New Zealand Investment landscape

Dr Rick Pridmore
PGGRC Chairman, NZAGRC  Steering group member
What’s driving investment?

- Good global citizen
- National commitment to reduce emissions
- Building capability
- Part of being a sustainable business
- Consumer and market demand
- Brand (industry and national)
Who’s investing?
What are they trying to do?

- Creating a fundamental knowledge base
- Developing new technologies
- Breeding better animals and plants
- Modifying farm systems and conducting trials
- Driving on-farm change
- Building capability and capacity
- Developing a robust national inventory
- Commercialising products
Is there a unifying plan to guide investment and optimise progress?

- Unfortunately no
- But there is some degree of coordination
- Enter NZAGRC and PGGRC (and the overarching presence of the Ministry of Primary Industries)
Their investment

Total = $14.0 m /pa
Their focus

- Methane 71%
- Nitrous Oxide 11%
- Soil Carbon 9%
- Integrated Farm Systems 8%
Their purpose

To be an internationally renowned centre for research and development into agricultural greenhouse gas mitigation solutions

To develop GHG-reducing technologies and practices for our shareholders’ stakeholders, who are, primarily New Zealand farmers.
Our goal is to reduce agricultural emission intensity by 2.5% per annum from 2020.
How?

• 1% through increased efficiency (continuing historical trend, relying on industry drivers)

• 1.5% through additional direct mitigation options
Animal selection

- Have confirmed that there is a genetic basis that can be exploited in sheep and likely in other ruminants
- Established a flock of high and low methane emitting sheep (heritability 0.13)
- Intend to deliver opportunity to sheep industry in 2016/17
- Work on cattle will commence in 2015
- And no we haven’t forgot about deer!
Low GHG feeds

• Some brassica crops have shown potential (25-30% lower methane emission when fed 100% diet of rape)

• Supplements (maize silage, PKE) have not altered methane emissions, but can reduce nitrous oxide emission through lower nitrogen content of feed

• Focus is to package this information and get it included in the national Inventory
Vaccine

- Utilises the animals own immune response to inhibit methanogens
- Ruminants create antibodies to methanogens
- Found antibodies that inhibit pure cultures
- Plan to deliver antibodies to the rumen through animal’s saliva
- Animal trials with lead antigens to begin shortly
- Aim is to engage a commercial partner once approach is proven in animal trials
Methanogen inhibitors

- Target essential enzymes with small animal safe compounds
- Looking for reduction of 20% or greater
- Have screened >100,000 compounds
- In the last four months, have confirmed 5 leads that have reduced methane by 30-90% in animal trials
- Many barriers to overcome (e.g., cost, mode of delivery, undesirable impacts, food safety)
Closing remarks

- New Zealand is putting in a great effort to reduce agricultural greenhouse gas emissions.
- There are many participants and a wide range of investment.
- The science is top class and in many areas is nearing proof of concept.
- Commercialisation will require a whole new range of skills and partners.
- Ten years ago the task seemed enormous.
- We should be incredibly proud that we are almost there.