Agricultural Climate Change Conference

Getting to Low Emissions: Sheep & Beef

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The Levels - South Canterbury:

- 320ha intensive irrigated sheep/beef & cropping.
- Monitoring carbon emissions last 6 years (efficiency improved but gross emissions steady)
- Irrigation gives us land use options
  - Horticulture
  - Arable
  - Above both limited to climate & topograhy
- Integrating stock and crop is an important part of managing our soils. Healthy soils is critical to water quality, biodiversity and soil carbon.

The Challenge & The Why?

- Sheep & beef farms represent 45% of total farmed area in NZ & we are the home of 25% of our native woody vegetation.
- We produce naturally raised lamb & beef with some of the lowest carbon footprint in the world.
- Our family farming businesses are “brand advocates” for NZ with stunning landscapes & typically have a “light” environmental impact, we are committed to Kaitiakitanga.
- Sheep & beef have reduced our sector emissions by 30% since 1990 predominantly through land use conversion to more intensive land uses **but this doesn’t let us off the hook**.
- We have a long history of innovation and adaptation – policies of the late 80’s & 90’s sent strong messages of “get more business savvy, develop, lift production, be profitable or get out”.
- Sheep & Beef farmers are feeling threatened by not only emission pricing but a raft of policy & regulation which could have significant impacts on viability – **BIG risk of disengagement.**
- Ready access to the “Internet of Things” & a wide range of conflicting information creates confusion.
- Climate change effects us as farmers more than most – it is the driver of a good or bad year.
- Our consumers are enquiring about our how we farm, impact on our environment & emission reduction commitments.
- Trade agreements are putting pressure on reducing gross emissions.
- **Doing Nothing is Not an Option** but we do ask that “additional warming” impact be considered.

DOING NOTHING IS NOT AN OPTION

The Problem **or Barrier to "Doing Something"**

- The fastest, simplest, bluntest way to reduce emissions is to **reduce stock numbers but this would decimate our farms & our communities.**
- **Biological Threshold:** In many districts due to climate & topography we are approaching our biological threshold of increasing productive efficiency unless we further develop land, change land use or stock policies (limited options of all three).
- **Financial:** Our sheep & beef sector and our farmers are financially sensitive to climate, swings in product prices, inflation & have lower levels of profitability than other land uses – this makes us cautious by need.
- **Sequestration:** How to accurately identify & measure on-farm sequestration
  - Trees, woodlots, shelter, native vegetation.
  - Soil carbon sequestration likely to be limited in NZ
  - Already relatively high due to recent soils, climate, farm systems.
- **Mitigation:** Limited near term options to mitigate methane. We need to accelerate research & development.

Solutions & Opportunity for Sheep & Beef:

- **Integration of Trees on Farm:**
  - Productive/carbon forestry on poor producing areas of hill country.
  - Regenerating native vegetation & forestry (but limited recognition if fencing required)
  - Both require capital

- **Research & Development:**
  - Low Methane Sheep Genetics (1%/yr)
  - Low Methane Cattle Genetics
  - Methane Inhibitor (Bolus)
  - Methane Vaccine
  - Satellite/digital assessment of carbon sequestration

- **Land Use Change:**
  - Carbon Farming
  - Horticulture / Arable
  - Water availability critical
  - Capital
  - Confidence

- **Increase Animal Performance**
  - Increase reproductive rates
  - Animal LWGs
  - Both limited as both will increase feed demand.

Sequestration – Friend or Foe?

- Yes carbon farming offers an opportunity but only makes sense on non-productive areas as only a **16 year window**.
- Land will be committed to trees forever. Farmers understand this, carbon farming speculators do not. Need a sensible limit on carbon emission offsets.
- NZ will want to see greater focus on forestry slash management. Need a National Forestry Strategy.

S&B 698ha av	2025 Levy	Forestry Credit	Net Impact
Base	-$35,212		
Plant 1% - Pines	-$35,212	+$55,279	+$21,548
Plant 3% - Natives	-$34,471	+$48,731	+$14,259

"Trees on farms, not farms into trees" - Phil Journeaux

Above extrapolated from Information Kindly Provided by Phil Journeaux: AgFirst

Limited Sequestration:

- Large areas in NZ not suitable or not permitted for trees & forestry (MacKenzie Basin / Central Otago etc) – how do they adapt?

On-Farm System Change; Modelling Results: Sheep & Beef

AGFIRST

		Change in GHG	Change in EBIT
All male progeny as bulls		-6%	12%
Convert to deer (Finishing weaners)		0%	-19%
Shift to 50:50 sheep: beef		-10%	13%
Increase sheep:cattle ratio			
	Farm 1	-1%	0%
	Farm 2	1%	10%
	Farm 3	-1%	-20%
	Farm 4	0%	19%
Intensive lamb finishing		7%	22%
Increase lambing % (135 to 160)		0%	12%
Convert to dairy sheep		17%	68%

Information Kindly Provided by Phil Journeaux: AgFirst

We are not a typical Sheep & Beef Property but an example of how intensive farms can adapt.

Levels: Intensive Sheep & Beef

	2021/2022	Less Beef +20ha Arable Crop 1.5% in Trees
CO2e kg/ha Carbon kg/ha Methane kg/ha Nitrous Oxide kg/ha Carbon Sequestered e kg/ha	8514 104 261 6	6006 133 198 5 515
Methane Reduction		**24%**
Other Measures: Kg N/ha inputs Soil Carbon Shift Impact on Water Quality	68	 100 ?? ??
EBIT/ha: **HWEN Levy (8c/kg methane & $85/T C)**	$2000/ha $85/ha (4.3%)	~$2300/ha *$74/ha (3%)
Other Financials:		**More infrastructure & plant required for cropping.** Carbon income only for 16 years.

Extensive Sheep & Beef

- Iconic NZ brand landscapes.
- Integral part of our regional communities & economy
- Low emissions per Ha **(range 0.16-3.4t carbon/ha/year**) but large Ha compared to intensive.
- Have large areas of woody vegetation, regenerating bush not currently qualifying for credits.

Options to Reduce Emissions & Reduce Warming:

- Limited land use change options.
- Do we really want to see large scale pine forests replacing native red tussock hill country??
  - Loss of biodiversity, impact on water quality.
- Be wary of desk top studies that suggest we can replace breeding ewes or breeding cows with more productive (lower carbon kg/ kg product) stock policies – dairy cross cows on SI hard hill country don't survive.
- **Research & development is the answer!**
- While investing in R&D and developing mitigation we need to minimise the economic impact on these family farming businesses & their communities.

Key Messages:

- Agriculture is facing biggest changes since 1980's. Transition is critical.
- There will be threats & opportunities:

Threats:

- If we do nothing, we face increasing emission pricing & erode our social license and product brands.
- Whole farm carbon farming is not the answer but integrated trees on farm can be (but not everywhere!).
- Too much stick through regulation will disempower farmers.

Opportunity:

- **Invest in R&D (priority for HWEN)** that develops & provides mitigation that can be widely adopted to have material impact. Even if more dairy/intensive farm centric it will have advantages for all if emission reduction shared across sector.
- 16-year carbon cashflow win for S&B farmers where integration of trees makes sense.
- More consideration of policy carrots that incentivise emission reductions.
- NZ Farming can be seen as the "Hero" not the villain in this debate if we work together.