grazing (Tree Lucerne)
8. Vegetables, fruit, & Herbs
9. Flowers (fresh and oils)
10. Energy generation (solar, hydro, wind)

Figure 9

# Opportunities Excluded

1. Canola Oil
2. Gorse
3. Insects for protein source
4. Velvet
5. Arable crops (Quinoa)
6. Fish Stocks
7. Quail eggs
8. Duck and Geese
9. Biofuel Sources
10. Technologies
11. New business models and existing introduced to the area (e.g. Storage sheds)

Figure 10: Group discussion summaries

Taggart Farms		
Alternate Land Use Options	Pro's	Con's
Flowers	<p>Many different options</p> <ul style="list-style-type: none"> <li>- Fresh</li> <li>- Bulbs</li> <li>- Oils</li> </ul> <p>Feel good crop – can enable some local levels of tourism (Weddings, photos etc)</p>	<p>Can be chemical input heavy to manage</p> <p>May require specialist infrastructure</p>
Permanent Crop	<p>Value protection for the farm</p> <p>Small footprint on farm (Area and Impact)</p>	<p>May be an increased labour requirement for harvest</p>
Alternate Fibres (Hemp/Flax)	<p>Already have expertise in growing these crops</p> <p>High use for the fibre</p>	<p>Not internationally competitive for cost of production</p> <p>Lack of processing capability</p>
Hops	<p>Already industry and knowledge within NZ</p> <p>Some infrastructure and equipment already on farm</p> <p>Wind risk not as high as other Waimakariri catchment farms</p>	<p>Specialist Capital Infrastructure required that may be costly</p> <p>Can still be windy so risk to crop unless mitigated</p> <p>Staff/Harvest requirement</p>
Sunflower Seeds/Oil	<p>High in protein</p> <p>Processing infrastructure in Canterbury</p>	<p>Farmer not keen</p> <p>Lack of return and has a heavy requirement of nutrients from the soil</p> <p>Low Yield</p>



Medicinal Cannabis Growing	Low Water Use Popular/Buzz product in the current climate	Hard on machinery and soils Side issues to consider Regulation and paperwork heavy to enable license to grow Security requirement May require glass house/covered growing
Vegetables/Fruits/Herbs - Fresh and Processed Market	Can have a sensible manageable footprint within farming business Already have infrastructure, and knowledge as well as farmer enjoys growing Environment and soils on farm proven to grow Close to markets and Port Social license to grow and provide resource	High level of skill required Risky return to farmers Individual industry Some level of waste product that needs to be disposed of or 'on sold' at lower price (e.g.stock food).
Kanuka Oil	Add to biodiversity Good for bees/pollination Able to grow on dryland Creates a biproduct – Honey and bees already required for other crops on farm Corridor of native plantings for amenity, birds and bees	Unclear infrastructure required to produce Return unclear for the product, but additional benefits need consideration
Biofuel	Works well in current 'climate' for the clean green image	Unclear what the market is and therefore return

# The Grange

Alternate Land Use Options	Pro's	Con's
Mixed Farming according to LUC <ul style="list-style-type: none"> <li>- Carbon/Forestry on unsuitable farming country</li> <li>- Rolling/Developed gullies planted out for carbon/natives</li> <li>- Sheep/Beef support block on flats more intensive</li> </ul>	Diverse Income and manage risk Maximising the potential for each land class May reduce labour requirement (retiring some of the non-developed land to forestry)	Returns short term for some of the land uses Public perception of forestry/Carbon Potentially reliant on collaborative approach to farm if hill country no longer 'farmed'
Sheep Milking	Highly productive flat land Existing infrastructure for sheep and knowledge Potential to support other Waimakariri sheep milking ventures to create a hub	Unclear returns Market not determined as a new industry
Carbon Farming or Forestry	Ability to offset practices on farm and make a return Land use class already on farm supporting trees Can look at natives, pines or exotics to diversify income, management and visual amenity	Fixed returns Milling/infrastructure required so accessibility needed Access to natives and exotics Need to confirm if recognition under ETS of current plantings and forestry can be included Erosion risk and planning required
Alternate Dairy	Already have knowledge and results for growing forage/cereal crops Potential to fit in with other farming practices	Returns unclear Local level processing for Oat milk etc not established
Permanent Tree Cropping	Small footprint and nutrient loading Potential to plant on unused or unsuitable land	Needs to be 'snow' and cold climate type Soils may be too heavy so areas available may be limited Labour and equipment for harvesting Climate and soil mapping required to confirm 'crops' able to grow and not add to any on farm risks (Environmental and nutrient)

Riparian Planting (Income or grazing)	<p>Existing areas planted and fenced off</p> <p>Ability to reduce sediment load from the rolling areas on farm</p> <p>Another source of feed when climate etc may be limited</p> <p>Can grow flax etc for income and cultural aesthetic/market</p> <p>Tree lucerne grows already, and has the additional benefit of providing stock shelter and planting within gullies and not only riparian margins</p>	<p>Regulations unclear around riparian plantings and grazing to ensure compliant</p> <p>Milling or processing of flax locally</p> <p>Returns unclear if not grazing</p> <p>Native or species tolerant to both grazing and riparian buffering benefits unclear</p>
Domestic Tourism	<p>Hunting, walks etc to compliment tiny house</p> <p>Mountain Biking tracks</p> <p>Collaboration with other properties</p> <p>Benefit of 'urban' public embracing on farm</p>	<p>Health and Safety risk with regulations</p> <p>Potential risk of 'urban' perception of on farm, and general public on farm</p> <p>Heavy regulated and often changing especially if in conjunction to a 'working farm' and not a sole business</p>
Kanuka Oil	<p>Adds to biodiversity</p> <p>Good for bees/pollination</p> <p>Able to grow on dryland</p> <p>Creates a biproduct – Honey and bees already required for other crops on farm</p> <p>Corridor of native plantings for amenity, birds and bees</p>	<p>Unclear infrastructure required to produce</p> <p>Return unclear for the product, but additional benefits need consideration</p>
Sheep/Alternate Fibres	<p>Adding value to wool alongside the current marketing that is being considered for NZ strongwool</p> <p>Cashmere industry? Goats suitable for some of the rolling/developed country on farm</p>	<p>Market yet to be established for value add consistently for mid and strong wool</p> <p>Infrastructure and management for other animals e.g. goats</p>



Native Landscape driving Income	Mixed model of oils, tourism, plantings (both established and added) so diverse income Value as corridors in the wider catchment landscape for wildlife and bees Biodiversity value with new regulations incoming Potential to be a 'ecosource' nursery for some of the existing trees on farm	Return for farm unclear May take a long time to establish to get the product Markets not established for some of the more niche products
Freshwater Crayfish and Fish Stocks	Potential value from being able to 'supply' or have native stream species	Need to identify what is already present on farm Needs to fit in with current on farm practice to add to the income/value rather than detract with land not being usable May require specialist labour and knowledge

# Larundel Dairy

Alternate Land Use Options	Pro's	Con's
Vegetables or flower crops <ul style="list-style-type: none"> <li>- Nomadic vegetables within pasture renewal cycle</li> <li>- Small plot vegetables</li> <li>- Fresh or bulb flowers</li> </ul>	Utilises areas on farm that may be otherwise underperforming Gives a high value break crop between pasture renewal Climate suited to vegetable/Flowers Close to dense populations and airport Existing irrigation to give reliable yields	May require specialist knowledge and infrastructure May be reliant on others locally doing similar crops to have a market/labour force Needs a clear market – Export May only suit a single soil type Can have a high footprint that needs to be taken into account alongside the dairy farm Lack of research on impact – N loss/environmental
Local Tourism <ul style="list-style-type: none"> <li>- Walkway through fenced off undercurrent</li> </ul>	Ability to partner with Ngai Tahu and other farms within the area	Health and Safety risk/regulation of having public on a working farm
Riparian Planting <ul style="list-style-type: none"> <li>- Shade/Shelter</li> <li>- Carbon Farming</li> </ul>	Ability to earn an income from ETS Other benefits such as animal health and welfare Social license to farm and visual amenity factors	Returns may be hard to value in \$\$
Permanent Tree Crops <ul style="list-style-type: none"> <li>- Pine Nuts or Tree Nut species</li> <li>- Apples or other orchard fruit</li> </ul>	Utilise areas that are not currently farmed or irrigated Lower footprint for N, water and fertiliser? Gross income per ha – 8 to 10x higher if on underutilised land Existing irrigation system that can be adapted with a reliable water supply Potential to begin small and scale up to manage risk Existing local market so can share resources and equipment/labour	May require specialist labour and infrastructure Returns may be slow to establish with tree crops not always producing in first season (break even on Year 3 and full production by year 7 for apples) Big investment required on and off farm Lack of management expertise if only doing small scale Lack of research and industry investment

Native Landscape driving income - Kanuka Oil	Adds to biodiversity Good for bees/pollination Able to grow on dryland Creates a biproduct – Honey and bees already required for other crops on farm Corridor of native plantings for amenity, birds and bees Taps into a growing niche market of health products/cosmetics	Unclear infrastructure required to produce Return unclear for the product, but additional benefits need consideration
Sunflower Oil	Can be grown on small or large scale to fit in with the current on farm practices Can make use of effluent on farm as a nutrient source Ability to be a high value break crop Existing irrigation can reduce the risk by allowing yields to be met	Needs a clear market May require specialist equipment, expertise and labour
Lucerne for Export	Existing irrigation Knowledge and equipment already on farm Clear market for export Can fit in with current farming type as an additional income source Nutrient/Soil health benefits	Dependent on external market need and quality Can have a high footprint if multiple cuts/crops are taken within a season (inputs-Outputs) Soil type needs to be suitable
Housed Dairy with land used for Arable/Vegetables	Ability to have diverse income Can utilise waste product from housed dairy for arable/vegetable crops, and vice versa if waste arable/vegetables at time of harvest as a feed source	Social license to farm Market for 'housed' cow products Footprint of both practices – increased?



# Workshop Outcomes

Farm	Taggart	<u>Larundel</u>	Grange
Farmer pick	Vegetable options (process)	Permanent tree crop (Apples)	Riparian and native planting (carbon, tourism)
Expert pick	Perennial tree crop (hops)	Future dairy	Permanent tree crop
Group pick 1	Kanuka oil/bees/honey/pollination	Vegetable flower options	Sheep milking (integration with existing operations nearby)
Group pick 2	Leasing for organics	Sheep milking	Carbon farming options