

**Lamb production:
grazing management, breeding policy and parasite control**

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Introduction

Internal parasitic infection can pose major health problems in young livestock and this is particularly so in the context of lambs in organic production systems. In the context of sheep production on an organic farm the challenge to control parasite infection is especially difficult in situations where crop production is absent or a minor element of the whole farm system. Our investigations, to date at Athenry, have concerned an exploration of lamb production in an all-grass farming setting with particular attention being paid to the breeds employed and the seasonal patterns of gastrointestinal parasite challenge. This flock (about 110 ewes plus replacements) is wintered indoors and lambs in early March each year.

Breeding policy

One of the major determinants of production efficiency from a sheep enterprise is the annual output of lamb meat per ewe carried. This is true whether the production system is conventional or organic. Consequently in developing the flock of ewes in the organic system in Athenry we took into account available evidence for breed differences in inherent prolificacy and parasite resistance. The policy established involved converting the foundation ewe flock to Belclare-cross ewes because our evidence shows that the Belclare crosses have a high level of resistance to parasites as well as having been developed for high prolificacy. The second part of our breeding policy was to use Texel rams to sire all lambs produced except those required to generate flock replacements. The reason for this is that we have very clearly shown over the years that the Texel breed is the most resistant to intestinal parasites across the range of terminal sire breeds used in this country. What this policy means is that about one third of the ewes are joined with Belclare rams each season to generate female replacements and the remainder of the flock is put out with Texel rams. This is expected to generate something of the order of 28 female lambs reared per ewe put

to the ram and hence leave some scope for culling a small proportion when selecting the necessary replacements.

Grazing management

The grazing management system that has operated over the last 3 seasons is that ewes are put out with their lambs on grassland that had not been grazed by sheep in the previous year. The primary objective of this policy to ensure that the risk to lambs from *Nematodirus* spring challenge is absolutely minimised; the second objective is to contain the normal season build up of larvae of other roundworm parasites. Our early experience with the organic flock at Athenry and evidence from larval build up studies under conventional systems that we have undertaken highlighted the need to dose ewes before turn out to the pasture to achieve the following objectives:

1. To ensure the season build up of larval challenge on pasture is delayed as long as possible.
2. That the level of challenge is reduced as much as possible.

The objective of this is to minimize the likelihood that the lambs are exposed to a significant roundworm larval challenge at any stage during the main grazing season and thus to obviate the need for anthelmintic intervention and retarded lamb growth performance. The combination of these management strategies with the use of breeds that have a high level of parasite resistance are key elements in the overall management of the flock.

Flock monitoring

Ewe reproductive performance and lamb growth are recorded using standard procedures. Roundworm parasite infection levels are monitored throughout the grazing season on a weekly basis. This involves using a DIY kit (Fecpak[®]) to determine the faecal egg count (FEC) on pooled faecal material from at least 20 lambs or 20 adults. The eggs are classified as *Nematodirus* or “other Trichostrongyles” as the development cycle of *Nematodirus* is annual whereas the others hatch to yield infective larvae within the season.

Results

The number of lambs reared per ewe put to the ram was 1.44 over the seasons 2006 & 2007 and this that is well above the average (1.3) achieved in conventional mid-season lamb production systems. Lamb birth weight and weight at weaning (at 14 weeks of age on average) are summarised in Table 1. The mean values recorded are below what we would expect from a similar flock under conventional management system- especially for the period between 10 weeks of age and weaning. The low average values shown in the table conceal the fact that there was a large divergence between 2006 and 2007 for growth during this period --- 250 g/day in 2006 compared with 169 g/day in 2007. The value for 2006 would be considered quite acceptable whereas the performance in 2007 was well below the norm.

Table 1. Lamb performance (\pm s.e.) – 2006 & 2007 seasons

Birth type	Birth weight (kg)	Growth rate birth to 5 weeks (g/day)	Growth rate 10 to 14 weeks (g/day)	Weaning weight (kg)
Single	5.0 \pm 0.16	334 \pm 17.1	228 \pm 20.7	35.1 \pm 1.14
Twin	4.0 \pm 0.12	250 \pm 14.2	208 \pm 17.4	29.0 \pm 0.95
Triplet	3.0 \pm 0.14	224 \pm 16.8	193 \pm 19.9	26.9 \pm 1.12

The pattern of parasitic infection in lambs for the 2006 and 2007 grazing seasons is shown in Figure 1. These results show a pronounced rise in FEC in mid June and the infection which was responsible for this occurred from late May and this coincides with the low growth rate in the period from 10 to 14 weeks of age. It is evident from the results in Figure 1 that while the strategy of providing grazing area for ewes and lambs that had not been grazed by sheep in the previous season gave effective control of *Nematodirus*- at least in 2006- it cannot be relied upon to prevent a significant build up of infective larvae on herbage during the grazing season.

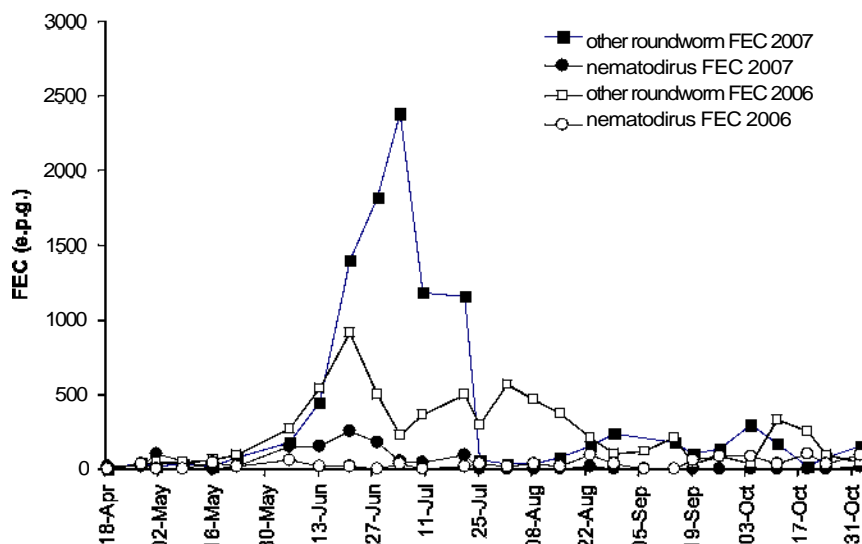


Figure 1 . Weekly faecal egg counts for lambs in the organic system at Athenry

The evidence also shows that Nematodirus was also present in early June in the 2007 season and so the adequacy of a 1-year break from sheep for the elimination of Nematodirus challenge is evidently not sufficient. The evidence also highlights the build up of challenge from “other Trichostrongyles” during the grazing season and our conclusion is that ewes should be receive an anthelmintic treatment before turnout with lambs onto pasture after lambing