

Priceless420.com

# Deer parasites & their control: the good, the bad & the ugly...

Simone Hoskin



Te Kūnenga  
ki Pūrehuroa

Institute of Veterinary, Animal and Biomedical Sciences



**Massey University**

# **Anthelmintics and parasite control in farmed deer in NZ: a survey**

F Castillo-Alcala, P Wilson,  
W Pomroy, S Hoskin.

Institute of Veterinary, Animal and Biomedical  
Sciences



Te Kūnenga  
ki Pūrehuroa

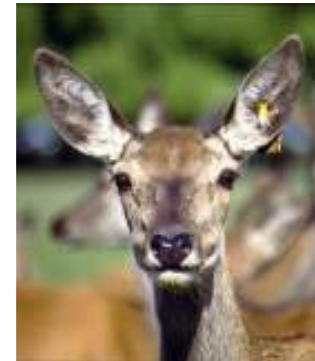
**FORT DODGE**

**Animal Health**  
Animal Health

# Methodology

- 500 deer farms
- Randomly selected: DINZ data base (confidential)
- 50 questions (12-mth period)
  - Farm/herd data
  - Drenching policies
  - Drenching practices
    - Weaners
    - Adult
  - General
    - Parasite control methods
    - knowledge
  - Comments

## Anthelmintic (Worm Drench) Usage on Deer Farms



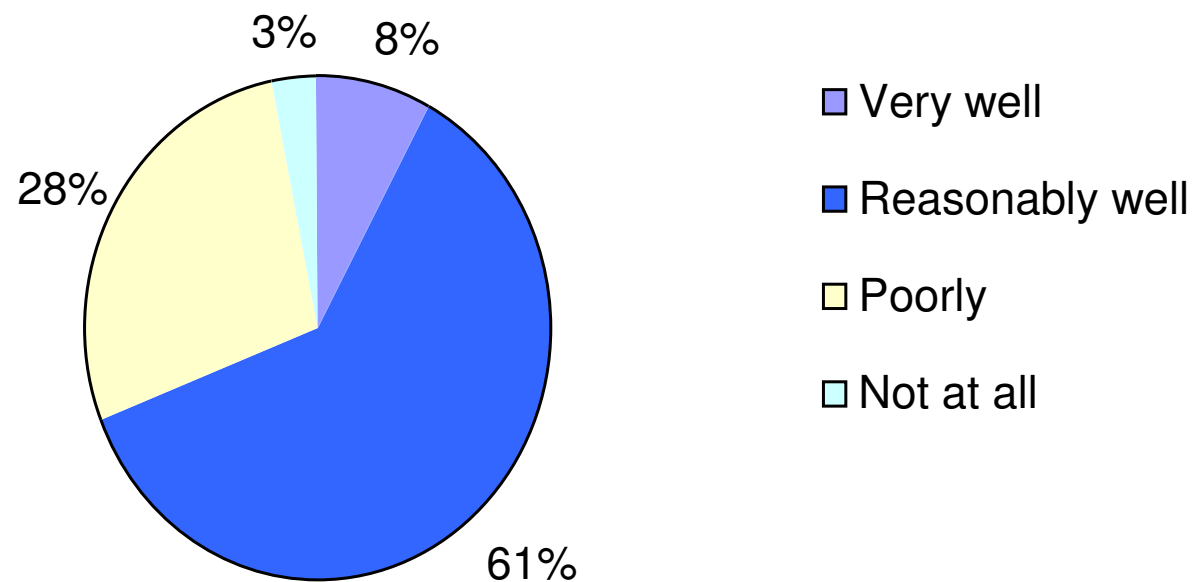
Institute of Veterinary, Animal and Biomedical Sciences

Te Kunenga  
ki Pūrehuroa

Te Kunenga  
ki Pūrehuroa



# How well do you know parasites?



# General observations 1

- **Anthelmintic use (last 12 months)**
  - 94%  $\geq$  once
  - 53% all stock classes
  - 22% weaners only
- **74% dosed to the heaviest weight**
  - 36% used a weigh scale
- **Selective treatment**
  - 5% treated only “poor” animals



# General observations 2

- **Anthelmintic resistance**
  - 35% concerned
  - 2% had “evidence”
- **Production loss**
  - 27% of farmers
- **\$ return on cost of anthelmintic**
  - 44% convinced
  - 46% moderately convinced
  - 7% not convinced



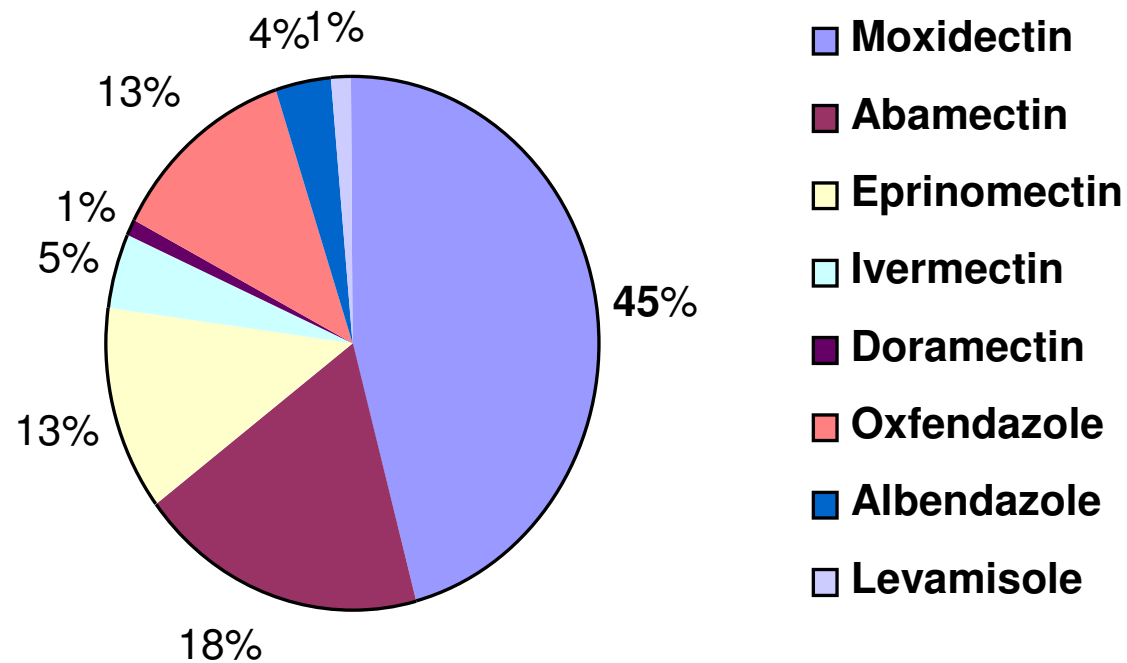
# Weaner drenching policies

- All farmers using anthelmintic treated weaners
- Weight gain most important monitor
- 7% of the farmers used FEC/FLC
- Many farmers used additional control measures
  - Paddock spelling
  - Rotational grazing
  - Crops
  - Alternative forage species

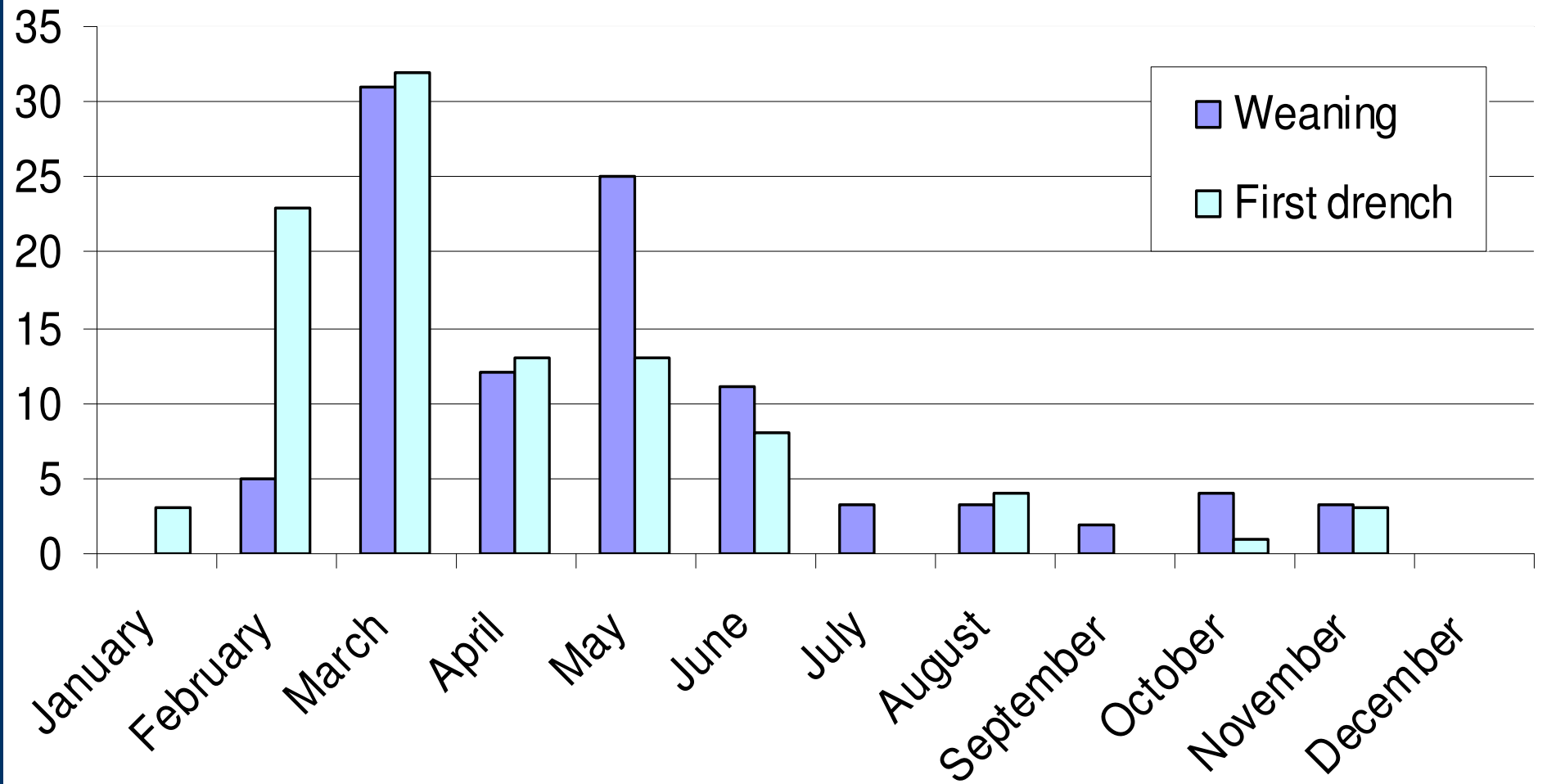


# Anthelmintic type used: weaners

>80% pour-on



# Start of treatment: weaners

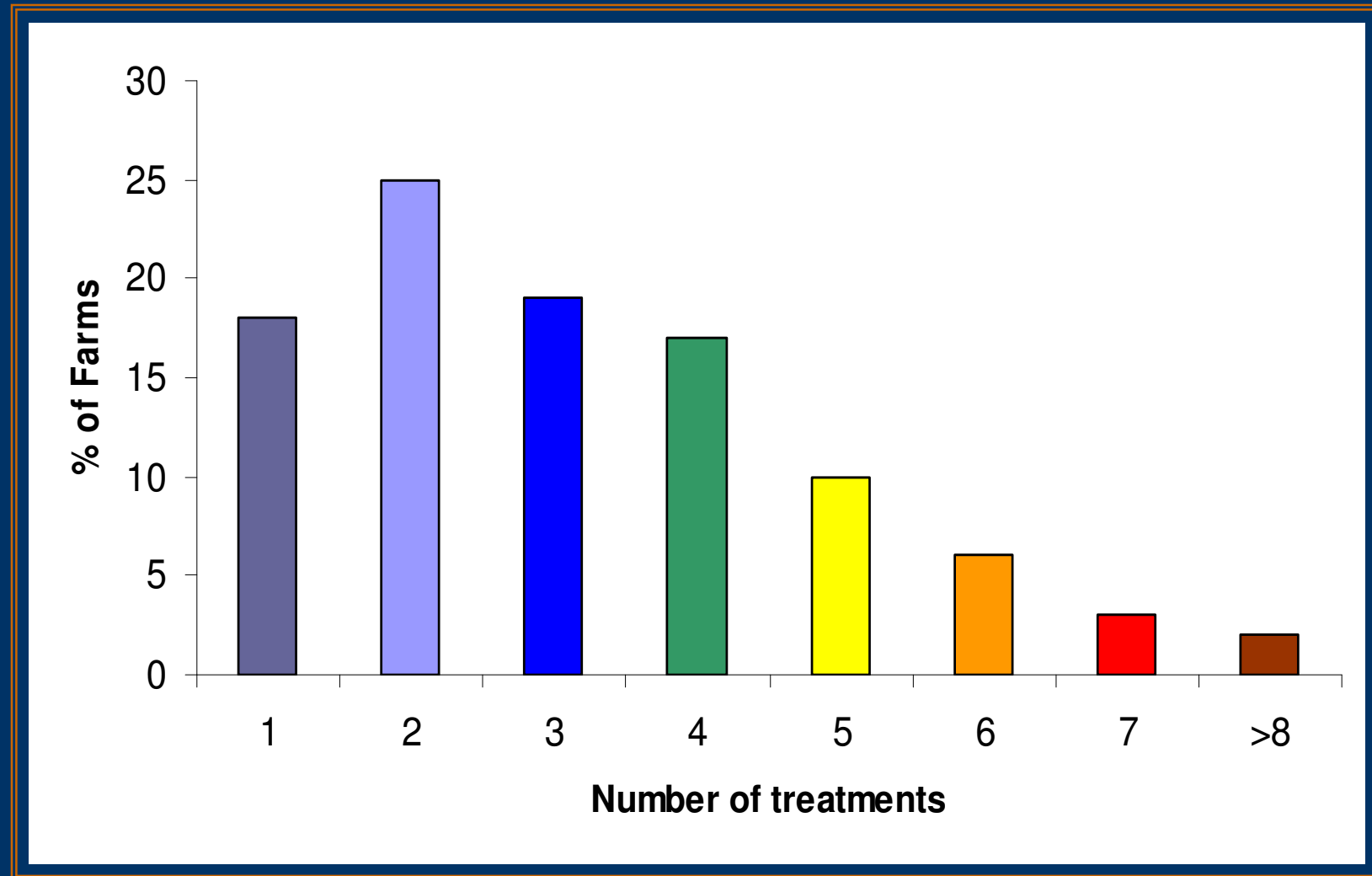


Te Kūnenga  
ki Pūrehuroa



Massey  
University

# Annual no. weaner treatments



# Clinical signs and deaths: weaners

## *Coughing*

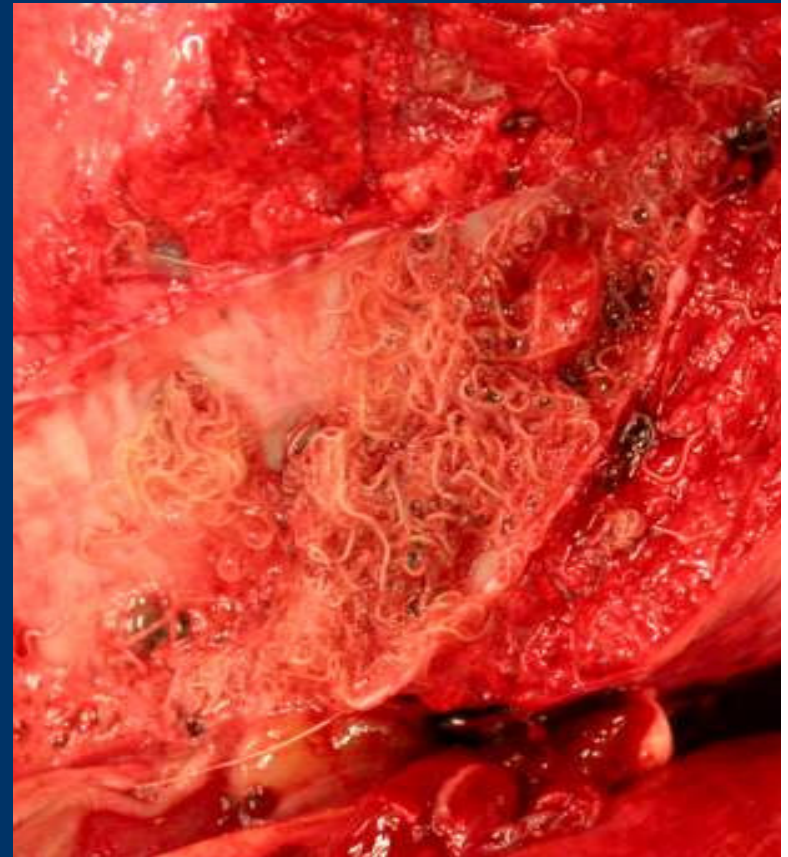
- 14% of farms
- Diagnosis 100% Farmer

## *Diarrhoea*

- 13% of farms
- Diagnosis 68% Farmer  
32% Vet/lab

## *Deaths*

- Lungworm 5% of farms
- GIT worms 3% of farms

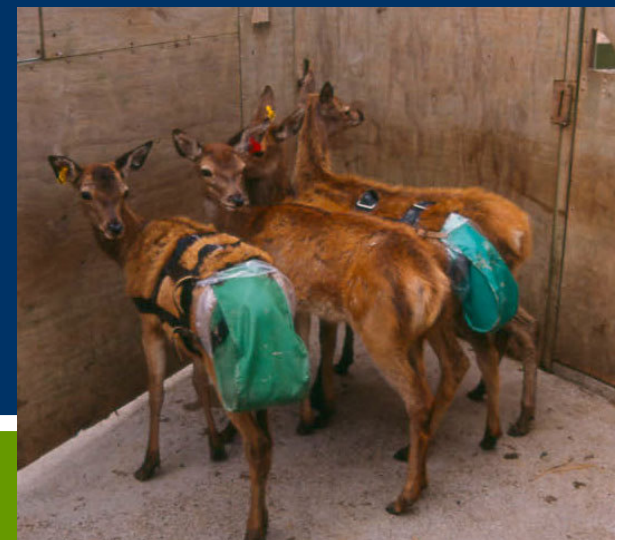


# Conclusions

- **Control programmes HIGHLY variable**
  - Age groups
  - Timing
  - Frequency
  - Number
- **Macrocyclic lactones >> benzimidazoles**
- **Decisions often subjective**
  - Clinical disease/production loss
- **Opportunities exist for improvement!!**

# Where to from here?

- Epidemiology of deer parasitism
- Sub-clinical effects esp. production
- Screen for anthelmintic resistance
- Sustainable control
  - Integrated parasite management
  - Multi-species farming
  - Alternative forages
- Better diagnostic markers





Te Kunenga  
ki Purehuroa



Massey  
University



**Massey University**

# **Efficacy of oral ivermectin, pour-on ivermectin & pour-on moxidectin in weaner deer**

---

Simone Hoskin

WE Pomroy, PR Wilson, M Ondris, P Mason<sup>1</sup>

**Institute of Veterinary, Animal and Biomedical  
Sciences**

**<sup>1</sup>Mason Consulting**



Te Kūnenga  
ki Pūrehuroa

Deer Branch NZVA 2005

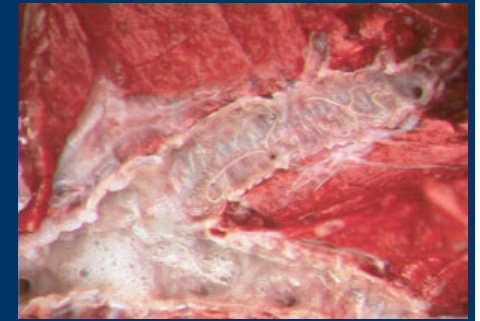
# Faecal lungworm larvae counts



larvae/g	FLC D0	FLC D10	% Efficacy FLCRT
Control	22 (2-48)	60 (0-487)	
IVMo	42 (1-165)	0	100
IVMp	67 (3-480)	0	100
MOX	33 (4-155)	0	100



# Lungworm



	Adults	Larvae
Control	1652 (481-3250)	3940 (968-6959)
IVMo	0.8 (50% +ve)	0.5 (30% +ve)
<b>% Efficacy</b>	<b>99.98</b>	<b>99.99</b>
IVMp	0	0
<b>% Efficacy</b>	<b>100</b>	<b>100</b>
MOX	0.7 (40% +ve)	0.6 (10% +ve)
<b>% Efficacy</b>	<b>99.99</b>	<b>99.98</b>



# Faecal egg counts



	FEC D0	FEC D10	% Efficacy FECRT
Control	195 (0-400)	195 (0-600)	
IVMo	80 (0-200)	35 (50% +ve)	56.25
IVMp	60 (0-150)	0	100
MOX	190 (0-500)	0	100



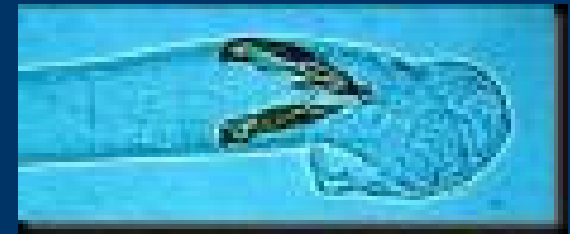
# Intestinal nematodes

No small intestinal nematodes – **Efficacy ?**

Large I:	<i>Oesophagostomum</i>	<i>Trichuris</i>
Control	722 (0-1920)	168 (0-1670)
All Anthelmintics	0	0
<b>% Efficacy</b>	<b>100</b>	<b>100</b>



# *Trichostrongylus axei*



---

Abomasum:	<i>T. axei</i>
Control	2.9 (0-20)
IVMo/p	0
<b>% Efficacy</b>	<b>100</b>
MOX	2.0 (0-20)
<b>% Efficacy</b>	<b>30.00</b>

---



# Total *Ostertagia*-types

Abomasum	Adults	Larvae
Control	273 (60-450)	23 (0-120)
IVMo	188 (100% +ve)	10 (30% +ve)
<b>% Efficacy</b>	<b>31.10</b>	<b>56.25</b>
IVMp	86 (100% +ve)	0
<b>% Efficacy</b>	<b>68.48</b>	<b>100</b>
MOX	16 (50% +ve)	4 (20% +ve)
<b>% Efficacy</b>	<b>94.14</b>	<b>82.50</b>



# *Ostertagia*-type species

	<i>Ost. l.</i>	<i>Ost. k.</i>	<i>Spic. s.</i>	<i>Spic. a.</i>
Control	31%	22%	7%	40%
IVMo				
% Efficacy	29.8	100	12.4	-5.5
IVMp				
% Efficacy	71.4	100	100	40.4
MOX				
% Efficacy	81.4	96.3	100	100



# Conclusions: drench efficacy

- IVM, MOX 'highly effective' against lungworm & large intestinal worms
  - But 40-50% still had lungworm with MOX & IVMo
- MOX 'highly effective' against some but not other abomasal worms
- FEC/ FLC for efficacy tests in deer – unreliable, but should pick up big problems
- *Sub-optimum efficacy or resistance?*

**Industry issue!**



# Facts to consider re pour-ons

- Widespread use/ reliance for deer
- Efficacy reduced with dirty/ dusty coats
  - Efficacy testing done with applicator with direct skin contact, not exactly 'pour-on'...
- In cattle, efficacy related to oral consumption (licking)
  - Deer don't lick....

***= risk factors for development of anthelmintic resistance!!***



# Final conclusions re drenching

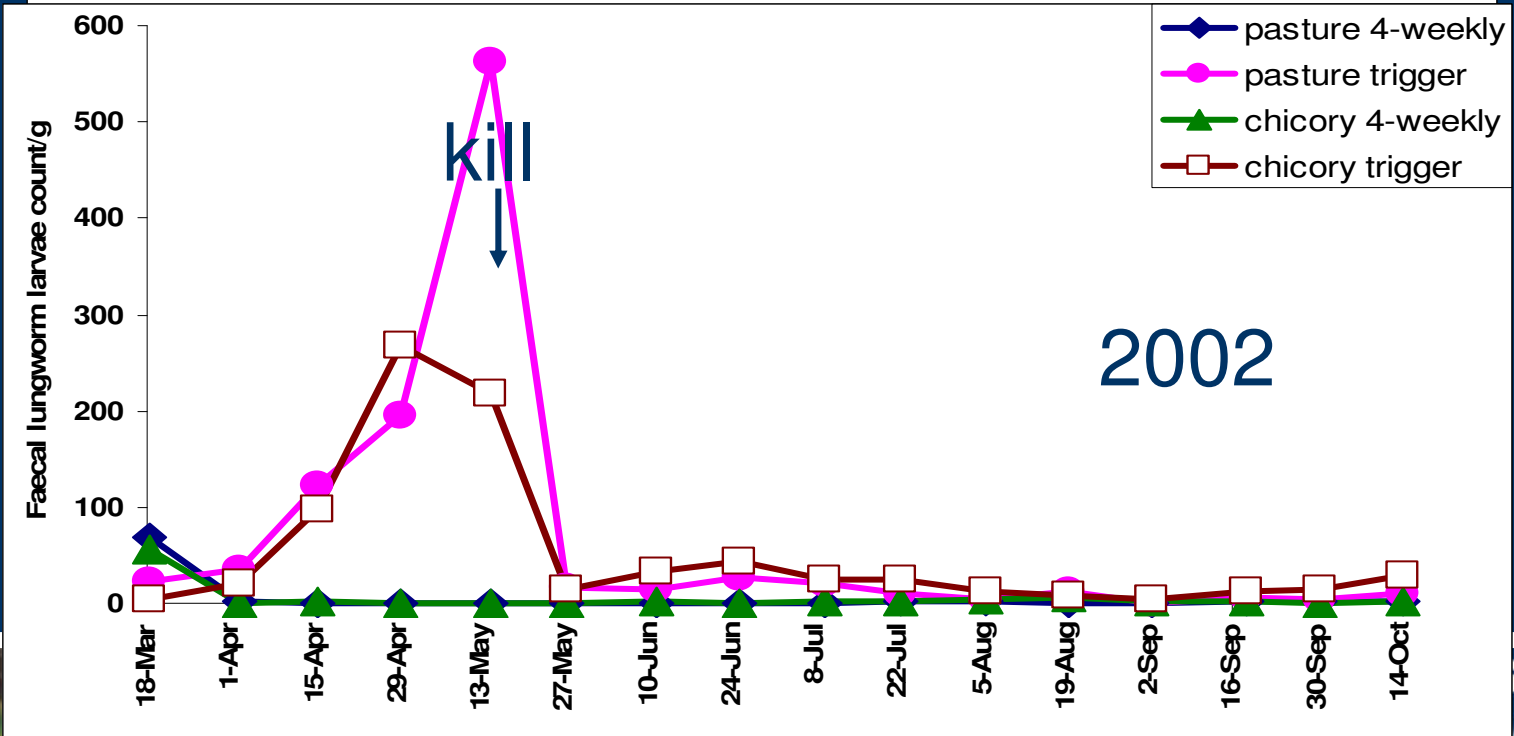
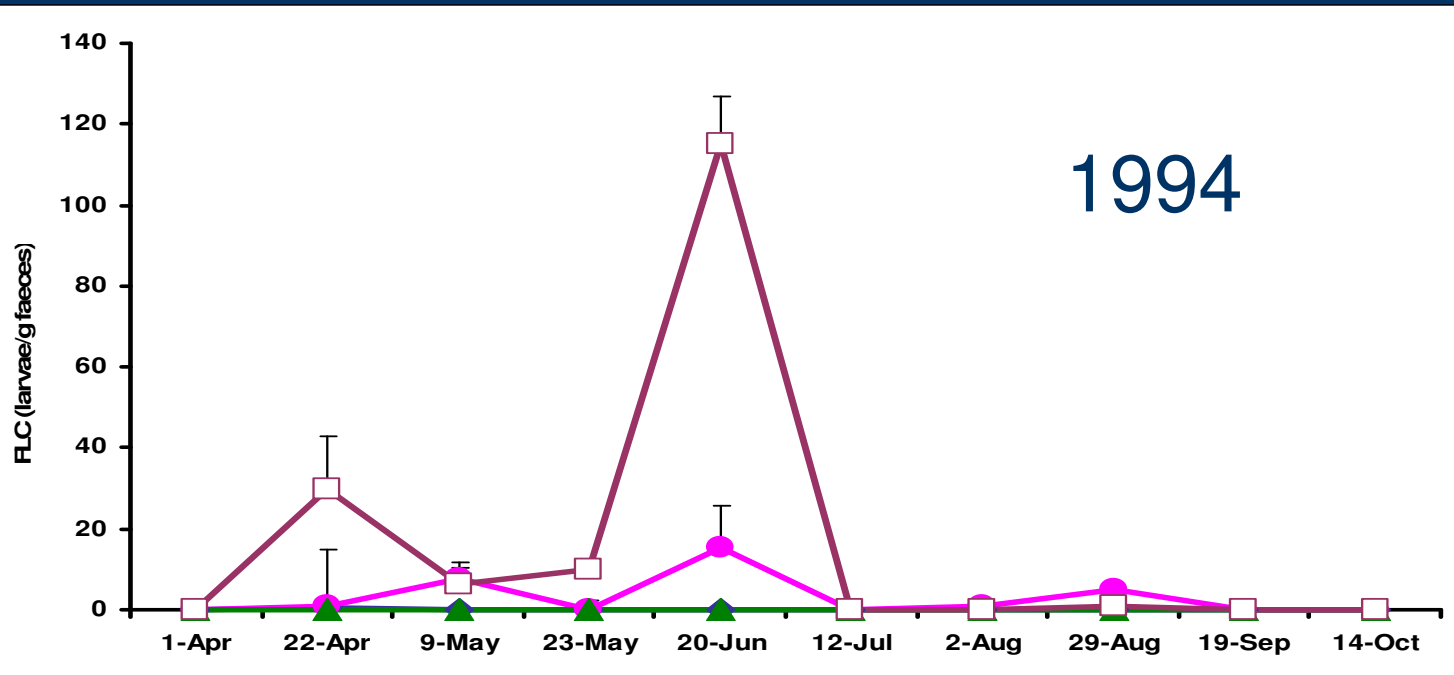
- **Think before you drench**
  - Evidence for drench requirement
  - Does it have to be pour-on, if so, can you get it on clean skin?
  - Dose to heaviest animal, preferably weighed
  - Do all animals need drenching, now?
  - How can you maximise refugia?
  - Test your drench efficacy
- **Get an animal health plan, stick to it**
- **Monitor liveweight gain of weaners**

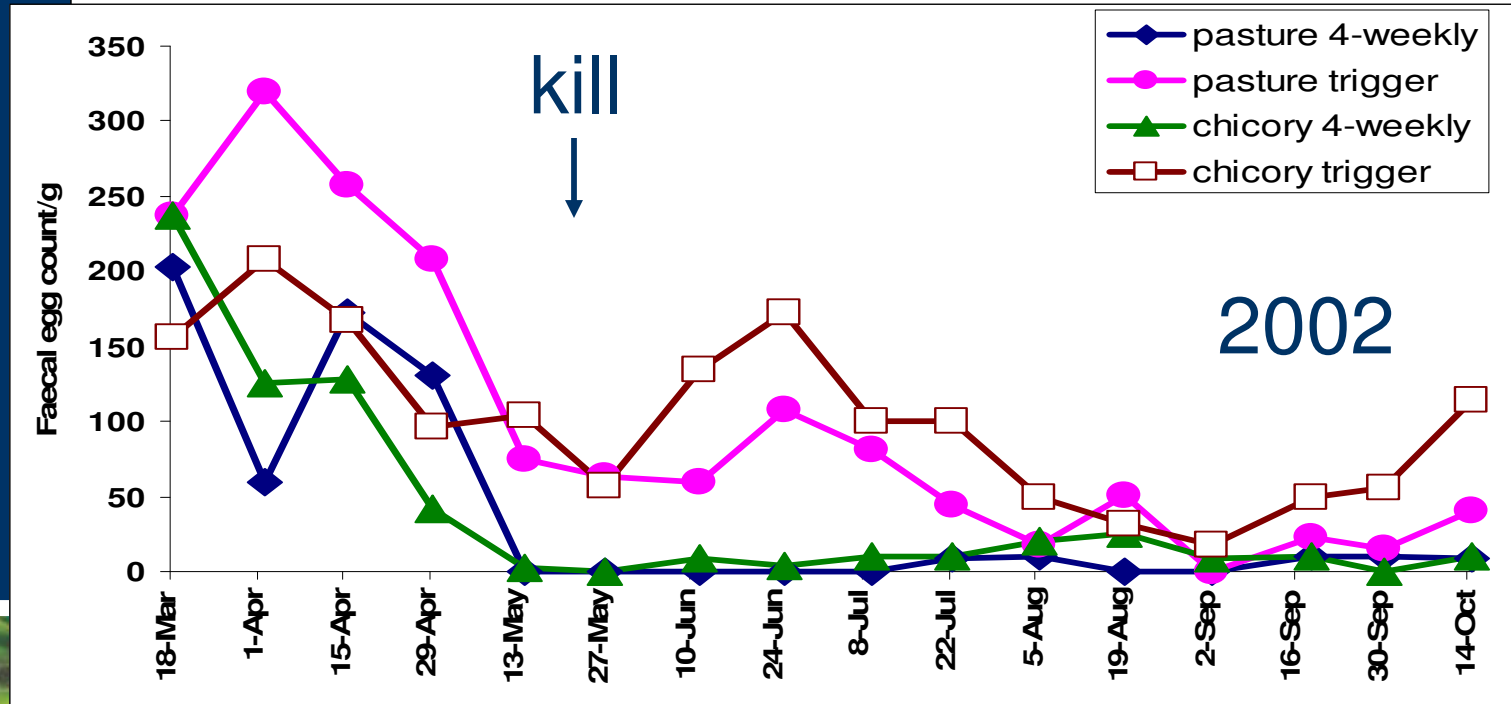
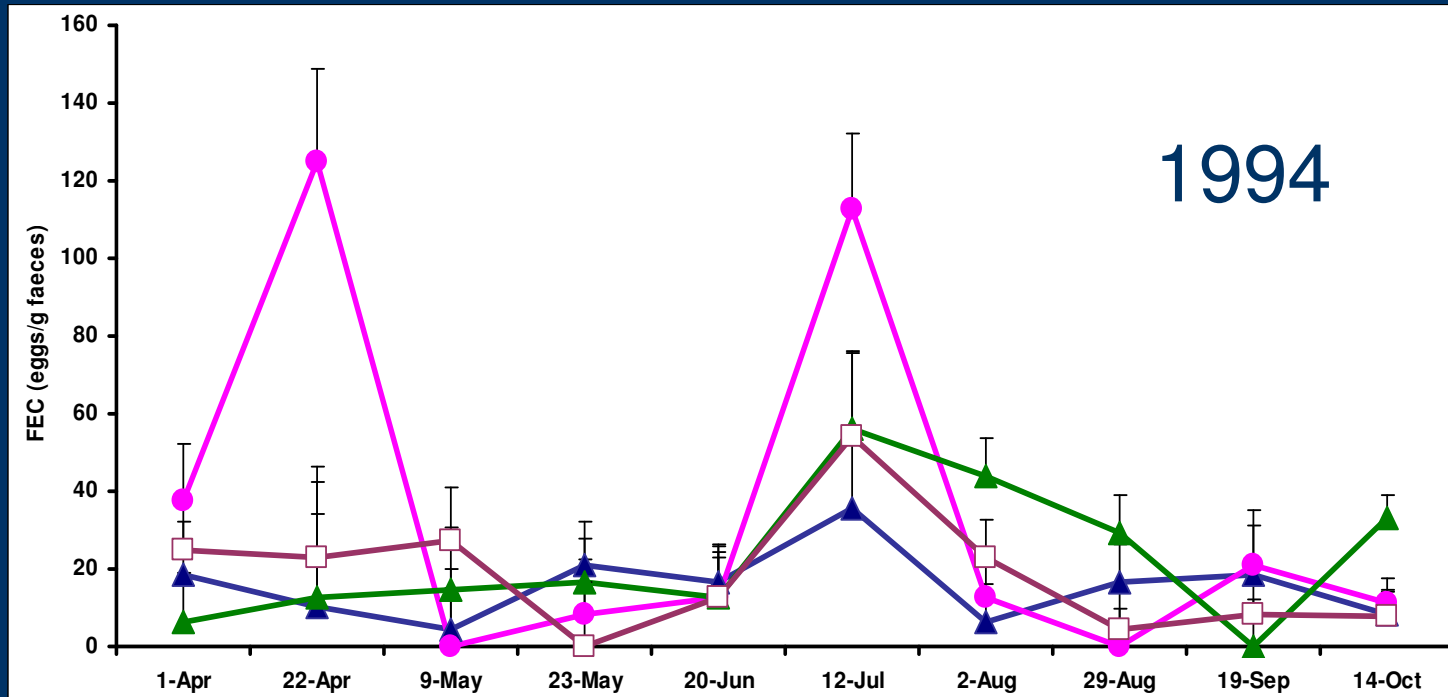


# Monitoring of parasitism

- Vital for minimal or zero anthelmintic systems
- Limited by little knowledge of deer-specific epidemiology
- Liveweight gain + FEC + FLC
  - Essential minimum criteria
  - Restricted diagnostic technology for deer
    - Serum biochemistry & haematology
      - Limited use on individual animal basis?









Questions?



Te Kunenga  
ki Purehuroa



Massey  
University