Massey University

"The epidemiology of Johne's disease in New Zealand farmed deer"

Branch Chairmens Meeting
Hamilton, 22nd May 2007

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Assoc Prof Cord Heuer
Prof Dave West
Dr Colin Mackintosh

Te Kunenga ki Purehurca

PhD funding

- New Zealand Foundation of Research Science and Technology (FRST)
- Johne's Research Group
  - Sustainable Farming Fund
  - **New Zealand Deer Farmers Association regional branches**
- Massey University

NZDFA New Zealand Deer Farmers' Association — Johne's Research Group

Sustainable Farming Fund

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Johne's Disease in deer: what did we know in 2004?

Mycobacterium avium subspecies *paratuberculosis*

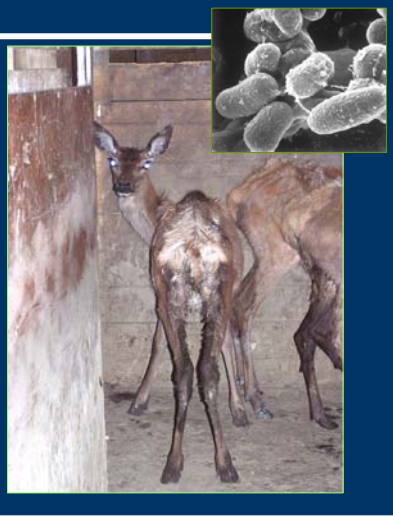
- Persistent, unresponsive scouring
- Wasting
- Rough/persistent winter coat
- Two strains: cattle and sheep

1. Clinical signs/mortality:

- "Weaner outbreak": 20% mob
- "Mixed-age sporadic"

2. TB test non-specific reactors

3. TB-suspect lesions at slaughter



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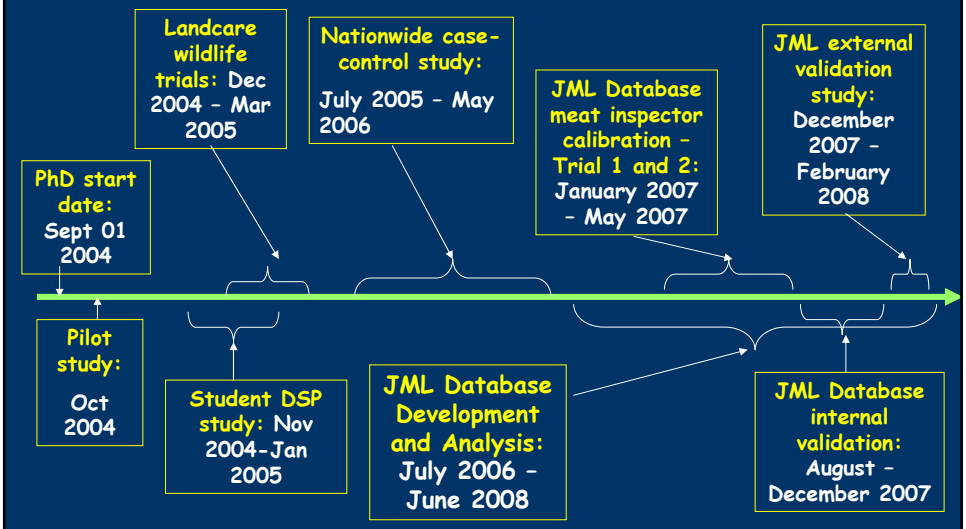
PhD: timeline (Sept 2004 – June 2008)



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What do we know now???

- Pilot study: *M.ptb* present in deer herds not showing clinical signs of Johne's Disease
- Study DSP study: *M.ptb* causing significant level of unnecessary testing for bovine TB in slaughter plants. Structured system necessary to reduce this.
- Wildlife study: *M.ptb* present in and shed from wildlife located on NZ deer farms

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Nationwide Case-Control Study: AIMS

1. Risk factors for:
   a. Infection with *M.paratuberculosis*
   b. Clinical signs of Johne's Disease
   c. Non-specific reactors to a TB skin test
2. Management practices to control risk factors
3. Regional differences of JD infection and disease
4. General knowledge of JD in deer

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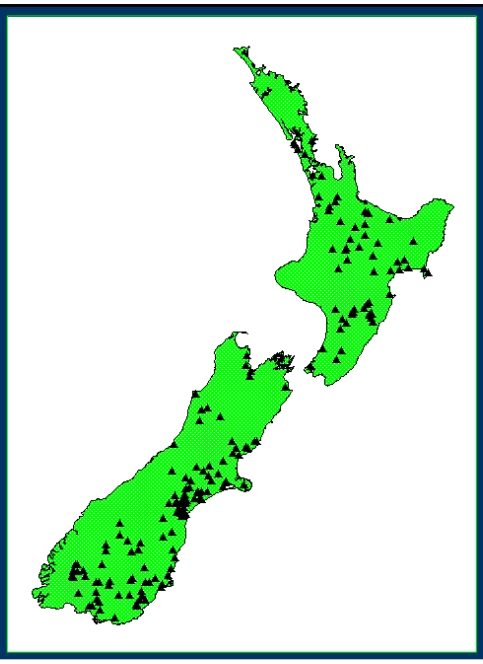
Nationwide Case-control Study

- 174 properties
- Pooled Faecal Culture
- 25-page questionnaire



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Nationwide case-control study: Preliminary results

115 farms sampled: status unknown

Clinical status	*M.ptb* (faecal culture) Herd Status		
	Positive	Negative	TOTAL
Positive	36	8	**44 (38%)**
Negative	14	57	**71 (62%)**
TOTAL	**50 (43%)**	**65 (57%)**	**115 (100%)**

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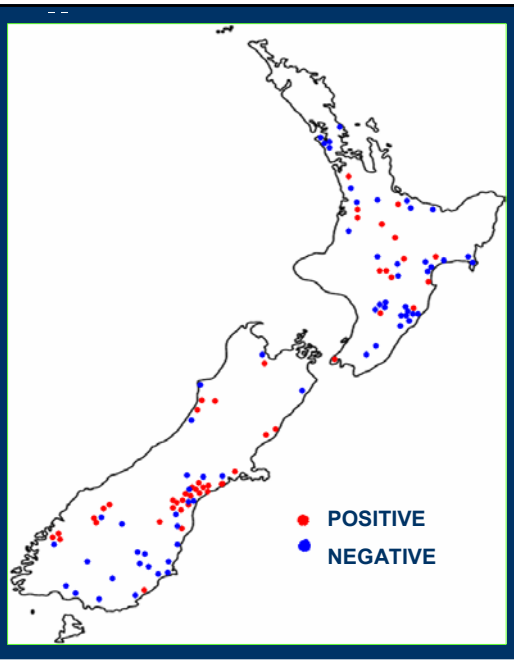

Geographic distribution of 115 sampled properties: *M.ptb* +ve/-ve

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Clinical JD present in weaner mob

- Significant Risk Factors – **LESS** JD:
- **Sheep** present on deer fenced area in 2005 (parameter includes stocking rates and time spent on-farm in a 365 day year)
- High percentage of the **breeding herd less than 5 years old**
- **Yearling deer** bought as replacements (vs weaners/adults)

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Clinical JD present in weaner mob

- Significant Risk Factors – **MORE** JD:
- **Yearling beef cattle** present on deer fenced area in 2005 (parameter includes stocking rates and time spent on-farm in a 365 day year)
- Presence of **clinical signs of JD in cattle** on-farm in previous 2 years
- **Irrigation**

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- National case-control study: Species other than deer significant in presence of clinical signs of JD on-farm

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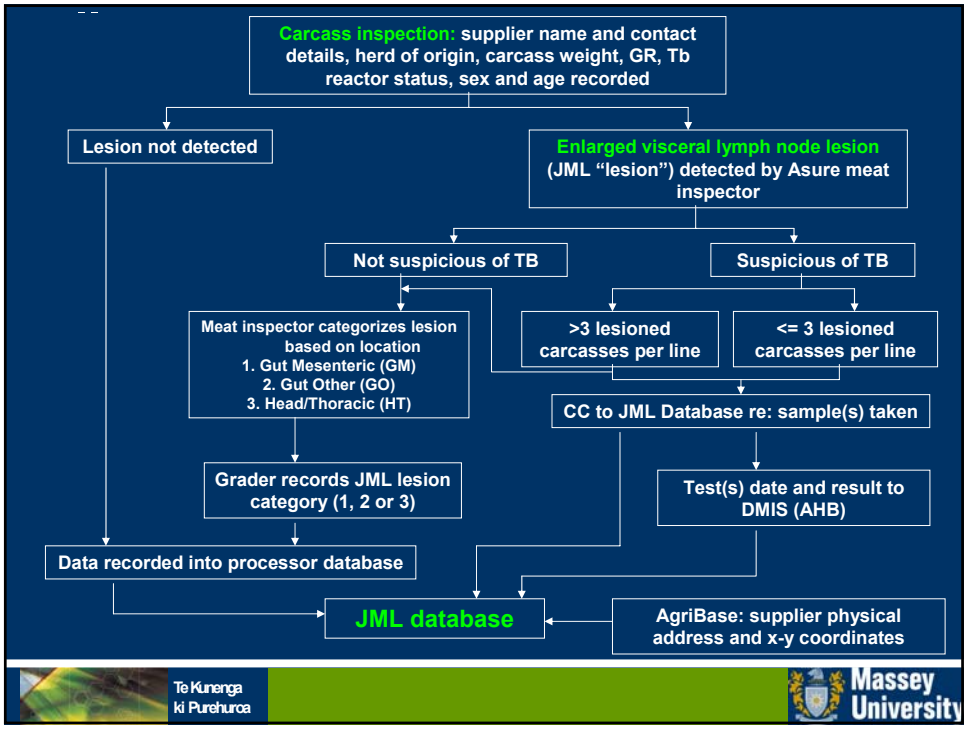
Primary aim of JML

"To provide data to industry and researchers enabling effective targeting of education and monitoring of Johne's Disease in deer"



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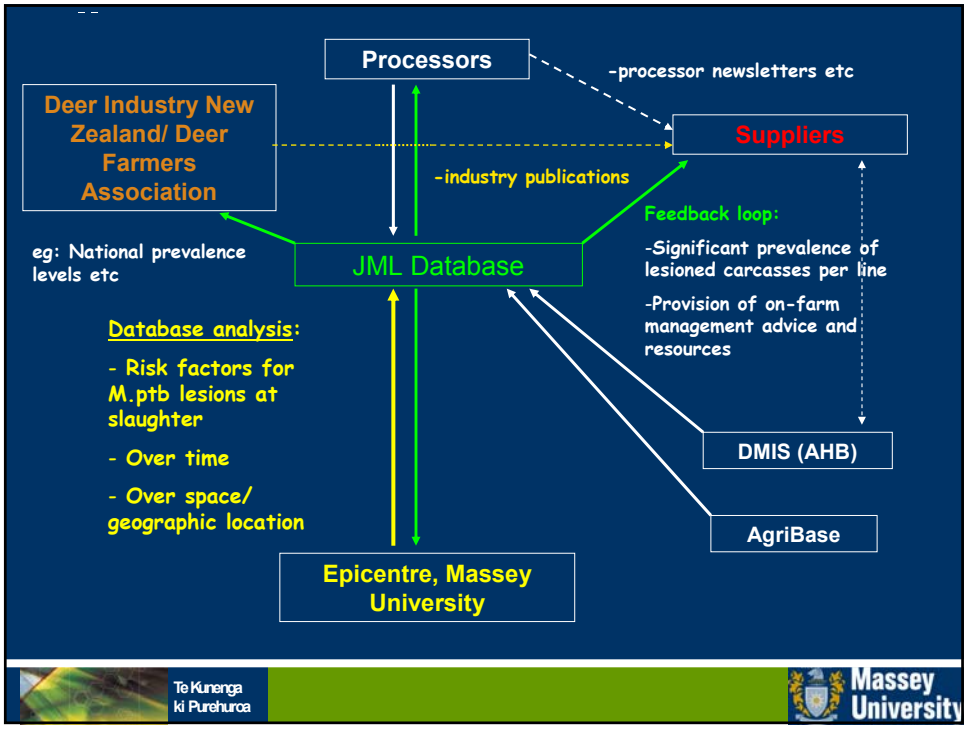

CALIBRATION: Two questions:

54 inspectors across NZ

Sensitivity:

Are inspectors detecting enlarged mesenteric lymph nodes as "JD suspect lesions"?

80.6%

Specificity:

Are inspectors incising non-lesioned mesenteric lymph nodes as "JD suspect lesions"?

61.2%

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- Johne's Management Limited: potential unlimited

Postgraduate studies/presentations

- JRG manual/bulletins
- Presentations:
  - International Society of Veterinary Epidemiology and Economics (ISVEE): Cairns, August 2006
  - Focus farm meetings (x2)
  - VetSouth
  - New Zealand Johne's Disease Consortium
  - New Zealand Johne's Disease Science Meetings (x2)
  - Johne's Research Group (JRG) (x5)
  - NZVA (Deer Branch) Conferences:
    - Te Anau (2005) (x3)
    - Wellington (May 2006) (x1)
    - Palmerston North (May 2007) (x2)
  - IVABS presentation (July 2005)