Control Of Parasites Especially Protozoan

- Grazing management strategies
- Genetic selection
- Biological control & Pasture ecology
- Vaccines
- Dietary control – alternative forages

Grazing Management Strategies

Management strategies include :

- reduce stocking rates
- use of clean grazing
- rotational grazing
- mixed/alternate grazing

Stocking rate (SR)

- Studies indicate positive effect of SR on reducing parasites.
- But dependent on initial infection level and age of stock and parasite species involved
- Not a control method in itself
- SR is a risk factor that affects the incidence of parasitism in livestock

Clean Grazing System

- Grazing season divided into 2 parts (30th June is mid-point)

  For pastures not grazed by sheep overwinter:

- 1st half - pastures are ‘safe’ until end April
- 2nd half - pastures are ‘clean’ by 30th June
- BUT if lambs grazed in previous season - pastures are ‘potentially-dangerous’ until middle of season due to *Nematodirus*

Grazing management: Mixed v. sequential

- Mixed grazing is based on diluting strategy
- Do not use cattle under 12 months old

Rotational grazing

- Requires sub-division of pastures & careful management (high capital and labour costs)
- rotation must be long enough for larvae from previous grazing to have died
- difficult to estimate time required

Biological Control

- “the use of biological agents which are natural enemies of the pest as a method of control”.

  Biocontrol of Parasites

  - acts on the immature parasite larvae on pasture

  Natural enemies of parasites include:

- Viruses
- Bacteria (e.g. *Bacillus thuringiensis)*
- Mites
- Earthworms and dung beetles
- Nematode-trapping fungus (e.g. *Duddingtonia flagrans)*

Genetic Selection

- Differences in susceptibility to parasites exist within and between different breeds
- 10 % of a flock is typically carrying > 90 % of the parasites – need to identify those individuals

Animals are selected on basis of :

- ‘resistance’ (ability to fight a parasite infection)

or

- ‘resilience’ (ability to cope with a parasite infection

Vaccines

- An effective irradiation-attenuated larval vaccine against lungworm in cattle is commercially available
- But no vaccine against parasitic nematodes
- Recent work using parasitic gut proteins from *H.contortus in vaccine development*
- But this is a long way from commercial development of a vaccine against ALL parasitic nematodes

Dietary control of parasites

- Parasitic infection reduces feed intake
- Protein is particularly important – high protein diets can enhance ‘immunity’ to parasites
- Relationship between trace elements and parasite burdens e.g. Copper
- Alternative forages

Alternative Forages

- Recent studies in New Zealand have shown that some forages, including :

  i) Chicory (*Cichorium intybus)* and

  ii) Birds foot Trefoil (*Lotus corniculatus)* may reduce helminth parasites in sheep.

Summery

- Prevention is better than cure – Health planning
- Grazing strategies are useful tools for reducing parasites
- Current research is being undertaken in many aspects to try to produce alternatives to anthelmintics
- Parasite control will be achieved by using a combination of the alternative methods – there is NOT just one solution