Reducing emissions of backgrounding cattle

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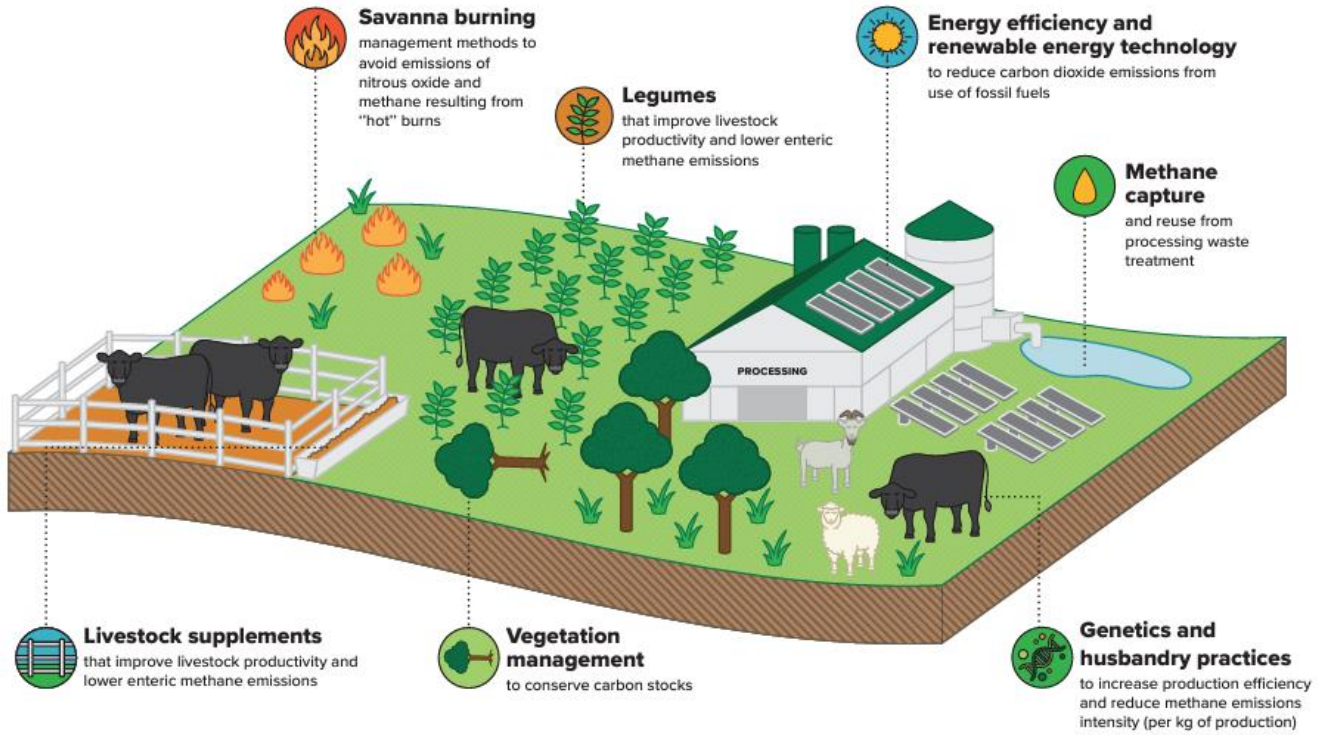
Tackling the problem: Methane

Opportunity to reduce emission from grazing cattle to have large impact on overall emissions

Any increase in productivity would amplify these reductions over the animal's lifetime



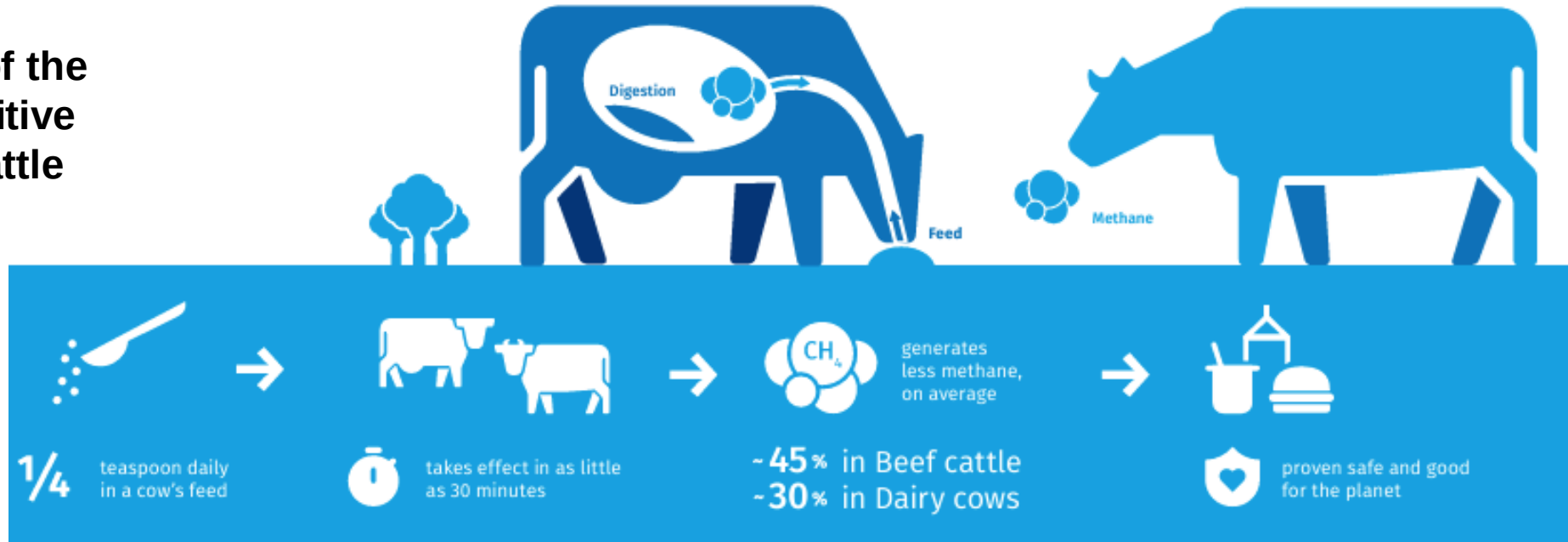
Dietary supplements showing promise in intensive systems

Asparagopsis and Bovaer® have reduced methane up to 90%

Despite effectiveness of these products, no work has evaluated their use in grazing systems.

- Need for constant and quantifiable intake of the supplement

World first evaluation of the antimethanogenic additive Bovaer® in grazing cattle



Delivery of Bovaer® on pasture

Essential considerations:

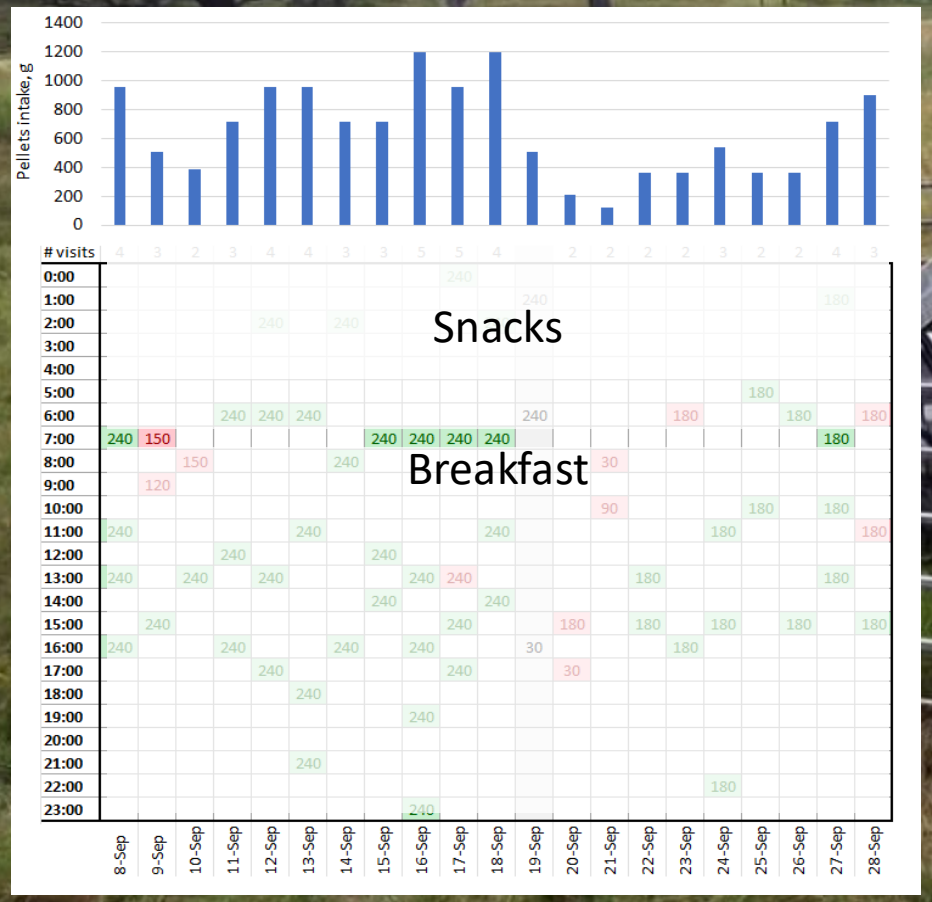
- How to supplement on pasture?
- How to ensure animals consumed Bovaer® throughout the day
- How to obtain reliable data capture for methane quantification

Our approach…

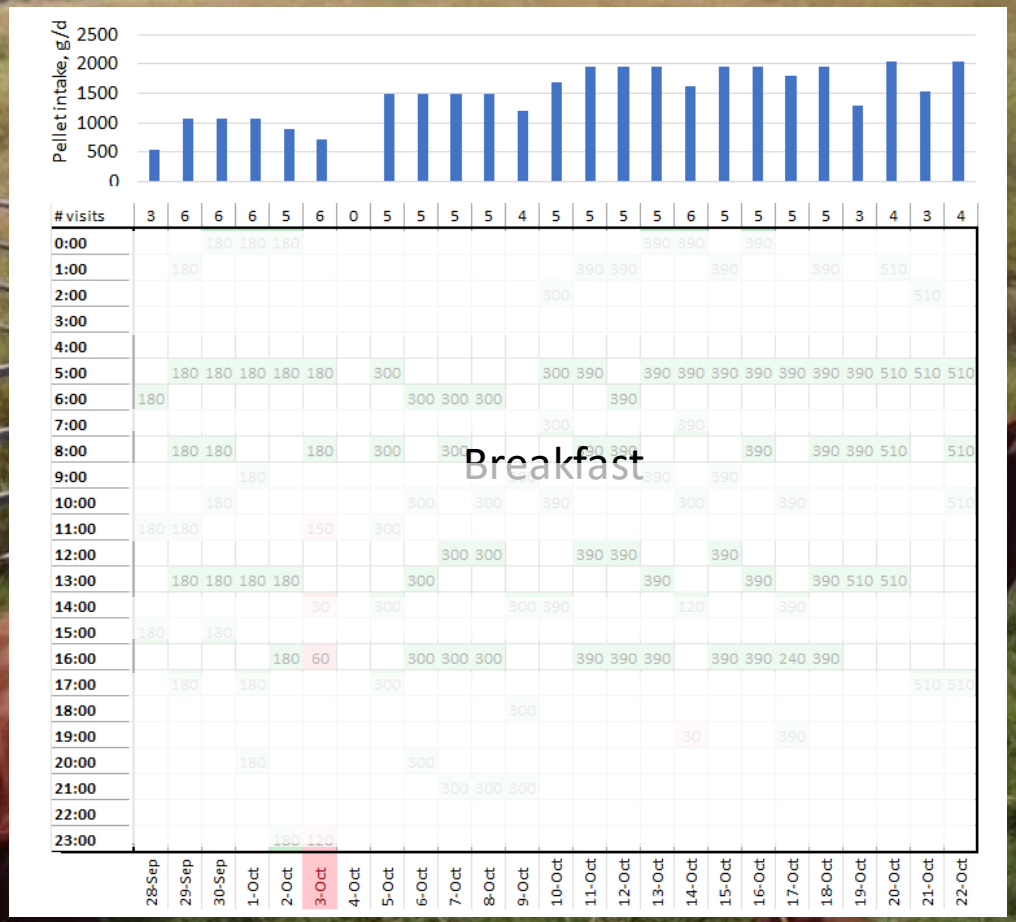
- Use energy pellets as delivery vehicle
- Supplied to cattle with a GreenFeed machine at timed intervals

What is a GreenFeed?

The choice of feed matters



Lucerne pellet



Grain pellet

Supplementation of backgrounding cattle

150 NAPCo heifers rotationally grazed in summer & autumn

(72 with reliable methane data)

Supplemented with:

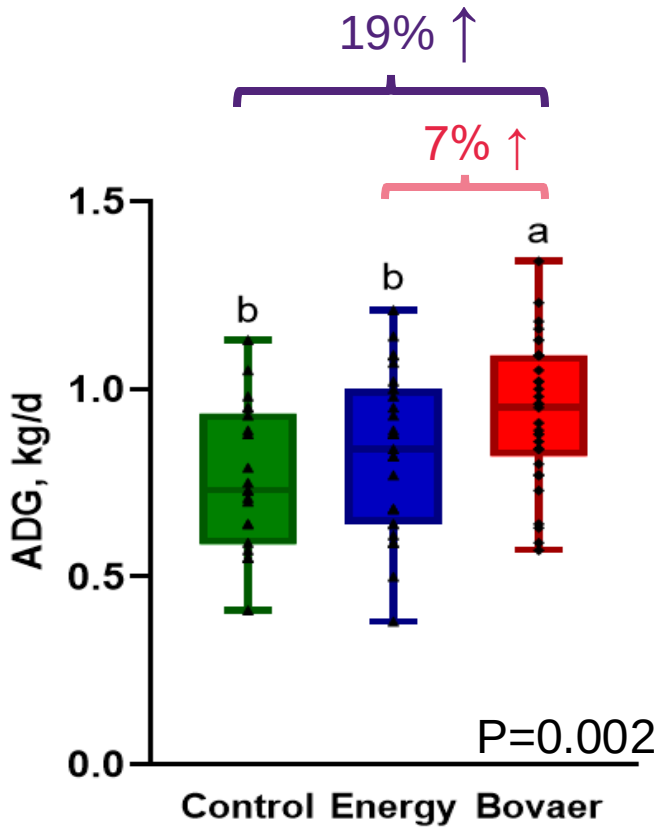
- Lucerne pellets to replicate grazing (1 kg/d)
- Energy pellets (2 kg/d)
- Energy pellets + Bovaer® (2 kg/d)

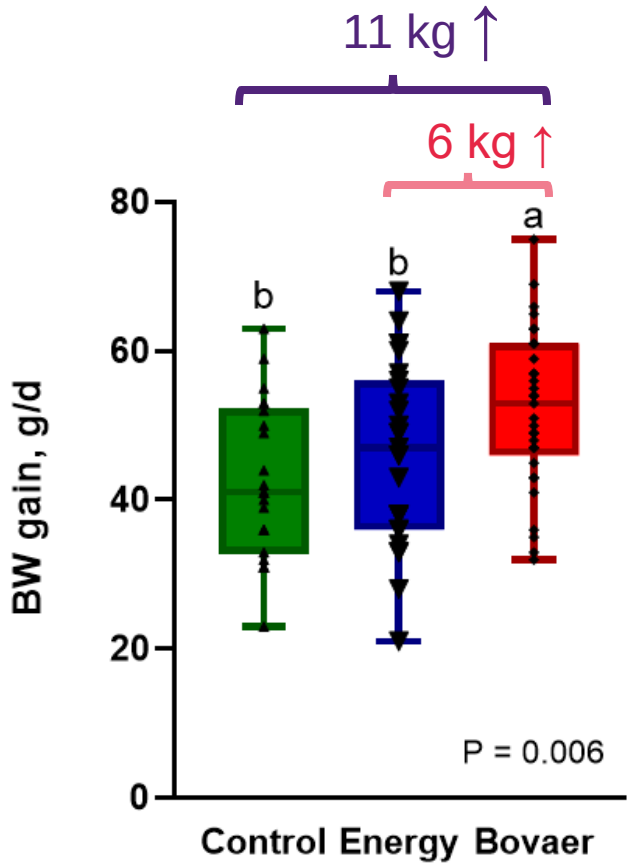
Provided through a GreenFeed (+ methane)

Body weight measured every 12 d

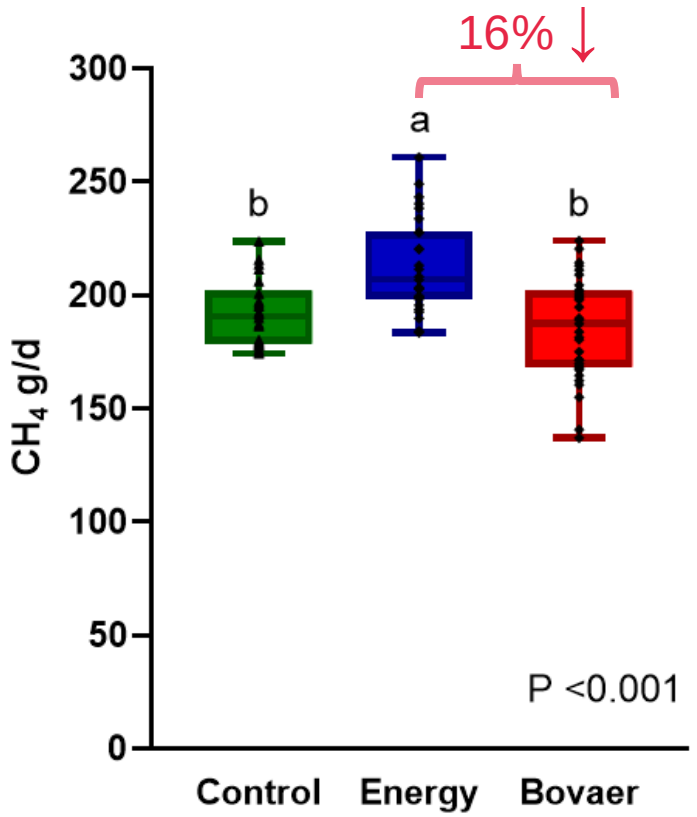
Results – Animal growth

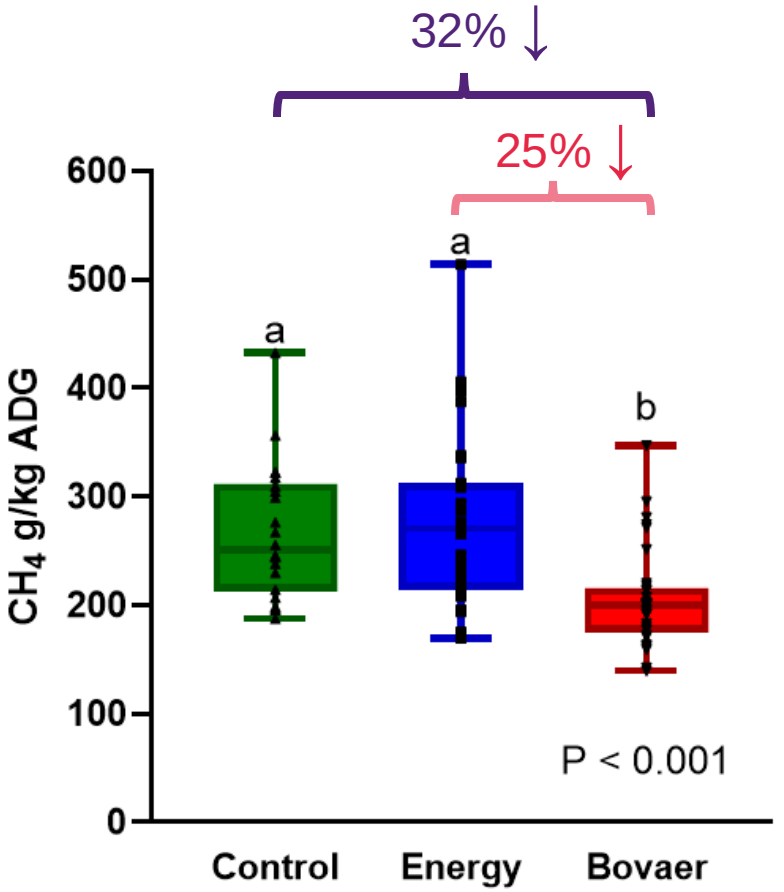
Daily weight gain (ADG) was similar in cattle in the control group and those not consuming any pellets = adequately represented a **grazing only scenario**





Results - Methane





What does that mean?

Over a 200-day theoretical backgrounding period, **Bovaer supplementation** showed the potential to:

	Vs. Grazing	Vs. Energy
↓ Number of days grazing	54	28
↓ Methane emissions	351 kg CO_2e/hd	341 kg CO_2e/hd

- Compared to grazing only, Bovaer supplementation had the potential to achieve an additional $12.58/head profit in carbon credits

Potential gross margin

Energy and Bovaer supplementation were economically viable at ≥ $3/kg liveweight value and supplement cost ≤ $500/tonne

Energy supplementation:

Liveweight value ($/kg Liveweight)	Supplement cost ($/tonne)				
	300	400	500	600	700
2	-0.15	-0.35	-0.55	-0.75	-0.95
3	0.58	0.38	0.18	-0.02	-0.22
4	1.31	1.11	0.91	0.71	0.51
5	2.03	1.83	1.63	1.43	1.23
6	2.76	2.56	2.36	2.16	1.96

- maximum return of $2.76/hd/d

Bovaer supplementation:

Liveweight value ($/kg Liveweight)	Supplement cost ($/tonne)				
	300	400	500	600	700
2	-0.31	-0.51	-0.71	-0.91	-1.11
3	0.50	0.30	0.10	-0.10	-0.30
4	1.32	1.12	0.92	0.72	0.52
5	2.13	1.93	1.73	1.53	1.33
6	2.94	2.74	2.54	2.34	2.14

- maximum return of $2.94/hd/d
  + $0.19/d or $37/head over 200 d

**Research setting, need to adjust for cost of feeding supplement (labour or technology)

Conclusion

Supplementing Bovaer in an energy-based pellet reduced methane emissions and allowed cattle to grow faster, than either grain supplemented or control animals.

This growth was sufficient to offset the cost of the supplement, and provide additional return

Need to consider how you would supplement, and the associated costs (form and delivery)

Storage of delivery product (pellet, lick block etc)

Acknowledgments

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