



# Does leptospirosis have an effect on New Zealand sheep and beef cattle production?

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# Lepto in New Zealand sheep and beef cattle

- Hardjo and Pomona
- Source of human infection
- Associated with subfertility, abortion and perinatal losses
- 2009 seroprevalence (Anou Dreyfus)

Farms	Hardjo	Pomona
Sheep	91%	74%
Beef cattle	92%	72%

Animals	Hardjo	Pomona
Sheep	43%	14%
Beef cattle	50%	25%

# Question

- Does leptospirosis reduce sheep **growth** and **reproduction**?
- If yes, does **vaccine** reduce the losses?
- Is vaccination **cost-effective** (when compared to animal production)?

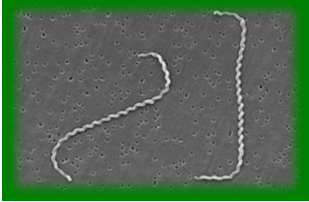
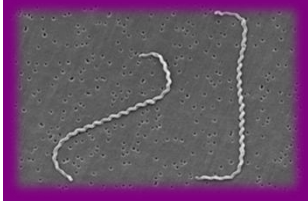
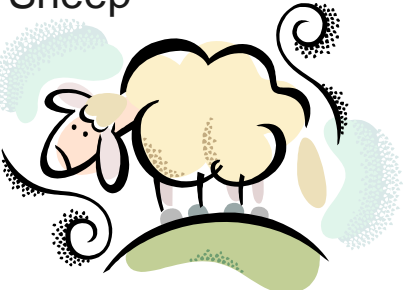
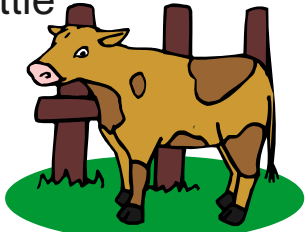


# The study

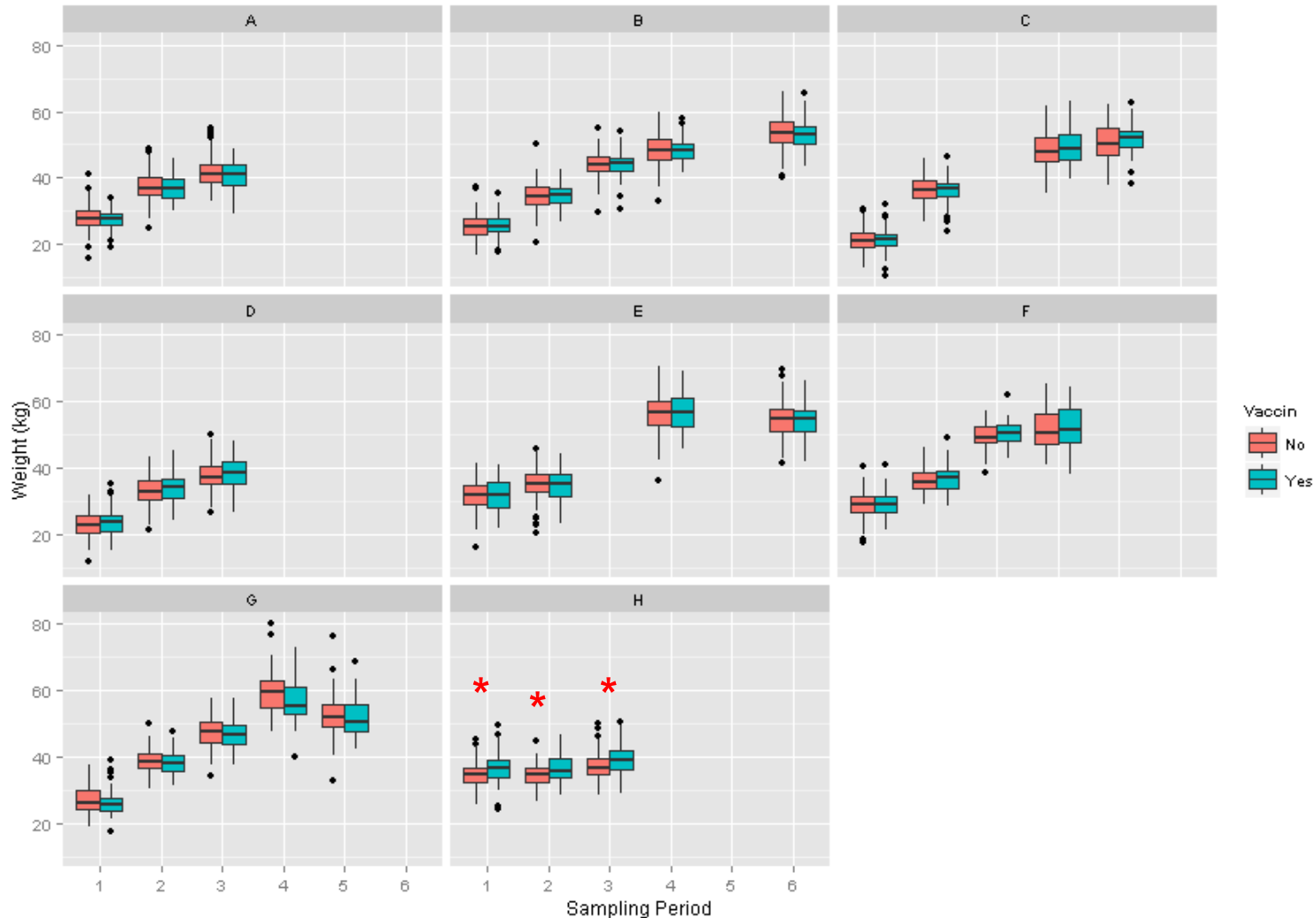
- October 2011 – ongoing
- 8 sheep and beef commercial farms
  - 2260 ewe lambs
  - 2026 cattle
- Split flock vaccination trial (1/3 – 2/3)
  - Commercial Hardjo-Pomona vaccine
  - Natural challenge
- Comparison
  - Vaccinated and control
  - Seroconverted and seronegative



# Natural exposure to lepto

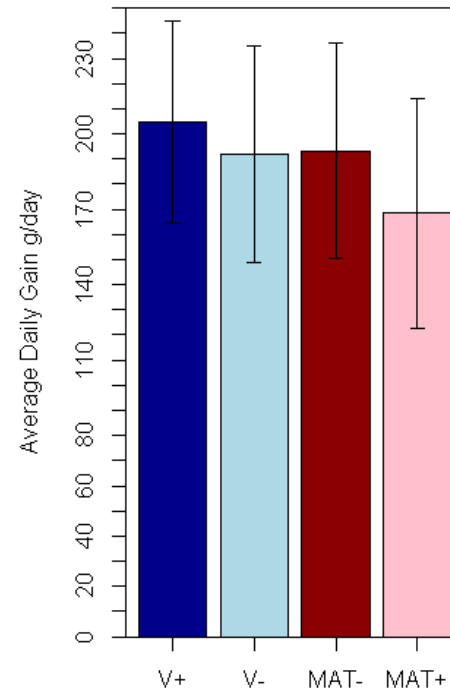
	Hardjo	Pomona
		
<p>Sheep</p> 	<p>-1 farm: between docking and weaning</p> <p>- 7 farms: during 1<sup>st</sup> winter/hoggets pregnancy</p>	<p>- 4 farms: during 1<sup>st</sup> winter</p>
<p>Cattle</p> 	<p>- 6 farms during winter/during 1<sup>st</sup> pregnancy</p>	<p>- 1 farm during winter</p>

# Sheep growth by farm

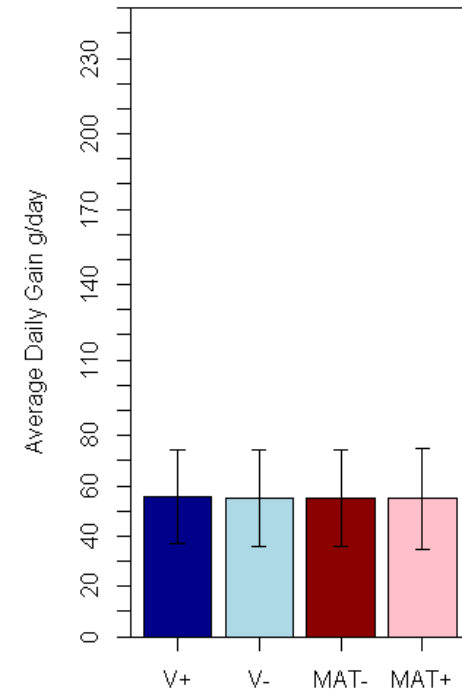


# Farm F: early seroconversion

- Early challenge
  - Up to **19g/day** difference
  - Corrected by vaccination
- Later growth effects not observed
- No reproductive effects observed



Period 1



Period 2

Cut-off for MAT+ 1:768



# Sheep reproduction

- No effect on reproduction
  - Seroconversion for Hardjo and/or Pomona during hoggets pregnancy
  - No difference in
    - Scanning rate
    - Docking rate
    - Weaning rate





# In cattle

- No effect on growth
  - But no early exposure observed
- No effect on reproduction
  - Less Pomona



# Vaccine efficacy on shedding in sheep

- Shedding prevalence in control group
  - One farm negative
  - Overall 49%
  - 11-88% in 7 farms
- 4 vaccinated shedding
  - 1 possibly already infected (farm F)
  - 3 in the same farm (farm H)
- **Vaccine efficacy 96%**

	PCR+	PCR-
Vac+	4	72
Vac-	44	46

# Summary

- Growth deficiency due to Hardjo?
  - **Yes, if lambs exposed early (calves ?)**
  - No if sheep and cattle exposed later
- Reproduction deficiency due to Hardjo (and Pomona)?
  - No
  - Pomona in cattle?