Livestock matters

ISSUE 51
SUMMER 2019

Taking action against parasites

Control strategies for liver fluke and dog tapeworms

Coccidiosis control in calves

Benefits of diagnostic testing and a holistic approach

Active BVD surveillance needed

Routine monitoring flags up disease entry

New direction for suckler herd

Changes in genetics and management to boost output

Preventing bulk tank failures

Training course improves knowledge on medicine use

XL Vets Farm

Welcome to the Summer issue of Livestock Matters

Rachel Queenborough

the editor

This summer may turn out to be just as wet as the spring, but at least it should be warmer! But warm weather, and especially warm wet weather, is great for parasites.

The protozoan parasite coccidia thrives in warm weather and cases of coccidiosis in dairy calves tend to rise in the summer. Mud snails also come out of hibernation, enabling liver fluke to complete their lifecycle and infect sheep and cattle.

In this issue we focus on the control strategies needed to protect livestock health and performance, as well as farm incomes.

Liver fluke is not the only parasite risk to carcase quality: Jules Rottenbury and Mike Glover of Torch Farm & Equine Vets explain how failing to treat dogs for tapeworm can also negatively impact on carcase sales.

Regardless of season or weather, beef and dairy farmers need to stay vigilant on keeping BVD out of their herds. Active surveillance averted a BVD disaster for one dairy farming client of Paragon Veterinary Group.

Vigilance is also important when it comes to antibiotic treatments. Shepton Vets is one of several XLVets practices that have been providing training to dairy farmers and their staff on medicines usage and mastitis control. Andy Tyrer reports on how a better understanding has led to a drop in bulk tank failures, and outlines the issues around off-label product use.

We hope you enjoy this issue of Livestock Matters.

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Summer Edition 2019

XLVets is a collaborative group of over 450 farm vets with dedicated support teams, who endeavour to be nationally recognised as the 'quality mark' for livestock veterinary services.

Learn more...

Take a holistic approach to preventing coccidiosis in dairy calves

FriarsMoor Livestock Health

Preventing and treating coccidiosis in calves requires a holistic approach which will include reducing the coccidial disease challenge, boosting calf immunity and nutritional health, and if necessary, strategic use of a coccidiostat or coccidiocide.

Lucy Hepworth
Friars Moor
Livestock Health

John Walsh
Friars Moor
Livestock Health

"Last summer we saw coccidiosis breakdowns on several farms," says vet Lucy Hepworth of Friars Moor Livestock Health. "What's more these farms had previously had good control of the disease using an in-feed coccidiostat. All the cases occurred after weaning: calves developed bloody diarrhoea, and some died.

"By identifying the particular species of coccidiosis on the farms we were able to advise on appropriate medicinal treatment and timing – but attention to good health and environmental hygiene was an essential part of the remedy."

About coccidiosis

Coccidiosis is the condition caused by infection with coccidia – a single celled protozoa which is not affected by antibiotics or vaccines. It infects the lining of the intestines, stunting the villi and affecting absorption of nutrients and water.

Coccidiosis can occur in calves between 4 weeks and 6 months of age and tends to occur around weaning. Infections can be acute, chronic, or sub-clinical.

In acute cases, bloody diarrhoea is seen with animals straining to pass dung and becoming dehydrated. Death can follow.

Chronically affected animals have poor coat hair, pasty dung and poor growth. Sub-clinical cases will appear normal, but the infection limits the animal's growth and future performance potential.

Lucy explains: "The only way to kill coccidia is to use a coccidiocidal drench; these are active in the small and large intestine. Alternatively, an in-feed coccidiostat – decoquinate – which is only active in the small intestine can be used to suppress the infection.

Step 1: Identify the coccidia

"In cattle, there are 13 different species of coccidia, but only three are pathogenic: *Eimeria bovis*, *Eimeria zuernii* and *Eimeria alabamensis*. It is helpful to know which species is present so that prevention measures can be targeted correctly.

"Every farm is different, and coccidiosis can strike at different times of calves' lives," explains Lucy.

"For instance, calves may develop diarrhoea when turned out to pasture. If *E.alabamensis* is identified then changes to pasture management are needed, but if *E.bovis* is the cause then this originated in the shed and the disinfection protocol needs improving.

"To assess whether coccidia are present, we can carry out faecal oocysts counts. Farmers need to collect faecal samples directly from the rectum of 10 animals. These should be kept cool and ideally submitted to the vet practice on the same day where they will be pooled.

"Scouring can happen before coccidial oocysts are shed, and also continue after shedding has ceased. By pooling samples taken from scouring and non-scouring animals, there is more chance of finding the evidence.

"We carry out faecal oocyst counts in our lab here at Friars Moor, and then send samples away for speciation. From this information we will know the length of its lifecycle and hence be able to target preventative measures."

Faecal oocyst counting

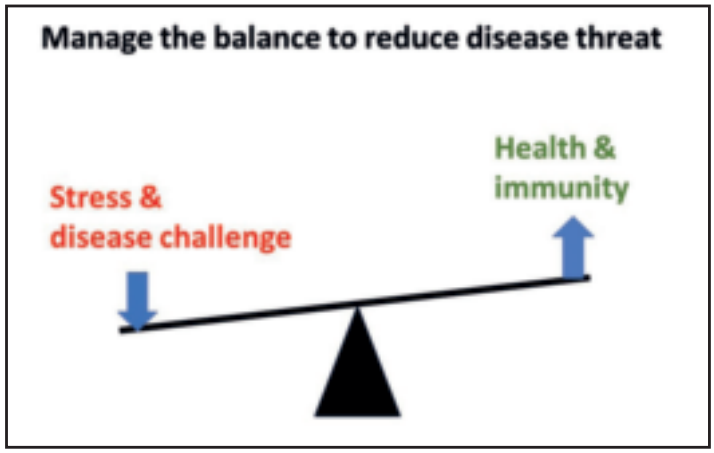
Step 2: Take a holistic approach

But prevention and control of coccidiosis requires more than medicinal treatment.

Lucy advises: "The management of calves and their environment is also important. The better the health and immunity of any animal, the better it can withstand disease challenges and the effects of stress on health.

"Good colostrum protocols and nutrition will boost immunity and make calves more resilient."

Factors which will reduce stress and disease challenge are shown below.



Reducing stress

- A good weaning protocol – gradual reduction in daily milk intakes, and calves eating at least 2kg of concentrate/day. Fresh concentrates fed. Clean water.
- Reduce changes in social groupings
- Disbud calves well before weaning
- Ensure pneumonia prevention in place if needed
- Ensure enough feed space once weaned
- Care with stocking rate

Reducing disease challenge

- Keep calving area clean and dry
- Raise calf troughs off floor to prevent contamination with dung
- Check correct disinfectant used at correct concentration and contact time
- All-in all-out system
- If calving all year round, give the shed a break for one month: find somewhere else to rear calves
- Care with stocking rate

In-feed coccidiostat control

Using an in-feed coccidiostat (decoquinate) is a convenient way for many farms to prevent coccidiosis. A veterinary prescription is needed to medicate a feed, and farmers can benefit from discussing their intended feeding regime with their vet.

Lucy explains: "First of all, for efficacy, calves need to eat a certain amount of medicated feed every day. There are two rates commonly used – a preventative rate and a treatment rate.

"Decoquinate acts on coccidia in the small intestine, but if a calf already has a coccidial infection which has reached the large intestine, then in-feed medication won't be very effective.

"Some calves are fed from birth – but this is too early. It delays exposure until they stop receiving the feed and then we see chronic cases because they have no immunity.

"Calves need to start receiving decoquinate in their feed about one week before they are going to encounter coccidial challenge. Ideally, it should only be fed in-feed for one month.

"In order not to blanket feed calves for longer than a month, farmers will need to provide some starter pellets with medication, and some without. This won't be practical on some farms, and money will be being spent on medication that isn't needed. There is also the possibility of resistance to decoquinate developing – as has happened in pigs and poultry.

"So in some cases, drenching with a coccidiocide will be more effective, and also cheaper in the long run."

Case study: Keeping coccidiosis under control

"It's not always the worst farms that get coccidiosis," explains Lucy. "It can be very clean units…as was the case with the dairy calves at Leweston Farm, near Sherborne.

"Despite a comprehensive protocol for the management of young calves, and good hygiene on the farm, this was one of the farms which had cases of coccidiosis last summer."

John Walsh is a part-time vet at Friars Moor Livestock Health, and works part-time at this farm where he is responsible for all the veterinary work.

Good calf care

The herd calves all year round. Newborn calves are given 4 litres of thawed pasteurised colostrum as soon as possible after birth, with another 4 litres given as their second feed. They are moved out of the calving area and into individual pens in the calf shed as soon as possible.

John explains: "The calf shed was built several years ago, and the system here is designed to ensure good hygiene. *Cryptosporidia* had been a problem in the past, but never coccidiosis."

On John's advice, the weaning age has been increased from 8 to 10 weeks to encourage better liveweight gains at weaning. Calves are fed 6 litres twice daily for the first 7 weeks and then drop to once a day feeding of 3 litres.

"Calves are fed starter pellets twice a day, 1kg in the morning and 1kg in the afternoon so there is always fresh food in front of them. Once they are eating 2kg/day they are ready for weaning.

"Once weaned they are housed in small groups in an open-fronted shed. But to avoid stress, they are not moved until a week or so after weaning. Similarly disbudding is not carried out close to weaning."

However, despite this attention to detail, last summer several calves in the group shed developed diarrhoea 4 weeks post-weaning, and one 3-month old calf died.

The individual pens, once empty, are dismantled and power-washed down. Next, each pen is steam-cleaned and disinfected with a product chosen for its effectiveness against protozoa

Investigations

John explains: "It was the smallest and youngest calf that died. Post-mortem showed a very high oocyst count of 43,000 eggs/g.

"Calves were already receiving decoquinate in the feed. But maybe this calf wasn't eating sufficient quantity or there was too much disease challenge.

"We needed to pinpoint when exposure to coccidia had occurred so that we could target preventative measures. Coccidiosis counts were carried out on a weekly basis from each grouping of animals – the young calves on milk, the post-weaning group, and older groups in other sheds. For each group I pooled faeces from 6-10 calves to do this.

"We found that oocysts began occurring in faeces of calves in the open-fronted shed about two weeks after they had moved there.

"Speciation revealed *Eimeria bovis* was the pathogenic strain present. This is mainly found in the large intestine – an area not targeted by the in-feed coccidiostat."

New protocol

A new management protocol has been instigated. John explains: "There are no changes to early calf management and weaning. In-feed medication has ceased. Instead, once calves have been in the group shed for two weeks, they are drenched with a coccidiocide.

"This delay in treatment is important. Calves need to have had time to become infected with some coccidia so they start to develop immunity to the parasite. If they were drenched at weaning, then they wouldn't get that immunity, and be liable to developing acute coccidiosis once medication ceased.

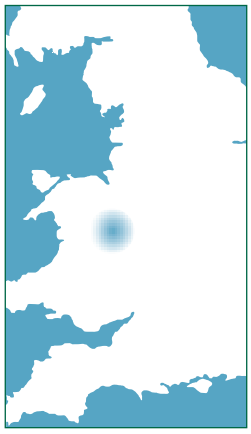
"We believe there was a high burden of infection in the open-fronted shed which was never rested, and so never disinfected. Calves also used to be fed from troughs on the floor. So now troughs have been raised, and a cleaning protocol introduced."

Lucy adds: "Even the best farms with good hygiene protocols can have coccidiosis cases. And because warm weather is needed for part of the lifecycle, there's always an increase in cases of coccidiosis in the summer months."

Lucy and John are advising farmers to talk to their vet if they see changes in calves' dung consistency, diarrhoea, or see/suspect growth rates have fallen. Scour seen after weaning may not be a nutritional effect, it could be coccidial disease.

Know when it's time to treat for liver fluke and **protect flukicide efficacies**

SHROPSHIRE FARM VETS
stand out from the herd



John Hemingway
Shropshire Farm Vets

In the treatment of liver fluke, only the active ingredient triclabendazole can kill all the life stages of the parasite. But in some parts of the country there is now firm evidence that resistance to this flukicide has developed.

Vet John Hemingway of Shropshire Farm Vets warns: "If we get really widespread resistance to triclabendazole then it puts us in a very difficult position. From a treatment perspective, there will be far less we can do to prevent the substantial damages caused by fluke: liver condemnation in abattoirs, lamb deaths in acute cases, and loss of performance in chronically affected sheep and cattle.

"So to preserve the efficacy of all flukicides, but in particular triclabendazole, it's imperative that treatments are only given when needed, and that products are selected and used strategically."

Fluke lifecycle

Liver fluke is endemic through the UK; it is present in wildlife such as deer and rabbits as well as farmed livestock. The lifecycle of the liver fluke is complex; it can be divided into two main stages:

1) **Outside the animal:** Fluke eggs in the environment hatch and the parasite seeks out and infects the mud snail where it matures into the next stage of its lifecycle. It then leaves the snail, multiplies and matures, and forms cysts which can get eaten by grazing animals. This part of the lifecycle can take from 5 weeks to several months depending on conditions.

2) **Inside the animal:** Once ingested, the parasite moves through the gut until it reaches the small intestine. It then burrows through the intestinal wall and out into the body cavity and then goes into the liver. By now they are visible to the naked eye – a flat leaf-shaped worm growing to 3cm in length. (See figure). The fluke eat their way through the tissue of the liver, causing bleeding and extensive damage. Eventually, they reach the bile ducts and gall bladder. Now adults, they lay eggs which are carried to the gut in the bile and excreted in the faeces. This part of the lifecycle – from ingestion to excretion – typically takes 10-12 weeks.

Adult liver fluke grow to a length of 3cm

John explains: "In lambs, acute cases of fluke infection – acute fascioliasis – result in poor growing lambs and deaths, while more chronic cases result in liver condemnations at the abattoir."

Fluke risk factors

The fluke's lifecycle is dependent on the presence of mud snails. Thus infection risk begins each year when they come out of hibernation and conditions are warm and wet.

John explains: "The severity of the fluke burden in a given year is dependent on a combination of temperature, weather and the immediate environment. Theoretically, we might expect South West England and Wales to be the first areas to develop a liver fluke risk, and then for the risk to spread north as the country warms up.

"However, every farm has its own micro-environment, micro-climate, and stocking density. These farm factors also influence the advent of the risk and the level of fluke challenge.

"So fluke treatments cannot be scheduled into a diary. Instead, it's best practice to test first and assess the risk, treatment may not always be needed immediately."

The time to administer fluke treatments will vary from farm to farm, and year to year

Testing for fluke

"There are several ways of diagnosing the presence of fluke. Farmers should ask for liver reports from abattoirs. Fluke are also easy to spot in post-mortems.

"Fluke eggs can be detected in a faecal sedimentation test – a different test from the standard worm egg count. But eggs will only appear once the animal has been infected for 10-12 weeks, as in sheep or cattle with chronic infection. So it's not usually relevant for lamb investigations.

"There is now a blood test for fluke which is very accurate and relatively cheap – around £50 to test six animals. It detects the presence of antibodies raised when an animal has encountered fluke – when this has happened, it's known as 'seroconversion'. It can detect the presence of fluke from about 2 weeks after infection.

"There is also a faecal coproantigen test which gives comparable accuracy to the blood test and works out even cheaper as farmers can collect the samples themselves instead of needing a vet."

Flukicide options

John explains: "Resistance to flukicides has arisen because people are treating non-specifically: under-dosing or dosing when it's not needed.

"There are five chemical groups which kill different stages of the liver fluke, with only triclabendazole killing all of them." See table below.

"Cattle are less likely to die of liver fluke, simply because they have larger livers. However, they are more likely to develop a chronic infection – chronic fascioliasis. This can also occur in adult sheep. It arises following an initial exposure to immature fluke which are now living their adult stage in the bile ducts and gall bladder. A classic sign of infection is 'bottle jaw' – fluid collection under the jaw, and performance is reduced. It can be treated for with any product which kills adult fluke.

"Similarly, where animals have been housed for at least 10 weeks, there won't be any immature fluke present in their systems. This again is the time to use a different flukicide to the triclabendazole one you have probably been using earlier in the year."

Effectiveness of active ingredients in killing different stages of liver fluke lifecycle

Active ingredient	Early immature stage	Late immature stage	Adult fluke
Triclabendazole	✓	✓	✓
Closantel		✓	✓
Nitroxynil		✓	✓
Oxyclozanide			✓
Albendazole			✓

Reducing risk

There are a number of management practices that can help reduce liver fluke risk, largely through reducing exposure to mud snails. These include improving land drainage, removing soil compaction to reduce standing water and wet ground, and fencing off watercourses.

"Also, plan grazings: avoid putting lambs on wet pasture or fields known to have high fluke risk," adds John.

A triclabendazole flukicide should never be the only type of flukicide used through the year

Farm Fluke Sentinel Project

This year, XLVet practices are collaborating in a project which will track the threat of liver fluke as the country warms up and mud snails play host to this parasite.

Each month, from July until September, a vet from each of the practices will take blood samples from a group of lambs on a farm where liver fluke is known to be an issue. If lambs encounter liver fluke, they will 'seroconvert'.

John explains: "These farms are acting as disease sentinels, alerting us to the presence of liver fluke on that farm."

He stresses: "If the lambs tested on a farm near you have seroconverted, this does not mean that you need to start treating your own livestock because the micro-environment and conditions between farms, even neighbouring ones, differ.

"However it does mean that it's time to seek advice from your SQP or vet.

"Ideally, blood tests or faecal egg counts should be carried out on your own stock to provide the evidence on which treatment advice can be based.

"And it may be that even with a positive test result, you are advised to wait for a while before treating livestock, as part of a strategic control plan.

"Of course, at this point we have no idea whether we'll have a dry summer and no lambs will seroconvert, or whether it will be so wet that the risk of fluke will be high everywhere within a few months.

"Either way, this project will track the advent of liver fluke risk on 31 farms across the UK, in this one season.

"We hope this will encourage farmers to have their livestock tested to assess their risk before reaching for the fluke treatment, and to seek professional advice on selecting an appropriate flukicide."

The locations of the participating XLVets practices are marked on the map below

When a farm's lambs test positive for seroconversion, this result will be shown on a map on the website flukesentinel.co.uk. The latest results and comments will also be tweeted – follow @XLVets, or search for #flukesentinel.

John adds: "On behalf of all the practices involved in this sentinel project, we'd like to thank the farmers who are giving their time and support, gathering their lambs for us to test."

The locations of the XLVets practices taking part in the Fluke Sentinel Project

Norbrook

The costs of the testing are kindly being sponsored by Norbrook.

Protecting lamb carcase sales….
with a worming programme for the dogs!

TORCH VETS

An effective worm control programme is important not just for sheep and lambs, but also for dogs on a farm with access to sheep grazing. This applies to all dogs – resident, working and visiting.

Here, SQP Jules Rottenbury and vet Mike Glover of Torch Farm and Equine Vets in Devon explain the potential for financial losses when slaughter lambs become infected with *Cysticercus ovis*, the larval intermediate stage of the dog tapeworm *Taenia ovis*.

Jules Rottenbury
Torch Farm
& Equine Vets

Mike Glover
Torch Farm
& Equine Vets

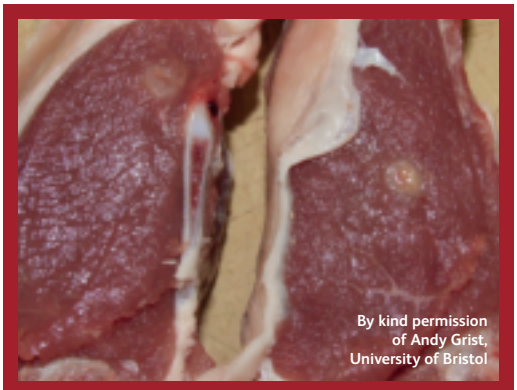
Tapeworms in dogs

Jules explains: "The dog is the final host to four species of tapeworm, for which sheep are the intermediary host. Three of them – *Taenia ovis*, *Taenia hydatigena*, and *Taenia multiceps* – can cause significant economic losses for sheep farmers and meat processors. The fourth – *Echinococcus granulosus* affects humans and is a public health issue.

"Taking *Taenia ovis* as the example: the adult stage of this tapeworm resides in the intestines of the dog where it produces large numbers of eggs in segments which are excreted daily in faeces.

"If tapeworms are not effectively controlled then these eggs may be deposited on grazing land and ingested by sheep. Eggs form into larvae which travel to the heart, the diaphragm and other hard-working muscles. Once there, they form fluid-filled sacs that harden to form cysts visible to the naked eye; a condition which is known as 'sheep measles' and referred to in slaughterhouse feedback as *'C.ovis'*.

"The presence of numerous *C.ovis* cysts in a lamb carcase at slaughter may make it unfit for human consumption and result in condemnation of the whole carcase."



In 2015, *Cysticercus ovis* cysts in muscle were found in 57,500 sheep/lambs.

Jules explains: "Sheep wormers are not effective against dog tapeworm larvae in sheep tissues. Once a group of lambs has been infected with *C.ovis* larvae there's nothing that can be done; there is currently no treatment available for this stage of the parasite.

"Tapeworm eggs can survive for up to 6 months on contaminated pasture, potentially leaving large number of grazing lambs vulnerable to infection over a long period. The key to control is preventing pastures from becoming contaminated with tapeworm eggs by dogs."

Targeted worming programme

"If *C.ovis* is present on a farm then it's essential that dogs are wormed regularly, and frequently enough, to break the tapeworm's lifecycle. And it's important that all the dogs visiting the farm are wormed, even granny's Yorkie!"

At Torch Vets, Jules has developed a worming programme specifically for farm dogs, she explains: "The working dog control scheme is sheep-focused and primarily aimed at controlling adult tapeworms in dogs to prevent spread of eggs onto pasture.

"The worming programme includes tablets containing praziquantel, the only active ingredient that effectively treats the adult stage of all dog tapeworms.

"When the interval between worming treatments extends beyond 5 weeks there is a risk that if a dog has scavenged on an infected sheep carcase then cysts will hatch and become egg-laying adult tapeworms. So in devising the worming scheme, we opted for a once a month treatment on the basis that this is easier to remember, and treatment dates can be marked on the calendar.

"Preventing dogs from scavenging sheep carcases by disposing of them quickly and controlling dogs when they are not working are key parts of an effective control scheme."

Lapse in worming routine results in a 'sheep measles' *(C.ovis)* outbreak

"Just two years ago, a lapse in a worming routine on a farm triggered a significant outbreak of sheep measles with serious consequences for one farm client," explains Mike.

"The family were aware that *C.ovis* was present on the farm and so the sheepdogs were being wormed every 5 weeks with tablets containing praziquantel. The family were also taking care to put dead sheep in a shed out of reach of the dogs before collection by a fallen stock scheme contractor.

"However, in the autumn, at least one of the dogs found and scavenged a sheep carcase. This unfortunately coincided with a lapse in the worming programme leaving a period for tapeworms to develop to egg-laying adults.

"In early January, when a batch of 250 lambs was sent to the abattoir, numerous *C.ovis* tapeworm cysts were found in the muscles of 30 carcases rendering them unfit for human consumption.

"There'd been no issues with lambs slaughtered previously that year, but from January onwards around 10% of every batch of lambs was found to be infected with tapeworm cysts. In all, 141 lambs were condemned that year equating to a financial loss of over £11,000.

"Investigations were carried out. By analysing faeces samples from the farm's dogs, it was possible to identify them as the source of tapeworm eggs and then work out how they had got access to sheep carcases.

"One or more of the dogs had scavenged on a carcase during a period of time coinciding with a missed treatment allowing *C.ovis* cysts to complete their lifecycle to adult tapeworms.

"The situation was made worse by the fact that lambs were being fed in troughs across several fields. The first affected batch of carcases was from lambs kept in the first field that the farmer and his working dogs went to each day. This was where the dogs jumped out of the truck and 'unloaded' first thing in the morning!

"Consequently, that pasture where lambs were grazing had become heavily seeded with tapeworm eggs.

"There was nothing that could be done for affected lambs that season. But nowadays, the dogs are on our Torch worming programme with monthly treatments which are easier to remember to do. There is continued vigilance about keeping dogs away from carcases, and as an extra precaution the sheepdogs are now given a run around the yard where they defaecate before going into the fields grazed by sheep."

Key control points

- Dispose of sheep carcases rapidly and keep dogs under control when not working to prevent scavenging
- Treat all dogs on the farm monthly (at <5wk intervals) with a product containing praziquantel
- Ensure visiting dogs and hounds with access to pasture are also treated monthly with praziquantel as they can bring the infection onto grassland.
- Dog walkers should pick up their dog's faeces; this is especially important for dogs being fed raw meat diets

Seek veterinary/SQP advice

Mike says: "Farm dogs, unless well controlled, will almost inevitably find carcases, and so are a higher risk than town dogs. Foxes also host the same dog tapeworms, and pose an element of risk to flocks, but are considered less important than working dogs and hounds.

"Farmers can limit risks to grazed pasture by fencing off footpaths and erecting signs raising awareness of *C.ovis* and asking dog owners to pick up after their dogs."

Jules adds: "Once sheep have been exposed to tapeworm eggs it's impossible to prevent cysts developing, putting lamb carcases at risk of condemnation at slaughter. So it is essential that preventative measures are put in place.

"As well as preventing dogs scavenging carcases, farmers should seek advice from their vet or SQP to ensure that their worming programmes provide effective control against all dog tapeworms.

"Dogs and sheep may show no obvious signs of tapeworm infestation although tapeworm segments may be seen around a dog's anus where they may cause itching and excessive grooming."

Tapeworm tablets are a bitter pill to swallow: Jules advises owners to watch their dogs to ensure that they eat all their worming tablet(s).

Active surveillance needed to ensure vaccinated herds stay BVD-free

There's more to keeping a herd BVD-free than just vaccination and biosecurity. Active ongoing surveillance is needed to ensure this highly contagious disease has not found its way back into the herd – and it can take just one small oversight in management for this to happen.

Bruce Richards
Paragon
Veterinary Group

Paul Kirkwood
Paragon
Veterinary Group

The benefits of routine monitoring for BVD are now much appreciated by Robert Pigg and his family who receive veterinary support for their dairy herd from Bruce Richards and Paul Kirkwood of Paragon Veterinary Group.

At Gaitsgill Hall, near Dalston, the Pigg family are milking 270 cows, averaging milk yields of 8,500 litres/cow. The herd has been vaccinated against BVD ever since it was re-established following Foot and Mouth Disease in 2001. It has been kept a totally closed herd for the past 10 years.

Stuart (Robert's son) explains: "We want to have a herd that's free of disease, with healthy productive animals. We know BVD can be an absolute disaster if it gets into a group of heifers."

PI hunting

In 2013, the herd started to have some fertility issues – abortions and calves not thriving.

Bruce explains: "Up until this point, we hadn't seen the need to actively hunt for PI animals. But now we started screening the abortions looking to identify the cause and testing the sickly calves.

"We blood tested one of the sick calves for the presence of BVD antigen/virus. When the results came back, the test was positive – this was a PI calf. At the same time we tested the bulk milk: this too showed the presence of BVD virus somewhere in the lactating herd.

BVD testing options

When an animal is exposed to a PI (persistently infected) animal which is shedding the virus, it becomes transiently infected and will raise antibodies to the virus. When these are detected in tests it confirms exposure to the virus.

However, the absence of BVD antibodies can mean one of two things: 1) the animal has not been exposed to the virus (nor been vaccinated against BVD), or 2) that the animal is Persistently Infected and recognises the virus as a part of itself, so does not mount an immune response.

So to identify a PI animal, it is necessary to carry out a BVD antigen test or PCR test using blood, tissue, fluids or milk. These identify the presence of the actual BVD virus. However, a positive result can occur if an animal is transiently infected, so it should always be tested again, after 3 weeks. If it is still virus-positive, it is most certainly a PI.

"Its dam – a lactating heifer – was then blood tested for BVD antigen. Her results were also positive, confirming she was a PI animal too. Both animals were culled."

Bruce explains: "Before any further blood tests were carried out, the next day another bulk milk test was done but this time the milk from the PI calf's mother was withheld. The results were negative, confirming it was unlikely that there were other PI animals in the milking herd."

A cohort of heifers was blood tested for BVD antigen. The results were negative.

Disease monitoring

This episode of events prompted Bruce to advise the Piggs to take a more proactive approach to monitoring for the disease

He advised all newborn calves be 'tag and tested': the tissue samples obtained using the special ear tags would be analysed to identify PI animals.

Using the 'Tag and Test' ear tags is a simple way of monitoring the herd to check no PI animals are being born

Stuart explains: "We did this for about three years and never had any PI calves born. Then the milk price crashed and we thought about stopping to help save costs. After all, we were vaccinating and it was a closed herd.

"But then we had a positive result come back from one heifer's calf, despite her being vaccinated!"

A blood-test to double check this three weeks later confirmed the calf was indeed a PI, and it was culled. Its dam was also antigen-tested; however, she was not a PI.

Oversight in the system

Investigations were carried out to identify how the virus had been able to infect the heifer's unborn calf.

Correctly, as per the instructions, the heifers had been given two doses of BVD vaccine, spaced four weeks apart.

Stuart explains: "Then once they'd had the second dose we would AI them as soon as they came into heat. Once served, we sent them to be outwintered on another farm. There were other cattle there, but we thought that was ok as our heifers were vaccinated."

Paul explains: "We believe the heifers were exposed to BVD on this other farm. And unbeknown to the Pigg family, they had not developed sufficient levels of protective antibodies.

"To maximise the degree of foetal protection, it's recommended that cows/heifers are not served until at least 4 weeks after the second dose of the inactivated vaccine has been given – or 3 weeks if using the single-dose modified live vaccine.

"It is important that vaccines are used in strict accordance to their datasheets; products do vary."

Paul adds: "This highlights how important the timings are in vaccination programmes. It's not just the timing of giving the vaccine, but also the time then needed for the animal to develop the antibodies – and hence immunity – to give it good protection against the disease. In the case of BVD, it is protection of the calf which is the most important. It will take longer than the typical 7-14 days that is stated for vaccines for less complex diseases than BVD."

Attention to detail

Since then, the Piggs have tightened up their vaccination programme and procedures.

"We're much stricter with our vaccination technique," says Stuart. "We used to feed the cows in troughs and then walk down behind them and quickly give them their jab.

"But we've got better handling facilities now, and the vaccine is carefully administered. Nothing gets vaccinated unless it's got a freeze-brand – we don't rely on ear tags as these can fall out.

"We'll clip them at the same time and update our records. We are taking a bit more time to make sure we do the job properly.

The date by which booster vaccinations are needed is entered into the herd's breeding diary to ensure animals stay protected

"We're definitely going to carry on tag and testing," says Stuart. "The extra £1 or so for the tag is nothing in return for peace of mind on herd health. Plus the sooner we catch a PI, the better.

"Tag and testing has added value to our beef calves at the auction. In fact, we have one suckler farmer who's had a bad experience of buying a PI calf, and only wants to buy from us. And it's a selling point for our breeding heifers – we're getting a premium price for them.

"We'll be keeping the herd closed. We've also stopped renting some land where we used to graze heifers – they could reach other cattle over the fence.

"We do send heifers off the farm to be contract-reared, but they are not only fully vaccinated, we also wait until they are 3 to 4 months in-calf to further minimise the risk of them encountering the virus and a PI animal being born."

Paul adds: "Every year we blood sample heifers to check they are negative for BVD antibody prior to vaccination – it's part of the BVDFree England scheme. It's a way of monitoring to check there's been no exposure to BVD virus in the herd.

"The experiences on this farm demonstrate the importance of carefully following the vaccination protocol, ensuring biosecurity for all animals – wherever they are being kept, and the benefits of routinely monitoring for disease."

Getting advice on **preventing bulk tank failures**

When a bulk tank collection fails the antibiotic residues test, it's a direct financial loss to the dairy farm and may threaten the security of the milk contract. For processors, it's an additional disposal cost. For consumers, it's concerning.

Andy Tyrer
Shepton
Veterinary Group

Here, vet Andy Tyrer of Shepton Veterinary Group explains why extended milk withholds are needed if administering medicines outside their prescribed use, and the benefits of taking up some training to prevent bulk tank failures.

Andy explains: "The growing sophistication of medicine residue tests, combined with higher public scrutiny of the provenance of animal products means that the dairy industry is now under even more pressure to ensure that milk leaving the farm is 'safe' for human consumption.

"Over 10% of dairy farms have at least one bulk tank antibiotic failure every year. What's more, in over half of cases investigated, the product which caused the failure was different to the one the farmer thought was responsible!

Understanding medicines

"There are many reasons why milk can fail the antibiotic residue tests; these include accidental slip-ups in the parlour, milking machine malfunctions, and lack of knowledge on medicine usage and/or milk withhold periods.

"There are now a number of industry training schemes available to give those working on farms and administering medicines a better understanding of medicine usage and consequences," explains Andy.

"The FarmSkills Mastering Medicines course, devised by XLVets, provides an overview of all the different medicine types, their mode of action and how to use them responsibly to reduce the risk of antimicrobial resistance developing.

"Another industry training course, designed specifically to help dairy farmers reduce the risk of bulk tank medicine failure, is MilkSure. It focuses on reducing the risks of accidental antibiotic contaminations occurring and highlights the difference between the 'on-label' and 'off-label' use of veterinary medicines."

MilkSure courses are delivered by vets and run in two parts: an initial training session in small groups or one-to-one which is interactive and discussion-based. This is followed by a visit to each farm where all those responsible for milking can get involved: it includes an assessment to reduce the risk of bulk tank failures and a review of all medicines used on the farm – their use, storage and disposal. A management plan is also agreed.

Benefit of knowledge

Andy has been delivering MilkSure courses to farmers supplying milk to local cheesemaker, Barbers. Under a new supply contract introduced in February 2017, every bulk tank collection is tested for antibiotic residues, and milk from all treated cows has to be tested before being let back into the bulk tank, plus all farms have had to complete MilkSure compliance training by March 2019.

Andy explains: "Now that farms are checking their treated cows, and as more and more staff attended the Milksure courses, a steady reduction was seen in the number of bulk tank failures. In fact, there's been more than a 6-fold reduction in failures!

"In my view this has come largely from farmers increasing their use of on-farm antibiotic residue tests and, through completing the MilkSure course, gaining a better understanding of how treatments should be administered and the need for responsible use of veterinary medicines. I believe this local example of farmers, the processor and vets cooperating to bring about such positive change provides a shining example for the dairy industry to follow.

Review treatment protocols

"In the past it's often been the case that farmers don't tell their vets if they've had a bulk tank failure," says Andy. "But I would encourage all farmers to spend some time discussing treatment protocols with their vet, especially if they've had a problem. We can help identify how to reduce the risks of the issue recurring.

"From an industry perspective, to minimise the opportunities for anti-microbial resistance to develop, medicines need to be used on-label as much as possible. They should only be used off-label following veterinary advice, and then the extended withholds must always be applied.

"When a mastitis antibiotic is used off-label, the milk withhold must be extended to a minimum of 7 days."

"In Scandinavia, if a cow gets mastitis, the farmer has to ring the vet to come out and administer the antibiotic. There are some organisations that are calling for a similar tight regulation on antibiotic use here in the UK. Bulk tank failure rates may be used as evidence that farmers can't be trusted with medicines. So we all – vets, processors and farmers – need to take a team approach, and work together to keep our house in order."

Check the dosing instructions on the datasheet!

Off-label/cascade use

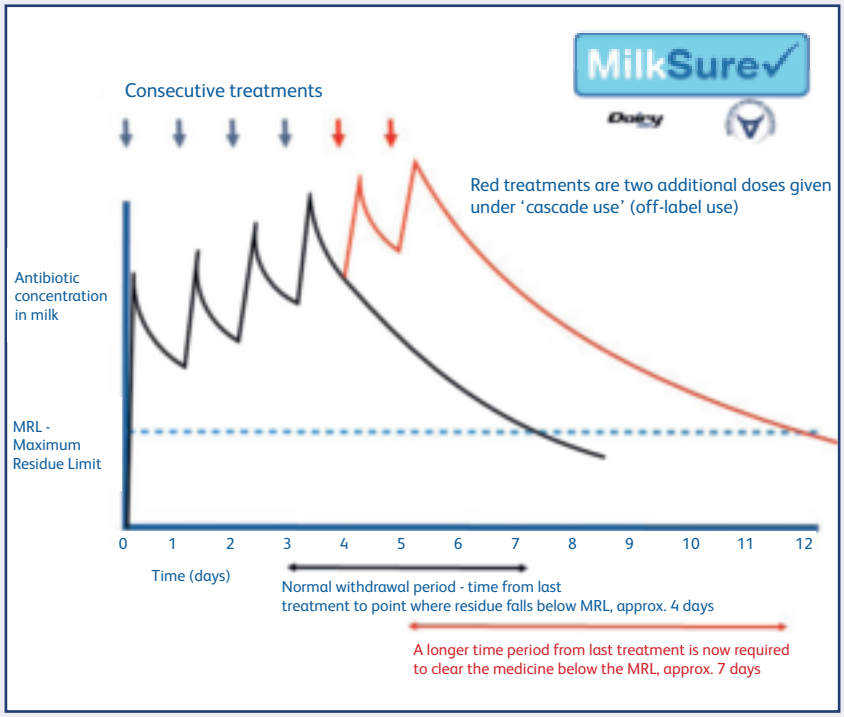
Andy explains: "If a medicine is being used in exactly the way its label/datasheet instructs with regards to dose, place of administration, number of administrations, frequency of administrations and combinations – then this is on-label use, and the milk and meat withholds on the label should be applied.

"However, if using a medicine in any way that deviates from the label – for instance, giving an injection daily for five days when the bottle says to treat for up to three days – this is off-label, also known as 'cascade' use."

Other common examples of off-label use in the treatment of mastitis are administering intramammary tubes for longer, or more frequently, than stated on the datasheet instructions; also, combining two different products that contain the same ingredient, e.g. using mastitis tubes containing penicillin at the same time as an injectable penicillin medicine.

"Whenever a medicine is used off-label, milk and meat withholds must be extended to a minimum of 7 and 28 days respectively," says Andy. (See figure below.)

"The off-label use of veterinary medicines remains relatively common on UK dairy farms. However, what many people fail to appreciate is that unless this off-label use has been advised by a vet, it is in fact, illegal. Moreover, milk and meat from an illegally treated animal is not 'fit for consumption'."



Read the datasheet!

Andy's advice to anyone involved in administering medicines on farm is: "First, read the datasheets of the medicines most commonly used on the farm. Check the dosing instructions to see if these products are being used 'off-label'. If they are, then ensure all staff recognise the implications – that at least a 7-day withhold for milk, and 28-day for meat, will be needed."

"Next, discuss this with your vet – should they be being used off-label? Review your treatment protocols."

A focus on output is taking upland suckler herd in a new direction

Milfeddygon ProStock Vets

Carmarthenshire farmer Carys Jones has been taking steps to improve the output from the family's suckler herd by changing its genetics and breeding policies. Prostock Vets' Rupert Sheppard has been providing advice and veterinary support.

Rupert Sheppard
Prostock Vets

At Carregcynffyrdd, an upland hill farm near Llandeilo, Carys Jones is farming with her grandparents Trevor and Pauline, running a 40-cow suckler herd and 550-ewe flock of improved Welsh ewes. Her father Stuart, a tractor mechanic, helps on the farm at weekends.

In 2015, after completing a degree at Harper Adams University, Carys returned to the family farm having gained new ideas on taking it forward. "The aim now is to increase the output from what we've got, rather than trying to increase livestock numbers," explains Carys.

Carys Jones and her grandfather Trevor Jones

Change of breed

Previously, the farm had run a suckler herd of dairy crossbreds of Limousin and Belgian Blue breeding. Cows were put to a Charolais bull and calves sold as stores.

"But now we are in the process of changing the herd over to the Stabiliser breed," says Carys. "We need a cow that is easy to manage: this breed is easy calving, and cows are smaller and more efficient. They're designed to do well on a forage-based system, so there's less reliance, and money spent, on bought-in concentrates.

"In 2017 we bought a Stabiliser bull and five heifers. Last year we bought another five heifers. Ultimately, we will be breeding our own replacements, as I want to have an almost closed herd to keep disease out. We will just buy in bulls from other high health herds.

"We are performance recording and selling breeding heifers, and hope in the future to be able to breed and sell bulls too."

Disease-free accreditation

Carys explains: "We have become a multiplier herd for the breed, and the terms require us to be part of a health scheme. So the whole herd has been tested for BVD, IBR and Johne's for the SAC Premium Cattle Health Scheme."

Rupert has been carrying out the blood-testing and providing advice on disease management.

Rupert explains: "After achieving BVD-free accredited status, the next goal is to achieve Johne's Risk Level 1 status. With diseases like BVD it is possible to become accredited free. By comparison, with Johne's disease, the accreditation process involves herds being assigned a risk level depending on the likelihood of Johne's being present in that herd – with R1 being the lowest Risk Level. Carys needs one more year of all negative results to achieve this – which when it happens will be a great achievement!

"The herd is possibly free of IBR: tests have shown the presence of antibodies to the disease in just one animal – a 15-year-old cow that was bought-in some time ago."

Rupert explains: "It's very possible that in the past this cow has been vaccinated against IBR. If this was the case, then she will have raised antibodies to the vaccine. This highlights the importance of keeping precise vaccine records.

"If an IBR marker vaccine had been used, then we would be able to distinguish the difference in terms of a response to the vaccine or so-called wild type IBR.

"So farmers who are thinking of entering a high health scheme should be aware of this. When buying-in cattle, they should ask if they have ever been vaccinated, and if so, what with."

To confirm there is no BVD virus on the farm, Rupert blood-tests the unvaccinated heifers each year. The whole herd is then vaccinated annually for BVD and also leptospirosis. Rupert explains: "Carys' cattle drink from natural water courses, so we are currently a bit wary of stopping the lepto vaccine."

Instead of buying another Stabiliser bull, this year's breeding heifers will be AI-ed

Breeding decisions

The first daughters of the Stabiliser bull are now ready for breeding. Carys explains: "Our bull is in the top 5% of EBVs for its breed and will be expensive to replace. We don't want to buy another bull, so this year we will be AI-ing nine pure Stabiliser and first-cross heifers."

Rupert has been involved in assessing the suitability of the heifers for breeding, carrying out pelvic scoring and giving heifers a reproductive tract score.

He and Carys have used EBVs to decide on an appropriate sire for the heifers. Rupert then drew up a breeding protocol for fixed time AI, and returned to synchronise the animals which were then AI-ed by the semen company's inseminator.

The farm had previously had an extended calving pattern but Carys is starting to tighten this up, she explains: "At the moment the Limousin crosses are calving between February and April, and the Stabiliser cows from April to mid-May.

"The aim is to be able to rear, finish and sell a bunch of heifers or store cattle, rather than rearing them one or two at a time.

"So if the February/March calving works well, then we will try and bring forward the Stabiliser calvings. However, our farm is in a high rainfall area, and we are limited in shed space, so there's a balance to what can be done."

Cary is pleased with the move over to Stabilisers, she adds: "They are really easy – they calve without any problems, are good mothers and have a lot of milk. We'll be culling around 6 of the older cows this year, which is why we've kept back 13 heifers this year as replacements. We'll see how this year goes, and then probably use fixed time AI next year, rather than buy a new bull."

Carys Jones is taking the family suckler herd forward – changing the herd's genetics and management to increase output without increasing herd size

Group learning

Carys is a member of two discussion groups. A sheep group organised by Farming Connect and Prostock Vets' ProBeef Discussion Group which was set up last year.

Carys says: "It's good to hear farmers sharing their experiences – both the good and the bad. I go to these meetings to meet people and see what others are doing. There's always something new to learn, and I'm open to trying new things.

"In our sheep discussion group, we are benchmarking our flocks against each other – it's interesting to know where you stand and what you are doing right."

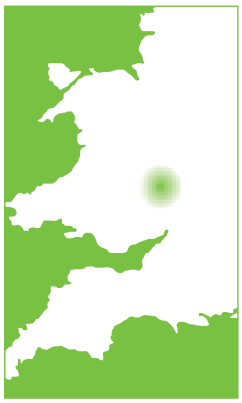
Rupert adds: "Discussion group meetings and workshops are always good opportunities for farmers to learn from each other, as well as their vet! Our practice has recently held some breeding workshops in which bull testing and pelvic scoring were demonstrated, and discussions had on the benefits of using EBVs to improve herd productivity.

"Together with the breeding workshops and funding available through Farming Connect, we are carrying out an increasing number of bull breeding examinations. Some of the farmers attending the recent workshop were surprised at how quick and easy it is to do, and that it was not as invasive or expensive as they had thought."

Rupert adds: "In our next ProBeef Discussion Group meeting to be held in the autumn, we will be looking at production figures for the 2018/19 year."

The responsibility, the stress and the satisfaction of **being a business owner!**

In 2013 vet Andrew Cooke moved himself and his family from Leicestershire to Herefordshire and joined large animal practice Belmont Farm & Equine Vets. Then in 2017, he took the opportunity to invest in the business and become a shareholding director.



Andrew Cooke
Belmont Farm and Equine Vets

Here, Andrew explains the appeals of being a business owner: the satisfaction and the responsibility that make the extra bit of stress worthwhile.

Belmont Farm & Equine Vets is a two-site practice with offices at Bromyard in north-east Herefordshire and new premises just outside Hereford.

Andrew explains: "Earlier this year we moved from a base in the centre of Hereford where parking was limited and traffic was dreadful, to an industrial estate on the outskirts of town. It's now really easy for farmers to drop in and pick up medicines or wormers, or bring sheep in for Caesareans.

"The move came during our busy lambing season but thanks to the hard work of the whole team it went remarkably smoothly. At both sites we have an excellent farm reception team – they can be one of the most important group of people in a practice as they probably have the most contact with farmers, either by phone or in person.

"The team mentality ensures that the practice still feels like a family business, although we now have 30 employees altogether. They are split fairly equally across the two locations. This does create a few issues but it means we can cover a larger area.

Becoming a business owner

"In 2015, the practice had just two directors – Matthew Pugh and Dominic Alexander. They had taken on the practice from the previous owner Bill Main who wanted to semi-retire.

"Then in 2017, my colleague Nick Gibbon and I were invited to invest in the practice, and we became the third and fourth directors. We all have an equal say in how the business is run. We also all have different personalities, and have naturally flowed to what we like doing, playing to our strengths.

"A key consideration for any independent business is to have a succession plan: the four of us are all in our 30s and 40s, keen to take the business forward, and keen that we remain an independent practice.

"Being independent gives us the flexibility to change protocols according to the client or the situation. And if I want to buy a specific piece of kit for the practice, then it's only the four of us that need to agree. There isn't a big chain of managers.

"And when farmers have an issue that needs resolving, they can come and speak to one of us, and they're talking to the 'top of the tree'. I'm not the middleman. I'm the man who is going to have to sort it! Of course, this can make my working life a bit more stressful, but it is also more rewarding!

"If I, or my colleagues, don't have the expertise to sort a problem, then one of the advantages of being a part of XLVets is that there are so many diverse skills within the membership, that there will be someone who can help.

"Stress in the farming sector gets talked about a lot nowadays, and rightly so. For vets, especially

The new Hereford site

for the assistants just starting out, there is a large volume of work as well as out-of-hours cover to provide and then often clinical work to do the next day. It can be stressful for young vets. Fortunately, as you get older and more experienced, the clinical work does become less stressful.

"Being a director does bring some stress – I've still got my clients and the clinical work and now I'm also partially responsible for the livelihoods of 29 other people! My name is on the door, and I've co-responsibility for the services and reputation of the practice.

"Sometimes people ask me why I wanted to buy into the practice. The truth is, I wanted ownership. I wanted to have a say in creating my own destiny.

Practice management

"Since becoming a director, a large proportion of my time is taken up with managing the practice. When you're an assistant vet you know there's a lot of organisation going on within the practice, but until you are part of the management team, you're never fully aware of how much!

"Being a co-owner of the practice allows me to have an influence on how the business is run. One of the areas that I enjoy is helping make the business more efficient – cutting costs and looking at new kit or computer software that will make our work easier, or better.

"I'm also enjoying the personnel side of things, helping people with their careers – developing their skills and hopefully helping give them job fulfilment. I like having the ability to help remedy any problems they may have, rather than only being able to offer a sympathetic ear.

"One of my roles within the practice is to be involved in the purchasing of medicines and equipment. We are always up against other medicine or wormer suppliers, but thanks to being a member of XLVets, we can buy our medicines for good prices which we can pass on to our clients.

Going forward

"These days there's a lot more pressure on farmers from consumers and the food sector. We need to make sure that animal welfare continues to be amongst the best in the world. Part of the responsibility of those involved with farming is to ensure that the public is aware of the great work that farmers do and the high levels of welfare on farms.

"At Belmont Farm & Equine Vets, we are adopting new and innovative veterinary techniques of benefit to animal welfare and/or productivity. Several of us are trained in laparoscopic endoscopy to correct LDAs; this is less invasive and usually doesn't require antibiotic treatment.

"We're also investing in training more of our support staff to become SQPs so they can provide advice on parasite control. And we are developing the role of Vet Techs within the practice to help in areas such as mobility scoring, body condition scoring, and potentially offering a vaccination service.

"Belmont has expanded a huge amount over the past few years, typically taking on an extra vet each year. This is mainly due to our ability to offer a high level of service yet also retain a friendly, family atmosphere. One of our strengths is our independence, and we are very proud of this."

About Belmont Farm & Equine Vets

The client base for Belmont Farm & Equine Vets is a fairly even mix of beef, sheep and dairy farmers, and horse owners.

The practice has two sites: one in Bromyard and new premises just outside Hereford. The practice serves farmers as far west as Hay on Wye, north to Tenbury Wells, south to Abergavenny and east to The Malverns.

Currently there are 13 clinical vets – 2 of whom specialise in equine work – and 7 TB testing vets. There are 10 support staff, including a Vet Tech and 2 qualified SQPs with 2 more in training.

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workshops in the **North**

5th July	Intermediate Foot Trimming and Lameness	Bishopton Veterinary Group, North Yorkshire
16th July	Sheep Smallholder	Bishopton Veterinary Group, North Yorkshire
19th July	Mastering Medicines - Dairy	Bishopton Veterinary Group, North Yorkshire
22nd July	DIY AI	Bishopton Veterinary Group, North Yorkshire
12th August	DIY AI	Bishopton Veterinary Group, North Yorkshire
3rd September	Sheep Lameness Control	Bishopton Veterinary Group, North Yorkshire
6th September	Dairy Cow Nutrition - Feeding the high yielding dairy cow	Bishopton Veterinary Group, North Yorkshire
11th September	Practical Calving	Armour Veterinary Group, Ayrshire
13th September	Mastering Medicines - Beef & Sheep	Bishopton Veterinary Group, North Yorkshire
25th September	DIY AI	Bishopton Veterinary Group, North Yorkshire
4th October	Beef Nutrition	Bishopton Veterinary Group, North Yorkshire
8th October	DIY AI (4-day course)	Capontree Veterinary Centre, Cumbria

workshops in the **South**

4th July	Practical Calving	Synergy Farm Health, Dorset
4th July	Successful Weaning Management	Synergy Farm Health, Dorset
8th July	Mastering Medicines - Dairy	Tyndale Vets, Glamorgan
10th July	Sheep Worm Egg Count	Synergy Farm Health, Dorset
11th July	Mastering Medicines	Synergy Farm Health, Dorset
15th July	Mastering Medicines	Tyndale Vets, Gloucestershire
15th July	MilkSure	Synergy Farm Health, Dorset
16th July	Mastering Medicines	Belmont Farm & Equine Vets, Herefordshire
22nd July	DIY AI (4-day course)	Shepton Veterinary Group, Somerset
6th August	Foot Trimming (2-day course)	Synergy Farm Health, Dorset
8th August	Mastering Medicines - Sheep	Synergy Farm Health, Dorset
12th August	Mastering Medicines - Dairy	Tyndale Vets, Glamorgan
12th August	Mastitis	Synergy Farm Health, Dorset
14th August	Mastering Medicines - Beef & Sheep	Hook Norton Veterinary Group, Oxfordshire
10th September	Mastering Medicines	Belmont Farm & Equine Vets, Herefordshire

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