NORTH CANTERBURY DEER INDUSTRY
FOCUS FARM PROJECT

DEER PARASITE WORKSHOP

TUESDAY 29TH JANUARY 2013

UPDATE ON PARASITE DIAGNOSIS

COLIN MACKINTOSH
VETERINARY SCIENTIST, INVERMAY
SOME QUESTIONS FARMERS ASK

How do I know if my deer have parasites?
When should I start worming my weaners?
Can we use a FECRT (faecal egg count reduction test) to test anthelmintics in deer?
Can we select deer for resistance to parasites?

Recent research into diagnostic tests may help answer these questions

agresearch
OTHER REASONS FOR RESEARCHING DIAGNOSTIC TESTS

- Overuse and misuse of anthelmintics leads to development of anthelmintic resistance in parasites
- Better diagnostic tests may allow more targeted use of anthelmintics and reduce overall usage
- Conflicting opinions on the accuracy of existing tests
  - Faecal larval count (FLC) for lungworm
  - Faecal egg count (FEC) for GI worms
- New tests becoming available

Recent studies undertaken to evaluate existing and new diagnostic
DIAGNOSING LUNGWORM

• Lungworm risk high early autumn
• Clinical signs: heavy breathing, coughing, poor weight gain
• Faecal larval count (FLC) done to count lungworm larvae in faeces expressed in lpg (larvae/g faeces)
• Collect faeces from rectum (keep cool, submit immediately)
• Is a faecal larval count (FLC) of any value?
• FLC correlates well with adult lungworm burdens in autumn
• But not well correlated in spring, once immunity develops
LIMITATIONS OF FLC FOR LUNGWORM IN DEER

• Only useful in young weaners in late summer/early autumn (Feb-Apr)
• FLC only indicates adult lungworm burden
• Cannot indicate challenge in last 3 weeks (23 day prepatent period)
• Must interpret FLCs with other risk factors
• Must test frequently in early autumn to be useful
• Treat as soon as Ipg rise
• Don’t wait for clinical signs in autumn
• Large lungworm burdens kill weaners
DIAGNOSING G-I PARASITES

- GI parasite high risk autumn/winter
- Clinical signs: scouring, reduced weight gain, weight loss etc
- Do a faecal egg count (FEC), expressed in epg (eggs/g faeces)
- Collect 6-8 faecal samples from rectum or freshly voided faeces from the paddock in morning; keep cool, send to lab promptly
- FEC correlates with adult abomasal worms only in autumn
- Not well correlated in spring, once immunity develops and too many false negatives/low counts
FEC (EPG) FOR GI WORMS

- Reasonable correlation between FEC and worms in autumn
- Poor correlation between FEC and worms in spring
- Too many false negatives for FEC to be useful in spring
CAN WE USE FECRT TO ASSESS ANTHELMINTIC EFFICACY IN DEER?

A recent efficacy study showed:

<table>
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<tr>
<th>Anthelmintic</th>
<th>Day 7 Ave FEC</th>
<th>Apparent Efficacy</th>
<th>Ave Worm Count</th>
<th>Actual Efficacy</th>
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<tr>
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RESULTS OF RECENT STUDY SHOW:
FECRT MISLEADING, WHEN ANTHELMINTIC RESISTANCE PRESENT
OTHER TESTS FOR GI WORMS AND LUNGWORM

Blood tests
• Not useful

Liveweight gain
• Probably the best indicator of weaner health if you have reasonable target weight gains to compare with
• Weigh weaners regularly
• Draft off and drench deer with poor weight gain
OTHER TESTS – SALIVA CARLA TEST

Saliva test for CarLA antibody

- **CarLA (Carbohydrate Larval Antigen)**
- Developed for measuring immunity to parasites in sheep
- L3 infective worm larvae have a carbohydrate sheath on the front end, given the name “CarLA”
- Hard coating appears to protect the larvae as in transits the GI tract from mouth to the stomach
- Animal sensitised to CarLA sheath
- Animal secretes antibody in saliva
- Confers resistance against rechallenge
- Saliva CarLA ab used for hogget selection
INVERMAY STUDY OF CARLA AB IN DEER

- Results in deer similar to findings in sheep
- Higher saliva CarLA antibody levels associated with lower parasite numbers
- CarLA antibody higher in red than wapx deer
Red deer saliva CarLA ab significantly greater than WapX saliva CarLA ab

Red deer abomasal worms peaked in June cf WapX peaked in November
LANDCORP HINDON STUDY RESULTS

- Very low saliva CarLA antibody levels in Sep and Oct (~2 OD) due to a cold spring and late snow at the farm (4-500 m. alt)
- CarLA antibody only started to rise in Nov and only peaked at 8 OD in Dec
LANDCORP HINDON RESULTS

- Low worm burdens (despite no drench) cf Invermay (Farm A)
- Significantly lower mean worm burden in deer with high CarLA ab (>4) than deer with low CarLA ab (<4) in the groups killed in November and December (P= 0.022)
Wapiti on Landcorp Freestone had significantly lower CarLA antibody than red deer on Landcorp Stuart stud.

Farm B wapiti deer CarLA ab Sep-Jan

Farm C red deer CarLA ab Sep-Jan
CONCLUSIONS FROM CARLA RESEARCH

- These studies suggest that salivary CarLA antibody in deer gives some protection against reinfection.
- Wapiti have poorer CarLA antibody response than red, which parallels their greater susceptibility to parasites.
- Results to date suggest CarLA ab will be a useful selection trait.
- The degree of heritability is yet to be measured.
- CarLA antibody trait will be measured in DPT.
DIAGNOSTIC TESTS – USEFUL, BUT

Every farm is different
  • Topography and pasture
  • Stocking rate
  • Degrees of natural resistance to parasites
  • Red vs red/wapiti hybrids vs wapiti
  • Pre-rut vs post-rut weaning
  • Winter feeding regime
  • History of anthelmintic use (and misuse) and degree of anthelmintic resistance

Every season is different
  • Weather conditions, especially rainfall in summer/autumn

General advice
  • Have a basic animal health programme for your farm and livestock
  • Each season, fine-tune it according to season (and expert veterinary advice)
And you thought your job sucked