Organic grassland management and animal health

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Promoting health through grassland management

Good nutrition; grazing, silage, hay, rotation: grain?
Environment; poaching, other stock, stocking rate
Develop system to farm resources
Grasses, Clovers, Herbs, other crops
Weed control
Grazing and silage management
Clean/safe grazing for young stock
Scald, orf, minerals, worms, fertility/fecundity, bloat,
nutritional scours, calving/lambing,
Aims of organic grassland management

Optimum grassland use - growth curve

Breed, store, finish healthy stock profitably

Manage clover rich swards to meet livestock needs (i.e. adequate and reliable amounts of clover)

Integrate grazing with conservation (both types!)

Clean/safe grazing for young stock
Why is nutrition important?

• Conception and lambing rate related to condition score
• Minerals and vitamins - good health for fighting disease
• Protein intake important for immunity development; low protein → immuno-suppression
• PGE reduces appetite (10-15%) & use protein for repair
• Feed additional protein for tissue repair & growth
• Low protein can increase roundworm effects
• Clover protein can reduce severity of roundworms
• Increase protein at ewe lambing to reduce FEC
Mixed grazing

Beneficial effects of spring cattle grazing by cattle compared with sheep on subsequent performance of weaned lambs. This was related to clover content of the sward.

<table>
<thead>
<tr>
<th></th>
<th>Cattle</th>
<th>Sheep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sward height (cm)</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Clover content (%DM)</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Lamb lwg (g/day)</td>
<td>92</td>
<td>140</td>
</tr>
</tbody>
</table>
What about bloat?

Common sense to reduce risk
Gradual introduction
Avoid grazing hungry animals
Avoid turning out on cold wet mornings
Consider treating troughs
Other ideas/solutions?

Tannins counteract bloatening
High levels can be found in birds-foot trefoil

Clover breeders are looking at clovers with higher levels of natural tannins
What about oestrogen problems?

Only a problem with red clovers
Avoid grazing ewes before and during and just after tupping
Little risk in feeding red clover silage to suckler cows
Some varieties are selected for lower ‘oestrogen’ levels but this may reduce the feeding benefits

Low oestrogen varieties are currently being developed

BUT ….More research needed into legumes and ruminant fertility
Grazing management

Set the targets - animal/herbage
Measuring herbage allowance
Grazing plan – integrate hay/silage
Continuous systems
Rotational systems
Parasites - classes of stock
Grazing management
Measuring herbage

Sward sticks, plate meters, a ruler? wellies? keep it simple

Grass availability - how much and how is it changing? (sunlight trapping and growth rates & % leaves age & die)
Set the stocking density
Graze with the right class of stock
Taking fields into/out of silage/hay
Identify shortfall BEFORE affect livestock growth rates
Efficient use of any feed supplementation

Recommendations made from much research work
### Grazing management
(research example)

<table>
<thead>
<tr>
<th>Twin lambs on continuously grazed swards (to weaning)</th>
<th>grass/clover</th>
<th>grass &amp; 420kg N/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sward height (cm)</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Stocking rate</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>Lamb growth rate</td>
<td>223</td>
<td>268</td>
</tr>
<tr>
<td>Lamb lwg/ha</td>
<td>1054</td>
<td>920</td>
</tr>
<tr>
<td>Clover content (%)</td>
<td>22</td>
<td>15</td>
</tr>
</tbody>
</table>

(Parsons et al 1987)
**Grazing management**

**target SSH**

**Sheep sward grazing heights (cm)**

<table>
<thead>
<tr>
<th>Graze period</th>
<th>pre graze</th>
<th>post graze</th>
<th>continuous</th>
<th>notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ewes &amp; lambs</td>
<td>8-10</td>
<td>4-5</td>
<td>4</td>
<td>Feed until 4+ gradually increase ssh</td>
</tr>
<tr>
<td>Turnout - April</td>
<td>8-10</td>
<td>4-6</td>
<td>4-6</td>
<td></td>
</tr>
<tr>
<td>May - wean</td>
<td>8-10</td>
<td>4-6</td>
<td>4-6</td>
<td></td>
</tr>
<tr>
<td>Weaned lambs to finish</td>
<td>10-15</td>
<td>5-7</td>
<td>6-8</td>
<td>Gradually increase</td>
</tr>
<tr>
<td>July - Sept</td>
<td>10-15</td>
<td>5-7</td>
<td>6-8</td>
<td></td>
</tr>
</tbody>
</table>
Grazing systems

Continuous
Strip grazing
Rotational
Leader follower
Forward creep
and many variations of the above

Research suggests there is more difference between stocking rates than between grazing systems.
BUT at high stocking rates rotational grazing gives better performance & more uniform intake patterns.
Grassland management and parasite control

Alternatives to anthelmintics

• Grazing management strategies
• Genetic selection
• Biological control
• Vaccines
• Dietary control
• Alternative forages
Improve resistance?

Nutrition (esp protein eg clover!)
Acquired resistance
Concurrent disease
(genetic resistance)
Reduce challenge

Diversity of enterprises
Stocking rate –( short term and total)
System choice ( eg store vs finish)
GRAZING MANAGEMENT
Strategic anthelmintics?
KEY POINTS FOR PLANNING

Most nematodes don’t cross infect
Most overwintered infection has dropped by end of June
Ewes around lambing time – **huge** potential
to contaminate pasture (not cows)

Lambs tend not to pick up infection until 4-5weeks old

**DANGER** highest after weaning in naive stock
Grazing management for parasite control

Pasture infectivity

Clean not cause lambs/calves to be infected by, or produce future contamination:

• new leys
• arable forage crops
• pastures not grazed with sheep for 12 months

• Often needs anthelmintic to keep status
• Isn’t well adopted... Do you??
• Inflexible grazing management
• Depends on farm infrastructure
• Weather?
Up to mid July

- Ewes & lambs
- Cattle
- Conservation

Mid July onwards

- Ewes
- Lambs
- Cattle

Traditional clean grazing 'Rutter' ring
Grazing management for parasite control

Pasture infectivity

**Safe** will not impede susceptible animal growth, but will leave contamination:
- spring grassland grazed by ewes in previous autumn
- hay/silage aftermaths grazed by sheep earlier in the season

**Potentially dangerous**
- summer grassland grazed by lambs earlier in year
- spring grassland grazed by lambs in previous
- summer/autumn/winter
Overall aims?

- Low initial exposure – *gradual* increase
- Regulate the challenge:
  - change pasture/ aftermath /stubble turnips
- Sell stores (hills)
- Maximise on farm resistance
Grazing strategies

- Preventative – (clean grazing)
- Evasive (strategic pasture change)
- Dilution – mixed grazing
  - stocking rate
  - conservation

NO BLUEPRINT?
Grazing for worm control

Clean grazing?
Need cattle/sheep/conservation/ rotation
Use of safe & ‘acceptable’ grazing to less vulnerable stock
(Combine with faecal egg counting/breed resistance)

Alternative crops? Chicory, Lotus,?

Prioritising stock
- twin lambs
- single lambs
- replacement ewe lambs
- lambed yearlings
- mature ewes
- dry stock
Sward structure

Taller swards: more moisture, cooler, than short ones of the same density.

Dense swards more moist than thin ones

Both affect intake

Eggs like warm moist soil to develop into larvae

Larvae like warm and wet conditions to move to sward top where they are ingested

Get cattle to graze them first! They like taller swards!
Taller more extensively grazed swards offer scope for complementary grazing between sheep and cattle, which leads to enhanced performance of lambs.

### Live-weight gains (g/day) of sheep and cattle

<table>
<thead>
<tr>
<th>Sward height</th>
<th>4-5cm</th>
<th>8-10cm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cattle</td>
<td>Cattle+Sheep</td>
</tr>
<tr>
<td>Steers</td>
<td>760</td>
<td>760</td>
</tr>
<tr>
<td>Lambs</td>
<td>273</td>
<td>272</td>
</tr>
</tbody>
</table>
Alternative forages

1) Effect of birdsfoot trefoil and chicory on helminth parasites in lambs with naturally-acquired parasite burdens;

2) Effect of lucerne, red clover, white clover on helminth parasites in lambs both with and without naturally-acquired parasite burdens.
Mean ± SEM Faecal Egg Count (FEC) of lambs grazing birdsfoot trefoil, chicory and RG/WC
Mean ± SEM Faecal Egg Count (epg) of lambs, naturally-infected with parasites, grazing lucerne, red clover, white clover and ryegrass

Legumes all Better than PRG By 35 days
How does it work?

- Improved nutrition (i.e. protein/trace elements)
- Direct effect of plant constituents (e.g. condensed tannins/ sesquiterpene lactones)
- Provision of a micro-climate in the sward which affects the development and/or survival of immature parasitic larvae
- Research continues..... Dr C Marley
Meeting the challenges of high-forage systems

3. To reduce reliance on external inputs, including mineral, trace element and vitamin supplementation

Experiment: lambs grazing pure swards of either

- Ryegrass/WC
- Birdsfoot trefoil
- Chicory
Blood selenium levels in lambs (GSHPx)

Day 35

<table>
<thead>
<tr>
<th></th>
<th>Chicory</th>
<th>Birdsfoot trefoil</th>
<th>RG/WC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value on Day 35</td>
<td>40</td>
<td>35</td>
<td>30</td>
</tr>
</tbody>
</table>
Alternatives to pharmaceuticals

- Integrated Parasite control
  - Novel crops
  - Grazing strategy
  - Genetic
  - NUTRITION
  - Homeopathy
  - Biol control
  - Herbal
  - Immunological
Summary

Devise a flexible grazing /conservation plan to give:
Balanced clover rich swards and forage
Good re-growth
Measure swards to plan stock numbers for optimum livestock growth rates and herbage use
Match grassland to livestock needs - integrate un-improved and semi improved pastures by using appropriate carrying capacity of all areas (CCS/TG)
Provision of clean-safe grazing for vulnerable livestock
Use winter forage crops for hungry ‘gap’