



Department of  
Primary Industries

# Can we use genetics to reduce methane emissions?

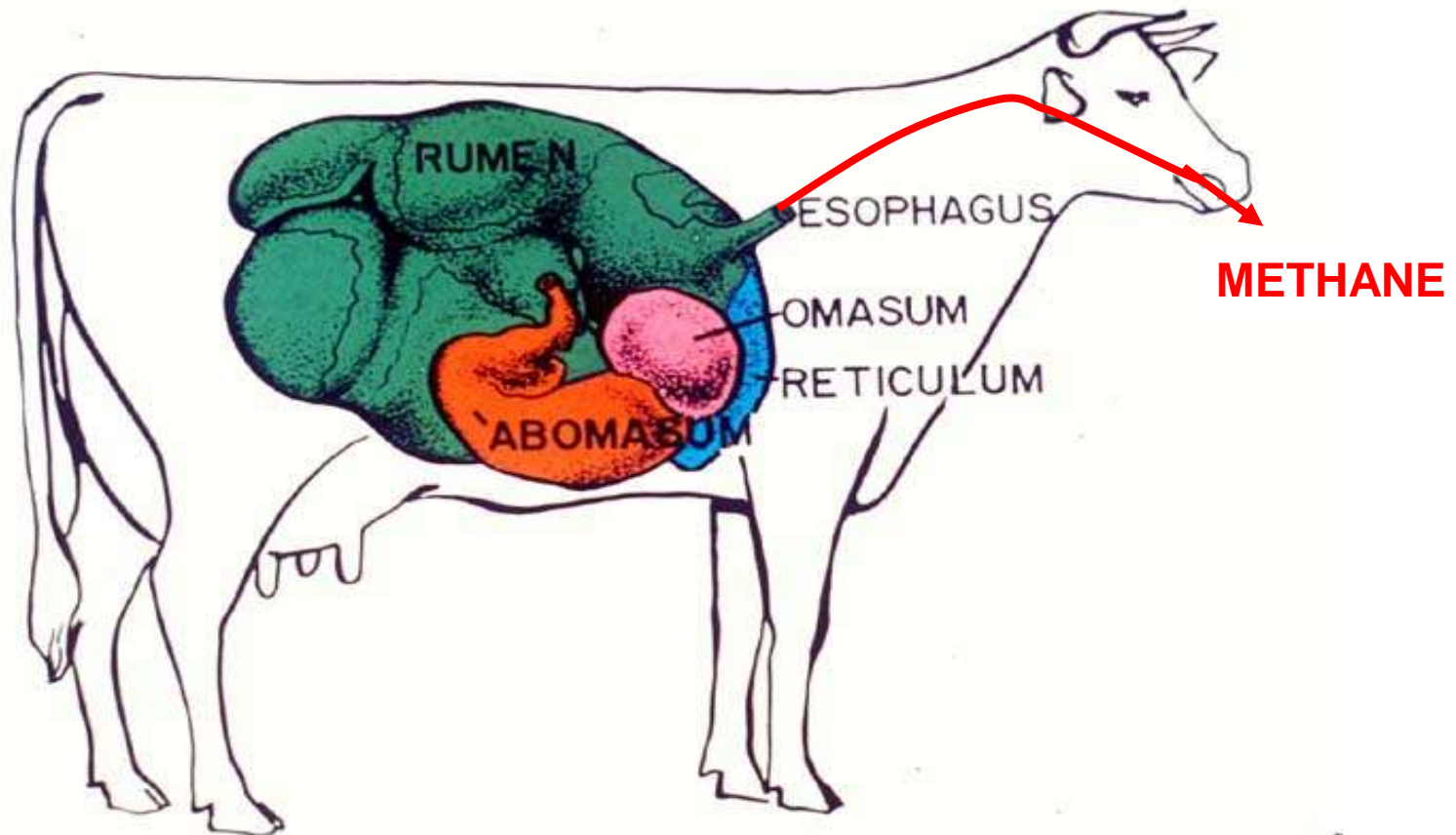
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NSW DPI

# Outline

- Why reduce methane & why use genetics?
- Results from cattle methane project
- Where to from here?

# Our cattle and sheep

- Convert grass into nutritious food & valuable fibre products



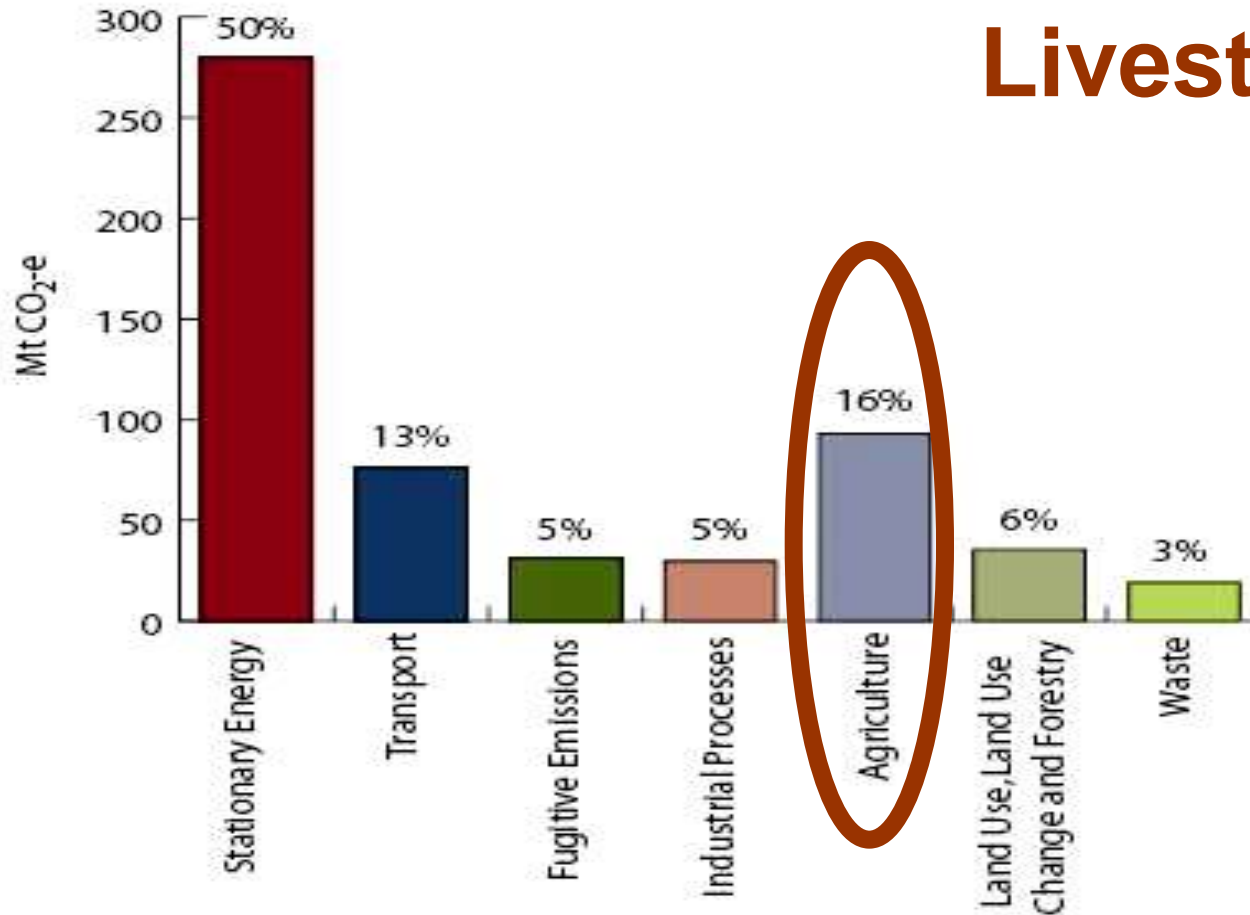
# Why reduce methane emissions?

## 1) Waste of feed energy:

- Methane has high energy content
- About 8% of feed energy is lost as methane
- Approx loss of a month's worth of feed energy

# Why reduce methane emissions?

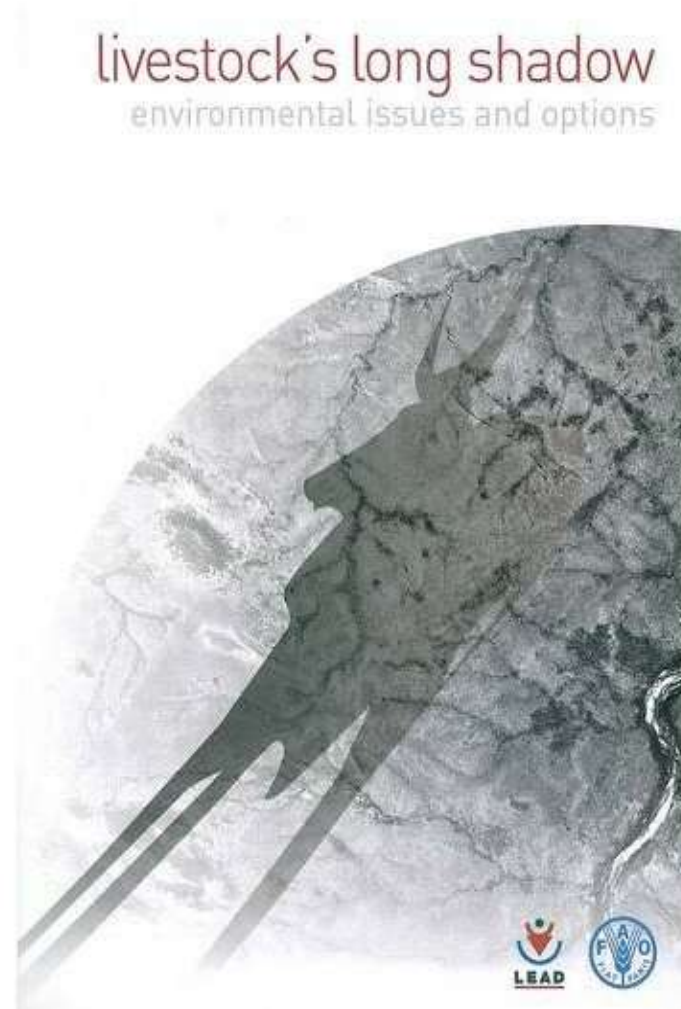
2) Included in Australian GHG accounts:



Livestock ~10%

# Why reduce methane emissions?

3) Consumers, governments & environmentalists are concerned



# Why use genetics?

- Application of feed additives not readily applicable for 95% of cattle
- Changes made using genetics are:
  - Wide reaching
  - Permanent
  - Cumulative
  - Known technology

# Cattle methane project objectives

- Measurement of large numbers of industry cattle
- Are methane traits passed from parents to offspring (**are they heritable?**)
- Relationships between methane traits and traits that make **\$\$\$\$\$\$\$\$**
- Genetic tools for beef producers to lower methane emissions





**Largest beef cattle methane test facility in world**



07/08/2011 09:36



# Traits of interest

- Methane production (**MP**): litres of methane/day
- Methane yield (**MY**): litres of methane/kg DMI
- Methane intensity (**MI**): litres of methane/kg WT

# Results so far (n=530 animals)

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Trait	Average (SD)	Min	Max	h <sup>2</sup> (SE)
<b>MP</b> (L/d)	205 (30)	122	350	0.21 (0.11)
<b>MY</b> (L/kgDMI)	29.9 (4.2)	15.9	41.2	0.19 (0.10)
<b>MI</b> (L/kgWT)	51.6 (9.4)	25.8	67.8	0.23 (0.10)

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# Results so far

Can we use genetics to reduce methane emissions?

- Early indications are **YES**

Implications for profit?

- Need many more records
- Early results are encouraging

# Where to from here?

Research  Industry implementation

1. Better understanding of relationships with \$\$\$\$ traits
2. Proven measurement technology outside research facility
3. Large scale testing of industry cattle
4. Methane EBV and “Environmentally friendly” \$Index???

# Benefits to beef industry

- Able to buy and breed from low methane bulls
- Apply for carbon credits under Carbon Farming Initiative
- **Greatly** dependant on financial incentives



# Reducing Emissions from Livestock Research Program



This project is funded by the following organisations and the Australian Government's Climate Change Research Program

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Delivering for the dairy industry

mla  
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THE UNIVERSITY OF QUEENSLAND  
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THE UNIVERSITY OF WESTERN AUSTRALIA  
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University of Wollongong

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