

Integrated parasite control on cattle farms

This document is part of the COWS Technical Manual which aims to provide a sound basis for advice to industry.

The manual also comprises chapters on roundworms, lungworm, liver and rumen fluke and ectoparasites.



COWS is an industry initiative promoting sustainable control strategies for parasites in cattle

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Other chapters of this guide provide detailed information on the parasites encountered on beef and dairy enterprises. This section shows how these principles can be applied to some common farming scenarios.

The precise situation on every farm will be different. Farmers should seek specific advice from their vets and animal health advisers about the parasites that might be affecting their livestock.

Beef farms

Scenario 1

- A beef suckler farm with all calves born in spring at pasture
- Calves at foot are at pasture grazed by young animals in the previous season
- There is a history of lungworm, roundworms and liver fluke
- All cattle are housed in autumn
- Chewing lice are a problem throughout the herd in winter



Control plan

Spring-born calves are likely to suckle from their mothers in the early part of the grazing season rather than eating large quantities of grass. They are therefore unlikely to ingest significant numbers of *Ostertagia* larvae that have overwintered or come from older cattle. This means the peak of infective L3 larvae in July is unlikely to occur and risk of clinical ostertagiosis is low.

Faecal egg counts in late summer could be useful in determining if calves have been exposed to roundworms. If exposure was low, the calves will not have a high level of immunity next year and this should be taken into account when planning worm control then. Mothers are likely to be immune due to their age, so are at low risk.

Lungworm could be a problem later in the season. If calves are with their mothers risks are low, unless it is a high prevalence farm or has other risk factors such as buying in animals. Keep a close eye on the cattle over the summer grazing season. If there is any evidence of coughing, loss of condition or ill thrift, consider taking a diagnostic test, eg the Baermann test for L1 lungworm larvae in faeces.

There is a history of liver fluke on the farm so there is a risk of infection in both cows and calves. Infection of sufficient intensity to cause poor weight gain is likely to occur in the autumn. Carry out a blood test for fluke antibodies in first season grazing calves after housing, which will show if they have been exposed to infection. If exposure is detected and the calves have been grazing with the cows, consider treating the cows as well as calves.

The liver fluke antibody test should be carried out about one month after housing. If exposure is detected, consider using a flukicide for the whole group. Alternatively, it may be useful to conduct a composite faecal egg count for fluke, two to three months after housing. The presence of eggs shows that the liver fluke have reached adult stage and consequently products other than triclabendazole (TCBZ) can be used.

Chewing lice are often a problem in housed cattle over winter, especially in dark, humid housing with a high stocking density. If lice have been a problem in the past, or store cattle are regularly purchased, treatment of adults and calves as they come inside will help remove reservoirs of lice and prevent build-up

in the group. In closed herds, with no history of lice problems, observe the cattle for signs of skin irritation throughout the housing period and treat early if any signs become apparent.

If liver fluke or roundworm tests are positive, consider a treatment around housing. There are many products on the market in a range of formulations. Consider macrocyclic lactone (ML) for lice and roundworms. For liver fluke, TCBZ can be used around housing when there may still be immature fluke stages in the liver. Or, if there are low burdens/evidence of fluke eggs, use a product to target adult liver fluke, eg clorsulon, around Christmas time.

Know the farm's resistance status before choosing a TCBZ flukicide and seek further advice if resistance is known to be a problem.

Key points

- Calves at low risk from roundworms in early season as mainly suckling. Test and treat if necessary, later in the year
- Be vigilant for lungworm later in the grazing season
- Test for liver fluke after housing and treat as necessary
- Consider treatments for ectoparasites and arrested roundworms at housing

Beef farms

Scenario 2

- A beef suckler farm with all calves born in autumn
- Autumn-born calves going out to graze the following spring can be exposed to overwintered larvae from youngstock in the previous season
- There is a history of lungworm, roundworms and liver fluke
- All cattle are housed in autumn
- Chewing lice are a problem throughout the herd



Control plan

Autumn-born calves will probably graze as soon as they go out the following spring, so are likely to be exposed to overwintered infective L3 of *Ostertagia* and other roundworms as they graze. As they ingest these, they will develop low adult worm burdens, which will result in contamination of pasture with eggs. These will develop as temperatures increase, leading to a peak of infective L3 larvae on pasture in summer. Contrary to some assumptions, colder winters usually allow L3 larvae to survive the winter in greater numbers, leading to a higher risk in the next grazing season. However, severe frost is harmful to L3 larvae.

If the pasture the cattle are turned onto is likely to be infected, ie it has been grazed by calves the previous year, prophylactic treatment over the grazing season might be considered, such as a bolus or a macrocyclic lactone (ML). Faecal egg counts can be used to assess the worm burden in calves in early summer – six to eight weeks after turnout.

It would also be possible to check the worm egg counts from animals grazing these pastures at the end of the previous season. This would give an indication of the level of pasture contamination carried over the winter, although it is difficult to quantify risk precisely.

Lungworm must be considered a risk over summer, especially since there is a history of lungworm, or other factors such as buying-in. Calves could be vaccinated before turnout, or prophylactic treatments used to prevent infection. Vaccination must be planned and the vaccine ordered well in advance and started at least six weeks before turnout.

Treatment given for roundworm control will also be effective against lungworm. However, if farmers plan to vaccinate against lungworm, and also use anthelmintics to control roundworms, they must allow for some natural challenge with lungworm to occur, otherwise vaccination will not provide full protection in subsequent grazing seasons. Use of boluses or repeat dosing with long-acting ML products may prevent this.

There is a history of liver fluke on the farm so there is a risk of infection in calves and cows. Infection which is of sufficient intensity to affect weight gain is most likely to occur in autumn. A blood test can be used to test for fluke antibodies in first grazing calves, so farmers know if the cattle have been exposed to infection in the autumn. If exposure is detected and the calves have been grazing with the cows, consider treating the whole group. Adult cattle do not develop immunity to liver fluke as they do to roundworms, so they remain susceptible to infection.

The liver fluke antibody test should be carried out about one month after housing. If exposure is detected, consider using a flukicide for the whole group. It may also be useful to do a composite faecal egg count for fluke two to three months after housing. The presence of eggs will show that the liver fluke has reached adult stage, which means products other than triclabendazole (TCBZ) can be used.

Chewing lice are often a problem in housed cattle over winter, especially in dark, humid housing with a high stocking density. If lice have been a problem in the past, or store cattle are regularly purchased, treatment of adults and calves as they come inside will help remove reservoirs of lice and prevent build-up in the group. In closed herds, with no history of lice problems, observe the cattle for signs of skin irritation throughout the housing period and treat early if any signs become apparent.

If liver fluke or roundworm tests are positive, consider a treatment around housing. There are many products on the market in a range of formulations. Consider macrocyclic lactone (ML) for lice and roundworms. For liver fluke, TCBZ can be used around housing when there may still be immature fluke stages in the liver. Or, if there are low burdens/evidence of fluke eggs, use a product to target adult liver fluke, eg clorsulon, around Christmas time.

Know the farm's resistance status before choosing a TCBZ flukicide and seek further advice if resistance is known to be a problem.

Key points

- In autumn-born beef calves, turned out at pasture for the first time, monitor faecal egg counts for roundworms and consider treatment if egg counts increase
- Lungworm is a risk. Plan vaccination well before turnout
- In autumn, test for liver fluke exposure and treat if needed
- Consider treatments for ectoparasites and arrested roundworms at housing

Beef farms

Scenario 3

- Autumn or spring calving suckler herd, which buys in store cattle
- The store cattle run with the main herd, or on pasture recently grazed by them
- The roundworm and liver fluke status of the bought-in cattle is unknown on arrival

Control plan

Buying in any cattle presents a risk of bringing in parasites that are resistant to wormers. Resistance is common to fluke treatments containing triclabendazole (TCBZ). Macrocyclic lactone (ML) resistance is also reported in *Cooperia* and *Ostertagia* species, and lice can be resistant to synthetic pyrethroids.

When buying cattle, it is important to obtain as much information as possible about where they are from and any treatment history. Also try to obtain results of any parasite resistance tests carried out previously.

Bought-in cattle should be quarantined and tested for roundworms, lungworm and liver fluke. In practice, most farms do not have the space to hold cattle, or time to wait for diagnostic test results, before the cattle join the main group or are turned onto pasture. In this case, treat for roundworms and hold off pasture for 24 hours until the worm eggs have left the system. Then turn out onto pasture that has been previously grazed by cattle. This will dilute any resistant worms that have survived treatment.

If the cattle are to be turned straight out, and nothing is known about the farm of origin because they were bought through a market, consider an ML treatment to prevent bringing lungworm onto the farm. In cases where roundworm resistance is suspected talk to the vet.

If cattle are housed after purchase because of the season or management practice, carry out a faecal



egg count test before deciding whether to treat or not.

Also consider a treatment for liver fluke, as many farms have the mud snail intermediate host, but no actual fluke. Preventing the importation of liver fluke onto the farm is very important, as bought-in cattle could cause infection in the snails, with subsequent liver fluke problems for all the cattle on the farm.

It is also very important that TCBZ-resistant liver fluke are not brought in with purchased cattle. Consider treating with a fluke product that does NOT contain TCBZ.

Key points

- Bought-in cattle present a risk of bringing in parasites, some of which may be resistant. Obtain as much information from the seller as possible
- Follow quarantine guidelines for purchased animals
- If purchased livestock is turned out immediately, take faecal egg counts to check for roundworms, consider ML treatment for lungworm and a fluke treatment that does not contain TCBZ. Seek advice from a vet where resistance is known

Dairy farms

Scenario 4

- Milking cows housed in winter. Grazing all summer
- Weaned calves and youngstock are turned out onto pasture on the same farm in the spring
- Roundworms, lungworm and liver fluke are known to be present

Control plan

Most dairy herds will have first season grazing (FSG) calves, second season grazers (SSG) and milking and dry cows. Each group can be considered differently.

FSG calves are normally set-stocked and are highly susceptible to roundworms, lungworm and liver fluke, so an integrated plan is needed.

Traditionally, calves are given anthelmintic cover early in the grazing season to control egg output from mature roundworms which were picked as overwintered L3 larvae. By mid-June, overwintered roundworm larvae will have died off, but there is still a risk of lungworm, the scale of which is harder to predict. There is also a risk of liver fluke infection later in the season.

1. FSG calves on a farm with limited pasture

If the fields have been used in previous years for FSG calves, but no other stock was ever grazed there, it is important to know how contaminated the pasture is.

If anthelmintics have been given routinely in the past, it can be assumed that the pasture carries a low worm burden. Monitor faecal egg counts in calves monthly and treat if the results increase above 200 eggs per gram (epg). If silage aftermath becomes available, consider moving calves there to avoid the peak of L3 larvae on pasture in July. Do not treat the calves before they are moved as this can encourage build up of resistance. Instead, if treatment is required, administer a few days before or a few days after the move.

Be aware of the farm's history for lungworm and consider vaccination before turnout.

Use blood samples to test calves for liver fluke in the autumn and treat if positive.

Consider a treatment for arrested roundworm



L4 larvae at housing, as these could cause type II ostertagiosis on their emergence. Remember to change the active ingredient for autumn treatment each year. Check the product data sheet carefully, as not all products carry a claim for arrested larvae.

2. FSG calves on farms with extensive pastures

Rotate the pasture used for calf turnout, eg use other stock such as sheep or horses or crops/silage. Pasture not used for cattle in the previous year can be considered 'clean' and there is no risk of roundworms.

Later in the summer, 'safe' pasture can be used for FSG calves. Safe pasture is fields that had cows and calves grazing on it the previous year, but after June, any overwintered L3 larvae will have died, so is safe for FSG calves to graze.

Monitor the group carefully for lungworm by checking growth rates and listening for any coughing. Vaccination for lungworm before turnout is recommended.

Monitor for liver fluke. Consider a treatment for liver fluke and arrested roundworm larvae at housing.

3. SSG heifers

These should have been exposed to low level roundworm infections during their first grazing season, so will have some immunity. Use faecal egg counts to assess if heifers have been exposed. Counts taken around mid-summer will show if infection pressure is heavy.

Vaccination against lungworm is sometimes necessary in SSG heifers, especially on farms where long-acting suppressive worming treatments were used during the first season at grass.

Monitor for liver fluke. Consider a treatment for liver fluke and arrested roundworm larvae at housing.

FSG and SSG require some exposure to roundworms to allow immunity to develop. The extent of wormer protection, especially when using ML treatment, must be balanced against this need.

4. Adult cows

The milking herd should have developed immunity in previous grazing seasons, so treatment against roundworms is not usually necessary.

Beware of lungworm. The risk depends on previous exposure. If cows were vaccinated against lungworm as youngstock, and there are no other risk factors, treatment should not be necessary. Keep an eye on milk yield, as any drop may be the first sign of lungworm infection.

Monitor liver fluke infection, especially in the autumn. Test, using a faecal egg count or individual milk or serum sample, and treat at drying off.

High levels of anti-ostertagia antibodies in bulk milk samples can indicate loss of milk yield from

roundworms. Treatment with eprinomectin can help reverse this in the short term, but control in replacement heifers should be reviewed to ensure they have sufficient opportunity to develop immunity.

If ectoparasites are an issue, use a macrocyclic lactone (ML) product at housing.

Key points

- FSG calves on farms with limited pasture are at high risk. Monitor carefully or use a season-long prophylactic programme
- Risks to FSG calves on extensive pasture farms can be minimised by using 'clean' or 'safe' pasture
- SSG heifers should have developed some immunity. Use faecal egg counts to assess exposure in mid-summer
- Consider lungworm vaccination for all youngstock
- Adult cattle should be immune to roundworms. However, lungworm immunity may be poor if the animals have had limited exposure previously
- Test all groups for liver fluke in autumn or at drying off and treat if necessary

Dairy farms

Scenario 5

- Milking cows housed in winter. Grazing all summer
- Weaned calves and youngstock are turned out onto pasture in the spring at a separate unit
- Roundworms, lungworm and liver fluke are known to be present on the home farm
- There is no evidence of lungworm at the rearing unit

Control plan

Farmers may not know what dairy calves reared away from the farm have been exposed to, or if they are bringing parasites with them when they enter the main herd. Previous treatments or vaccination history may also be unknown, but try to obtain as much detail as possible.

Follow quarantine guidelines (see Scenario 3) when the young heifers return.

Adult cows should have good immunity to roundworms, so routine treatment will not be needed.

Beware of lungworm. The risk depends on previous exposure. If cows were vaccinated against lungworm as youngstock, and there are no other risk factors, treatment should not be necessary. Keep an eye on milk yield, as any drop may be the first sign of lungworm infection.

Antibodies to lungworm can also be measured in bulk milk samples and can indicate a problem before signs become apparent.



Liver fluke is also a risk, either from the heifers coming in carrying an infection or if they acquire it from the home farm after arrival. Test heifers as they come in and take bulk tank ELISA tests monthly or quarterly to monitor exposure.

Monitor liver fluke infection, especially in the autumn. Test, using a faecal egg count or individual milk or serum sample, and treat at drying off.

Key points

- Immunity and infection status of heifers reared away from home may be unknown
- Follow quarantine guidelines when they return to the main herd
- Lungworm and liver fluke remain risks even in these older cattle