Practical parasite control on cattle farms

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

The guide also comprises chapters on controlling roundworms, lungworm, liver and rumen fluke, ectoparasites, coccidiosis and cryptosporidiosis.

COWS
Control Of Worms Sustainably

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 regarding parasitic infection and disease risk is different on every farm.

Farmers should seek specific advice from their vets, suitably qualified person (SQP) or registered animal medicines adviser (RAMA), about the parasites that might be affecting their livestock.

Beef farms
Scenario 1



- A beef suckler farm with a spring block calving herd
- Dams and calves are turned out to pasture soon after calving in March/April, depending on weather and pasture availability
- Calves may have contact with the previous season's calves during grazing
- 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

Spring-born calves will continue to suckle from their mothers throughout the early part of the grazing season, consuming only small quantities of grass in this period. This means they are unlikely to ingest significant numbers of gut roundworm larvae (eg *Ostertagia*), even if reasonable numbers have overwintered from the previous season.

Whilst the dams will consume grass and therefore infective larvae in this period, their prior exposure and immunity acquired over previous grazing seasons, mean they are unlikely to be at risk themselves. Nor will they act as a significant source of pasture contamination. Faecal worm egg counts (fWECs) in adult cattle are generally low. Consequently, pasture infectivity and disease risk is unlikely to peak significantly in early summer.

Faecal worm egg counts (fWECs) in late summer may be useful in determining if calves have been exposed to roundworms, with further routine monitoring later in the season to establish if animals are beginning to acquire significant burdens. Where available, blood sampling calves at housing for *Ostertagia* antibodies or plasma pepsinogen, can help assess the cumulative exposure at the end of the grazing season and identify groups at increased risk of Type 2 ostertagiosis.

On farms with a known history of lungworm infections, this could be a problem later in the season.

As with gut roundworms, the risk from overwintered L_3 larvae is extremely low, but it will be important to keep a close eye on the calves, particularly from mid-summer onwards. Dams are likely to be immune to infection and may further reduce exposure risk for their calves.

However, immunity of adult cattle to lungworm infection is not acquired and maintained as reliably as for gut roundworms. In particular, cattle bought-in from lungworm-free herds can be at significant risk in terms of their own health, but also as a source of risk and pasture contamination for other animals.

When monitoring at-risk groups, be vigilant for evidence of coughing or other signs of respiratory disease and distress, loss of condition or ill-thrift. Consider doing a diagnostic test, eg the Baermann Test for L_1 lungworm larvae in faeces, where there is uncertainty.

There is a risk of liver fluke infection in both calves and cows.

Infections can be carried year-round by cattle, but

are more commonly acquired from autumn through to early spring. Blood testing for fluke antibodies in first season grazing calves around one month after housing, can help show if they have been exposed to infection.

Alternatively, animals can be tested from two to three months after housing using a pooled fluke egg sedimentation test to identify patent (adult) liver fluke infection.

In either case, where infection is detected, consider treating both the cows and calves with a flukicide during the housing period.

Triclabendazole (TCBZ) can be used soon after housing if exposure has been high, to kill immature fluke stages in the liver. If there is no immediate disease issue, delaying treatment until two to three months after housing, will allow products other than TCBZ to be used effectively eg, clorsulon at the end of December.

If regularly choosing a TCBZ flukicide, take steps to test its efficacy. Seek further advice if resistance to this product is either unknown or suspected to be a problem.

Chewing lice are often a problem in housed cattle over winter, with infestation levels tending to be highest in younger stock in their first winter. Where lice have been a problem before, or new cattle are being introduced regularly, treatment at, or soon after housing, can help to reduce carryover and reinfection risk.

In closed herds where risk is lower, control is possible through regular monitoring and prompt treatments as required.

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. NB: Macrocyclic lactone (ML) products for roundworms are usually also effective against lice.

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 encysted roundworms at housing

Beef farms
Scenario 2



- A beef suckler farm with an autumn block calving herd
- Calves may have contact with the previous season's calves during grazing
- 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 graze as soon as they go out in spring, so are likely to be exposed to overwintered infective L_3 of *Ostertagia* and other gut roundworms from the outset.

If the pasture the cattle are turned onto is likely to be infected, ie it has been grazed by calves the previous year, monitoring calves using faecal worm egg counts (fWECs) can be used to assess the contamination of pasture if they are carried out in early summer – six to eight weeks after turnout.

They will initially develop light adult worm burdens,

which then re-contaminate their current pastures with fresh eggs. These will develop as temperatures increase, leading to an increase in infective L_3 in fields in the summer months. Contrary to some assumptions, cold winters can allow L_3 larvae to survive more effectively, leading to higher pasture burdens in the early part of the grazing season.

Where pasture infectivity at turnout is likely to be high and grazing options are limited, prophylactic treatment might be considered, such as a pulse-release bolus or a product with persistent activity at, or soon after turnout. However, it is important to note such heavy use of anthelmintics will increase both selection pressure for anthelmintic resistance and impact on the environment and farm ecosystems. As such, they should not be implemented routinely.

Blood sampling at housing for *Ostertagia* antibodies or plasma pepsinogen can help assess cumulative exposure at the end of the grazing season and identify groups that are at increased risk of Type 2 ostertagiosis.

Lungworm must be considered a risk over summer. 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 six weeks before turnout.

Treatment given for roundworm control will generally 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 ML products provide short-term protection within season, but can also prevent animals developing protective immunity to infection, meaning they may remain at risk in following years.

There is risk of liver fluke infection in both calves and cows.

Adult cattle do not develop immunity to liver fluke as they do to roundworms, so they remain susceptible to infection. This may be of sufficient intensity to affect performance and weight gain typically in autumn and winter.

A blood test can be used to test for fluke antibodies in first season grazing calves to identify if, and when exposure has occurred. This should be carried out around one month after housing. If exposure is detected, consider using a flukicide for the whole group. Triclabendazole can be used when risk is thought to be high and there may still be immature fluke stages present in the liver.

If the calves have been grazing with the cows, consider also treating the cows. NB: assessing adult cattle directly through antibody testing is more challenging, as the presence of antibodies in such animals can also indicate historic exposure, as well as current infection.

Alternatively, particularly if infection pressure and risk are low, composite fluke egg sedimentation or copro-antigen testing two to three months after housing, can give a clear indication of current infection for both calves and adult cows. These will also show whether the liver fluke have reached adult stage and treatments other than TCBZ can be used, eg Clorsulon, at the end of December.

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

Chewing lice are often a problem in housed cattle over winter, with infestation levels tending to be highest in younger stock in their first winter. Where lice have been a problem before, or new cattle are being introduced regularly, treatment at, or soon after housing, can help to reduce carryover and reinfection risk.

In closed herds where risk is lower, control is possible through regular monitoring and prompt treatments as required.

If liver fluke or roundworm tests are positive, a dual-active treatment around housing can be used. There are many products on the market in a range of formulations. NB: Macrocyclic lactone (ML) products for roundworms are usually also effective against lice.

Key points

- In autumn-born beef calves, monitor fWECs 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 encysted roundworms at housing

Beef farms
Scenario 3



- Beef suckler herd
- Store cattle run with the main herd, or on pastures 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 and/or anthelmintic resistance onto the farm, particularly liver fluke and lungworm.

Where a farm is currently free of these parasites, appropriate quarantine can help retain this status. Whilst gut roundworms are present in all grazing herds, resistance varies, making this an important consideration. Drug resistance has been reported in the UK for liver fluke, lungworms and lice.

When buying cattle, obtain as much information as possible about where they are from and any disease and treatment history. Avoiding purchase of animals from herds with unknown disease and resistance status, will significantly reduce the risks.

Bought-in cattle should be quarantined on arrival and ideally tested for roundworms, lungworm and liver fluke. They should only be turned out once their status is known and treatment efficacy has been confirmed.

If cattle are housed after purchase because of the season or management practice, faecal worm egg counts (fWECs) or other appropriate diagnostic testing can, and should be performed to decide whether to treat or not. These should be carried out again before spring turnout to establish whether or not these treatments have been effective.

However, many farms do not have the space or time to hold cattle while waiting for diagnostic test results. While less than ideal, steps can still be taken to try and reduce the risks.

If bought-in cattle are to be turned straight out, and nothing is known about the farm of origin, eg they were purchased at market, consider treatments to clear out existing parasite burdens, including gut roundworms, lung worms and liver fluke. NB: this will not prevent the introduction of parasites that are resistant to the products used.

In the case of liver fluke, consider treating with a product that does NOT contain TCBZ, to ensure TCBZ-resistant parasites are not introduced. This may require delaying fluke treatment for a few weeks until fluke burdens are mature enough to be treated effectively with a different product, eg clorsulon or albendazole. In the meantime, where animals are at pasture, it is essential they do not graze pastures with snail habitats to prevent the life cycle progressing on the farm.

Where possible, purchased animals could be placed in pastures grazed previously by the home herd. This will also allow them to become infected with the parasite populations (*in refugia*) already present on the farm, diluting the impact of any worms that may have survived the quarantine treatments.

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
- Implement quarantine measures for purchased animals
- If purchased livestock must be turned out immediately, perform fWECs and treat for possible parasite risks, before placing them on pasture grazed previously by the home herd

Dairy farms
Scenario 4



- Milking cows housed in winter. Grazing all summer
- Weaned calves and youngstock are turned out onto pasture 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 should be considered differently.

First season grazing calves are highly susceptible to roundworms, lungworm and liver fluke infections, so an integrated plan is needed. Commonly, such animals are given anthelmintics strategically from early in the grazing season, to control egg output following infections with overwintered parasitic gastroenteritis-causing L_3 larvae.

By mid-June, most of the overwintered larvae will have died, but the risk of lungworm and liver fluke remain.

FSG calves on a farm with limited pasture

If the fields have been used in previous years for FSG or SSG calves, overwintered larval populations may be moderate to high. Pasture grazed by adult cattle will pose a lower infection risk but remain a source of infection. New-sown leys and/or pastures not grazed in the previous season, are largely clean and low risk. Sheep grazed on tack, can also reduce pasture contamination for roundworms, but may increase liver fluke risk.

Monitoring faecal worm egg counts (fWECs) on a monthly basis from early in the season, will help establish infection rates and trends in worm burdens. Studies show that average fWECs of 200 eggs per gram (epg) or less in FSGs at two months post turn-out, suggest relatively light burdens at this stage of the season. This value has been proposed as a possible threshold for targeted treatment strategies in youngstock.

Where treatments are indicated, do not dose the calves at the same time they are moved, as this can encourage build-up of resistance. Instead, if a treatment is required, administer it several days before, if using a product with no persistent activity, or several days after the move, where long-acting ML products are used.

Where silage aftermath becomes available in the latter part of the grazing season, consider moving calves here to break the cycle of egg shedding and subsequent build-up of pasture infectivity.

Be aware of the farm's history for lungworm. Consider vaccination before turnout and think about how anthelmintic dosing might impact control of this parasite, in terms of disease protection and the build-up of immunity.

Use blood samples to test calves for liver fluke antibodies in the autumn or at housing and only treat if positive.

Consider additional testing for *Ostertagia* infection either by blood antibody ELISA or plasma pepsinogen around housing.

Also consider a treatment for arrested roundworm L_4 larvae at housing to reduce the risk of Type 2 ostertagiosis. Remember to change the active ingredients in treatments regularly, for example using benzimidazoles or levamisole in summer and MLs in autumn. NB: check the product data sheet carefully, as not all products carry a claim for arrested larvae.

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' pastures such as silage or hay aftermaths, can be used for FSG calves. These include pastures that may have been grazed by calves in the previous year, but from June onwards any overwintered L_3 larvae will have died, so is safe for FSG calves to graze.

Monitor the group carefully for lungworm by regular checking for any coughing and/or other respiratory or production related effects. Vaccination for lungworm before turnout is recommended.

Monitor for liver fluke through blood antibody testing at or around housing and consider testing for and treatment of arrested L_4 roundworm larvae.

SSG heifers

These animals should have been exposed to roundworm infections during their first grazing season, so will have developed some immunity.

Lungworm may still be a risk for SSG heifers, especially on farms where long-acting ML worming treatments were used in their first grazing season, as this will have limited their exposure and ability to develop their own protective immunity.

Monitoring for liver fluke in SSG animals by copro-antigen ELISA or fluke egg sedimentation tests will be more effective than blood antibody testing, particularly two to three months post housing.

Where animals have picked up low levels of roundworm burdens over the first two grazing seasons, a good degree of immunity will develop, meaning the risk of Type 2 ostertagiosis will be significantly lower than for FSG calves.

Adult cows

The milking herd and dry cows should have developed a fully deveoped immunity from 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. Bought-in cattle from farms with no lungworm history, could be at higher risk.

Liver fluke infection will continue to affect adult cows. Monitoring herd-level infection status by bulk tank milk antibody ELISA, can be a useful screening tool. Testing individual animals by fluke egg sedimentation or blood antibody testing, can be used to inform whether treatment over the dry period is required. NB: many flukicide products are not licensed for use in lactating cattle. This means the dry period is a good opportunity to test and treat if needed.

Always check the product data sheets and adhere to withdrawal periods as stated..

If ectoparasites, such as chorioptic mange are an issue, macrocyclic lactone (ML) pour-on products may be beneficial applied 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 fWECs to assess exposure in mid-summer
- Consider lungworm risk 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 and treat appropriately

Dairy farms
Scenario 5



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

Farmers may not know what dairy calves reared away from the farm have been exposed to, or if they are bringing parasites and/or resistance with them when they enter the main herd. Therefore, follow quarantine guidelines (see Scenario 3) when the young heifers return.

Adult cows develop good immunity to roundworms, so routine treatment should not be needed in the miking herd.

Whilst there is no history of lungworm where the heifers are reared, it is important to remain vigilant where biosecurity and/or status is uncertain. This is especially true where animals are sent to heifer rearing units with animals from multiple other holdings. It is important to consider whether the heifers might bring lungworm back to the home herd.

Ideally this will be handled through strict quarantine procedures. Use of a long-acting ML product should be effective, provided resistance is not an issue. It is important to bear in mind that for a herd where lungworm is not present, all animals, including adults will be at risk from disease.

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. Testing heifers as they return, using a copro-antigen test or fluke egg sedimentation test and taking bulk tank ELISA tests monthly or quarterly to monitor herd exposure, can help establish status and ongoing risk.

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 potential risks even in older cattle