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MATTERS

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Calf Tracker

Improving growth weights from birth to weaning to optimise lifetime performance

Campylobacter

Getting to grips with the disease and practical control measures on farm



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AUTUMN EDITION

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THE EDITOR

Welcome to the 'Autumn' issue of Livestock Matters

In this issue we go back-to-basics with fertility – considering the causes of poor fertility, particularly for the high-yielding dairy cow with Owen Tunney from Willows Veterinary Group. Owen discusses how the management of dairy cows can be supported by veterinary intervention to ensure good fertility, leading to a healthy pregnancy.

We also take a look at Campylobacter, a disease of cattle that Keith Cutler from Endell Veterinary Group believes is often overlooked and under-diagnosed. Keith talks us through the dynamics of this bacterial disease and the effects it can have on fertility in beef and dairy cattle.

It is with much delight, that after over five years of editing Livestock Matters we finally feature an article from my brother's farm. Kirsty Ranson from Westmorland Veterinary Group talks us through the importance of good calf management from birth to weaning, which impacts on life-time performance. Kirsty explains how small management changes have had a huge impact for two clients; my brother Darren and James Robinson. This knowledge is now being used to develop a wider XLVets Calf Tracker initiative running this Autumn and Winter.

We hear about the latest innovative research work being undertaken by two XLVets member practices, Bishopton Veterinary Group and Synergy Farm Health in the area of semen quality, which has led to the launch of a new service 'SemenRate'. We also find out the latest news and views from our more recently qualified vets in 'Graduate Diaries'.

Joanne

We hope you enjoy this issue of Livestock Matters.

Joanne Sharpe XLVets



CONTENTS

ANIMAL HEALTH

- 05 **Campylobacter**
Keith Cutler from Endell Veterinary Group talks us through this disease and its effects on fertility in cattle.
- 07 **Keeping your farm your fortress**
Neil Laing, Clyde Veterinary Group discusses the key parasites and diseases of sheep during Autumn and Winter - and how to prevent them arriving on your farm with bought-in sheep.
- 14 **Fertility**
Owen Tunney, Willows Veterinary Group discusses the challenges affecting fertility in the modern dairy cow and how the use of synchronisation programmes can assist on farm.

FARMSKILLS

- 13 **Calf rearing workshops**
Successful calf production begins long before the birth of the heifer calf. Even before conception there are many things to consider in order to maximise your chance of making her life a success.

FEATURE

- 09 **Calf health**
Improving calf growth weights from birth to weaning has a positive impact on long-term performance. As the XLVets Calf Tracker initiative launches, Kirsty Ranson from Westmorland Veterinary Group discusses what can be achieved by putting a focus on calf management.

GRADUATE DIARIES

- 21 **'All in a day's work' and 'Go, Go, Go!'**
Katherine Lumb and Matthew Hylands give us the latest round-up of their work as recent graduates working in farm animal practice.



Livestock Event 2015

Ready, steady, decorate...

400 cupcakes decorated by farmers, students and industry professionals, not exactly what you would expect of two days at the Livestock Event!

This year XLVets celebrates its 10th birthday, and as part of the celebrations, we decided that we would need cake! After much deliberation about how we could incorporate cakes into a FarmSkills challenge, we decided that cake decorating was the obvious choice. Or not, perhaps?

This year's stand at the Livestock Event incorporated two large workstations in the shape of the number 10. The giant number '1' was home to the sheep lameness challenge, to support the XLVets 'Stand up to Sheep Lameness' initiative; farmers identified different lesions and matched the condition to the appropriate treatments.

The giant '0' became a workstation where visitors to the stand created their cupcake masterpieces. We got just about every farm animal produced in careful detail, along with flowers, field scenes and pets to mention but a few of the highlights.

The top five decorated cupcakes were then posted on the XLVets Twitter page and FarmSkills Facebook page for members of the public to vote for their favourite and the chance to win a FarmSkills workshop. The winning cupcake was a quad bike which received in excess of 100 votes.

The stand was busy for the whole of the two days, with visitors taking the time to view the 10 year timeline that ran around the stand walls. A huge thank you must go to all the XLVets practices that came along and helped over the two days.



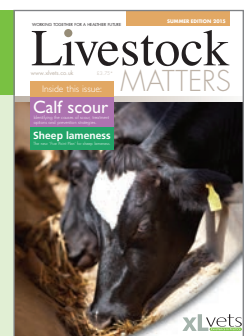
'The winning cake'

Livestock Matters readership survey

To ensure Livestock Matters continues to provide useful information and advice to readers we want to hear your views on the magazine. Let us know your thoughts and ideas of how the magazine could be improved to be more useful.

The survey is on-line at www.xlvets.co.uk and closes on Monday 30th November 2015.

For everyone who enters the readership survey there is a chance to win a Christmas hamper.





Torch Farm and Equine join XLVets

by Nich Roper

In July 2015 Torch Farm and Equine Ltd became a member of XLVets. We are looking forward to working with a large team of like-minded practices who all share the same goal; aiming to provide the best possible service to all our clients.

Torch Farm & Equine Ltd covers North Devon and Exmoor; the practice was formed in 2012 when the farm and equine parts of two local long-established veterinary practices came together.

Our farm team aims to provide a local service to farmers from each of our four main farm animal locations in Barnstaple, Bideford, Ilfracombe and South Molton. These teams can call upon the expertise across the group that only a larger practice can provide. Our practice works with clients on a wide range of units from large intensive high-input, high-output, commercial dairy units, to small pedigree sheep flocks and smallholders with a range of stock.

The practice provides a number of training courses tailored to client needs; such as lambing courses, DIY AI and cattle foot trimming. We are committed to working with the farming community for the long term

good of the industry. As part of this we continue to invest in our team, our equipment, our communication as well as clinical excellence in all the services we offer.



Charity Challenge

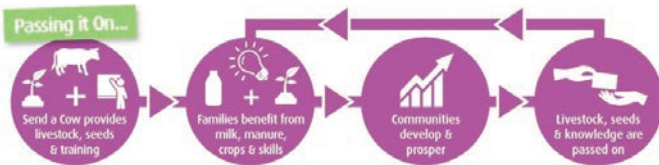
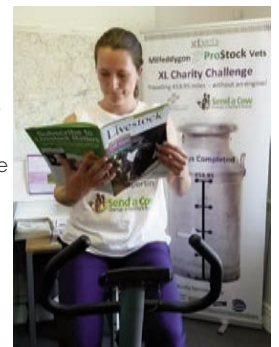
Over the summer XLVet member practices have been celebrating 10 years of working as a coherent and strategic group of independent veterinary practices by attempting to travel 'around the world' together using any means possible – as long as it doesn't involve an engine. Passing through the three regions in which XLVets operate: UK, Ireland and New Zealand – the UK practices hope to complete a total of 23,605.63 miles

Members have been using a wide range of methods to complete the miles including walking, canoeing, sailing, cycling and one practice had a member of staff paragliding his way to their miles total. Other popular modes of transport have included horse riding, exercise bikes in practice receptions and running. Many of the activities have been completed in very stylish fancy dress.



The aim of the charity challenge is to raise money for charities chosen by the practices and for the chosen XLVets national charity, Send a Cow. Send a Cow gives rural communities in Africa the hope and the means to secure their own futures from the land by providing training, livestock, seeds and support. These beneficiaries then pass on young livestock, seeds or training to others.

In the space of just a few months, all the practices have worked together and have already far exceeded the challenge - already clocking-up almost 35,000 miles and raising over £30,000 so far for charity. We'll have an update on what the practices got up to in the next issue of Livestock Matters.





Veterinary surgeon **Keith Cutler**

XLVets practice **Endell Veterinary Group**



KEITH CUTLER, ENDELL VETERINARY GROUP

Campylobacter: is this venereal disease affecting herd fertility?

Campylobacter is a sexually transmitted disease that in cattle leads to abortions and infertility. It is often an overlooked and under-diagnosed disease, believes Endell Veterinary Group vet Keith Cutler.

'The disease is caused by the bacterium - *Campylobacter foetus venerealis*,' explains Keith. 'It is spread from cow to bull to cow during natural service. So although it is more commonly found in beef suckler herds, any dairy farm which runs bulls and buys in animals, is also at risk.'

'Warning signs to look out for are when fertility is disappointing, especially in heifers, or when there is a wide spread in the calving block, plus a history of buying in animals which may be the source of the infection.'

Diagnosis is not straightforward. Keith explains: 'Campylobacter is a bacterial infection and can't be identified from blood samples.'



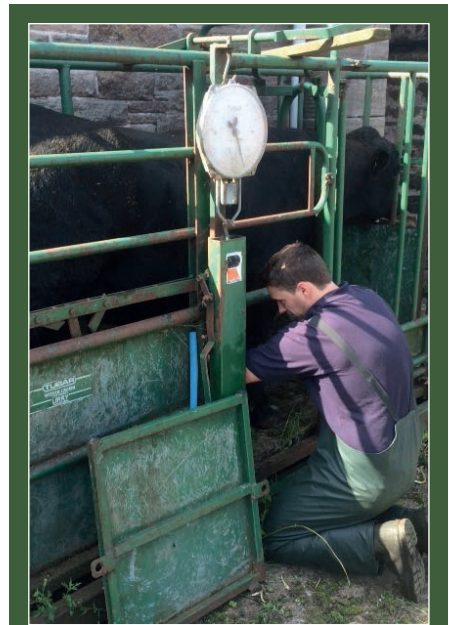
Laboratory analysis is required to diagnose *Campylobacter*

The bacterium inhabits the vagina and cervix of the cow. From here it can invade the uterus causing an endometritis and early embryonic death or later abortions. The damage caused may render the cow infertile. In bulls, the organism lives in the folds and crevices of the prepuce (foreskin), where it can persist for life.

'So to determine whether an animal is infected, vaginal washings or sheath washings need to be carried out and samples cultured in a laboratory to identify the bacterium,' explains Keith. 'Campylobacter is a delicate organism, and so it is easy to get false negatives.'

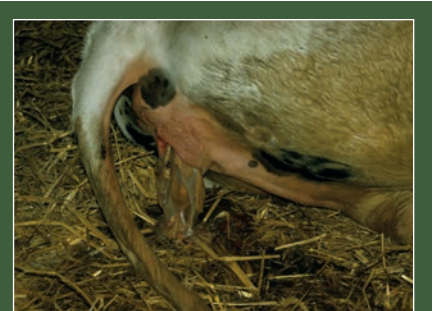
'The good news is that cows can rid themselves of the infection naturally - it will disappear after about five oestrous cycles. In suckler herds, as a rule of thumb, this equates to two years and two calves.'

'However, in bulls, although the sheath can be washed out with antibiotics, success is difficult to ascertain, as the bacterium could still be present in the folds of the foreskin.'



Sheath washing can be used to help in the control of *Campylobacter*

There are currently no UK licensed vaccines for *Campylobacter*. So controlling the disease is dependent on either management strategies, or the isolation of the bacterium from an infected animal to produce an autogenous vaccine.



Abortion can result from *Campylobacter* infection

Eradication and vaccination strategies

The Waight family of Compton Farm near Marlborough in Wiltshire have had two encounters with the disease.

Bruce and his son James run a 450-cow suckler herd on Salisbury Plain, on land rented from the MOD. The 10,000 acres of grazing are mainly permanent pasture, and are farmed organically. The system is very extensive, and 100-cow groups are run with three bulls.

The bull breeds currently on the farm are 12 Charolais, three South Devon, and three Aberdeen Angus. It is predominantly a spring-calving herd, with a smaller block of autumn calving animals. Bulls are monitored closely during the breeding season to make sure they are working properly, and routine breeding soundness examinations are carried out.

According to the Wights' organic regulations, the buying in of heifer replacements is limited to being no more than 10% of the herd. Previously heifers were purchased from a number of sources, but nowadays around 30 Hereford x Friesians heifers are purchased each year from a closed dairy herd in Dorset. This herd has a high health status – being free of BVD, Johnes' disease and leptospirosis.

All the bulls, cows and new arrivals to the farm are vaccinated against BVD, leptospirosis and clostridial diseases. They are also vaccinated for Campylobacter using a custom-made vaccine.

Clean and dirty herds

Bruce Waight first started the herd in 1990, and to begin with bulls were hired in. This is how Campylobacter is believed to have entered the herd in the mid 1990's. One year, instead of achieving fertility of over 90%, it was around only 60%.



Campylobacter is spread from cow to bull during natural service

Keith explains: 'The infection is spread by natural service. Therefore virgin heifers and bulls cannot be harbouring the bacterium. In the absence of a vaccine, the solution was to split the herd into two, one for 'clean' animals and one for 'dirty'.

'Each year, the next batch of heifers – virgins – can join the clean herd. Over time, the cows in the dirty herd develop immunity to the bacterium and their fertility resumes. Some of them will also be culled out, so over time the farm can rid itself of Campylobacter.'

'However, bulls never develop immunity and the bacterium will persist in the folds of their prepuce. So only virgin bulls are added to the clean herd.'



In bulls, Campylobacter lives in the folds and crevices of the prepuce (foreskin), where it can persist for life without treatment

Autogenous vaccine

However, in 2012, Campylobacter once again entered the herd.

'We think it came from a cow jumping the fence out on the plains,' explains Bruce.

This time, Keith carried out vaginal washings and was able to isolate the organism itself. It was cultured and an autogenous vaccine was created. This was licensed only for use

on Compton Farm, but could be made up in quantities, as and when required.

James explains: 'Nowadays, heifers are given two doses of vaccine, and cows just one, about three weeks after calving – which is six to eight weeks before being put in with the bulls again. The bulls are also all vaccinated.'

The previous Campylobacter episode was several years ago now, and it is possible that the bacterium is no longer present in the herd. However, the Wights have decided to continue vaccinating.

Bruce adds: 'I think it would be dangerous to stop it because of the significant effects that it has on fertility.'

Keith agrees: 'Suckler herd income is reliant on the annual production of a calf from each cow. So whilst the culture is still live and the vaccine can be made, then it is wise, considering the relative costs, for the Wights to continue vaccination.

'After all, the herd is grazed on land where tanks can take out the fencing on their overnight manoeuvres and so there is always the threat of neighbouring groups of suckler cattle mixing, and an infected animal from another herd serving/being served.'

Biosecurity measures

Given the problems that Campylobacter can cause, and the difficulty in eliminating it, then it is better to prevent its introduction in the first place.

Keith explains: 'Virgin heifers and bulls cannot have contracted the infection – that's assuming they really are virgins! Ideally all replacement stock should be virgins, and sourced from a reputable supplier.

'Non-virgin bulls should be treated with antibiotics on arrival at the farm and sheath-washed by a vet with an antibiotic solution for three consecutive days.'

Signs of Campylobacter infection

- A cloudy vaginal discharge 10 days after serving
- Irregular and/or abnormally long intervals between heats
- Abortions after 5-7 months of pregnancy
- There are no visible signs in bulls



Veterinary Surgeon Neil Laing

XLVets Practice Clyde Veterinary Group



NEIL LAING, CLYDE VETERINARY GROUP

Keeping Your Farm Your Fortress

As autumn moves on, many sheep farmers are in the process of buying in replacement stock; thoughts turn to quarantine treatments and preventing diseases being brought on to farms.

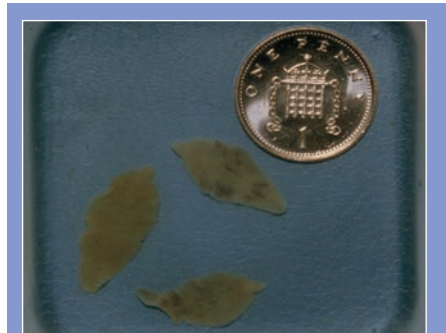
However, there can be a chink in the disease armour. Away wintering of young lambs, especially female replacements, is a common undertaking in many hill farming areas of the UK. Often there are sheep from more than one farm grazing on a wintering, or the wintering is on a different farm each year, all with potentially different challenges.

There are some important things to remember when bringing these sheep back that ensure disease risks within these flocks can be managed throughout the winter.

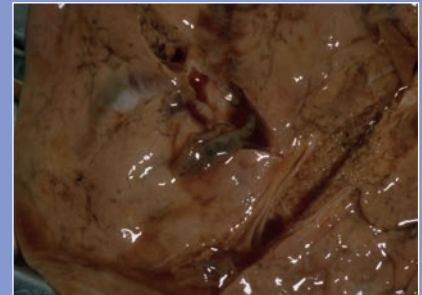
Liver fluke

As we know fluke infect cattle and sheep, but they are also capable of infecting any mammal - rabbits, deer - making infection impossible to eliminate. This means that grazing areas with snail habitats will remain permanently infected, even if left un-stocked for several years. Whilst strategic treatment using flukicides will help control the problem, long term there will need to be a move towards preventing infection and reducing our reliance on medicines, as is happening with gut worms.

Therefore limiting new infections relies on preventing access of the grazing animals to snail habitats, or removing snail habitats from the farm. It may not have crossed your mind to find out the fluke status, if known, of the farm where the sheep are wintering!



Adult fluke



Liver fluke affect both sheep and cattle

This will allow strategic treatment through the winter to reduce the burden being brought home, or the introduction of resistant fluke for example. Speak to your vet about the most appropriate times to treat lambs away at the wintering depending on the risks, and the best products to use.



Scab

Scab is caused by a mite living on the skin of the sheep.

It is incredibly contagious and causes intense itching leading to production losses. One of the problems with any sheep is that they can be carrying scab without showing signs; in the early stages it is undetectable. There is also the possibility of mites being picked up from the transport lorry or mixing with other wintered sheep.

The only way of knowing for sure that your sheep do not have scab, is to treat them on arrival home with an appropriate macrocyclic lactone injection or to dip them. 1% moxidectin injection is recommended by SCOPS, but this must not be used in sheep that have ever had or are likely to have the Footvax™ vaccination against footrot. There are other macrocyclic lactone injections available, but they differ in how long they last and how many injections are required. Consult your vet as to which is the most appropriate treatment for you.



Sheep scab

Lice

Although not necessarily a big issue, lice infestation is often not noticed until there is a reasonable length of fleece i.e. the winter months. The signs are similar to scab, rubbing on fences, nibbling and wool loss, although the skin is not usually as severely affected as with scab. Early diagnosis and treatment with a pyrethroid pour-on is usually effective in controlling this.

Lameness

Footrot is highly contagious and painful. It can cause dramatic weight loss and lead to expensive visits to the wintering to treat affected sheep. Vaccination before leaving can help reduce the incidence when the lambs are away.



Sheep infected with footrot and CODD

All too frequently contagious ovine digital dermatitis (CODD) and highly virulent strains of footrot can be introduced into a flock on the feet of bought in sheep, or sheep that have mixed with strangers while away. It is important to not only isolate sheep for at least three weeks on return so that lameness can be identified, but inspect feet and either footbath or spray with antibiotic. Some lesions can be very subtle and some sheep may carry bacteria without showing many signs of lameness.

Quarantine treatment, and vaccination are two of the elements of the '5 Point Plan' for lameness control and are a must do for reducing levels of lameness in your flock.

Clostridial disease

Depending on when the primary course was given, protection may have elapsed whilst away. This may mean that a booster may need to be given when the sheep are away. Failing that, all sheep should be vaccinated on return from the wintering as this will put them onto the same booster interval as the adult ewes in the next year, i.e. pre-lambing. This important treatment is often forgotten, leading to a break in protection and potentially the cause of apparent lack of protection in the adult flock. Similarly if lambs were only vaccinated with a 4in1 vaccine, there are some diseases more likely in late winter, which may cause unexpected losses in sheep where there wasn't adequate cover.

Johne's

Often overlooked as a problem in sheep, Johne's is caused by a bacteria that grows in the gut and causes thickening of the bowel leading to weight loss and wasting. It is spread on pasture. Spreading slurry on grazing fields is a known way of infecting pasture with the bacteria. There is a small risk that grazing sheep on farms with a known history of Johne's in the cows does two things; sheep can act as a way of dispersing the organism around the farm into previously grazed or mown fields, also there is a small risk that the sheep may themselves become infected with the organism.

Johne's in cattle and sheep has been shown to be increased when youngstock are exposed to the organism. It may be worth having a discussion with your own vet and the person who owns the farm about what Johne's might mean to your sheep.

Stand up to...



Make your farm your
FORTRESS



Biosecurity.
Have you considered the risks?
Management booklet for sheep



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FarmSkills
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For more information on the XLVets Make Your Farm Your Fortress and Stand up to Sheep Lameness initiatives contact your XLVets practice.

New initiative focuses on accelerating calf growth to advance heifer breeding age



Veterinary surgeon **Kirsty Ranson**

XLVets practice **Westmorland Veterinary Group**



KIRSTY RANSON, WESTMORLAND VETERINARY GROUP

The growth rate in the first eight weeks of a calf's life has a massive impact on its future performance - in both dairy and beef systems.

Research has shown that the optimum age for a dairy heifer at first calving is at 22-24 months of age, to maximise lifetime milk yields. Calculating back, this means heifer calves need to be averaging growth rates of 850g-1kg/day, so that they can be bred at 13-15 months of age, by which time they need to have reached 60% of their adult bodyweight.

Similarly, suckler cows should be calving at two years of age, not three.

This autumn XLVets is launching a scheme to help beef and dairy farms to accelerate growth rates in young calves, and enjoy the benefits of getting heifers in-calf sooner. This will not only lower rearing costs, but also means financial returns can be gained sooner.

Over the past year, a similar scheme has been running for clients by XLVets' Westmorland Veterinary Group, led by vet Kirsty Ranson.

'Healthy Heifers'

Kirsty explains: 'On many dairy farms, the milking herd is the focus, and it can be a struggle to find time for the calves. Striking the right time balance between the two is the key.'

In a bid to help Westmorland's dairy farming clients to re-focus some time on calf rearing, a 'Healthy Heifers' competition was launched in September 2014 with prizes for the best performers.

Targets were set for calf performance, and all it required was for farmers to record some key parameters. Growth rates would be

calculated, and any illnesses and deaths recorded so they could be reviewed. After an initial free introductory period, farmers paid a small monthly charge to cover the extra vet time on-farm, and the cost of blood tests and data analysis (6-monthly).

25 dairy farmers signed up to it, and 18 completed a full data set. The data is collated at Westmorland, and has enabled benchmarking across the different farms and rearing systems.

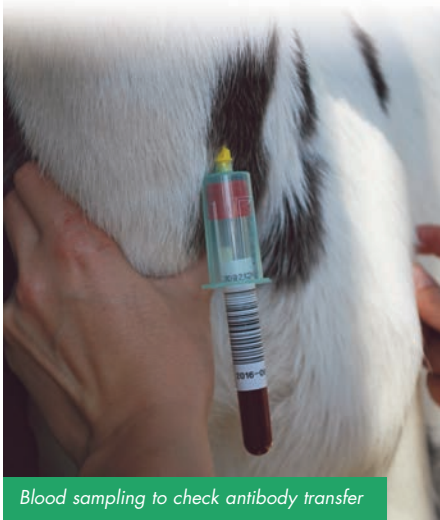
Kirsty explains: 'To make the best use of time, we vets would look at the calves during our routine fertility visits. For calves less than two months old, we measured their weights either using weigh bands to calculate their growth rates, or with a weigh cell which the farmer already had, or invested in. We took blood samples to assess colostrum intakes, and asked farmers to record all mortalities in the first eight weeks of life, and the number of pneumonia and scour cases in each 3-month period. Bulling weights and calving dates were also recorded by some.'

'Because we were now seeing calves on farms where perhaps we had only looked at the adult cattle before, we were able to make recommendations to improve some of the practical elements of calf rearing - housing and feeding. By measuring calf performance, it was easy to monitor the impact of any changes that were made, and assess their cost:benefit.'



Checking antibody transfer

To assess how well antibodies were being transferred from the colostrum and conferring immunity to the calves, measurements of 'total protein' were taken. This involved taking blood samples from calves of one to eight days of age.



Blood sampling to check antibody transfer

Kirsty explains: 'If the total protein result is less than 5.5g/dl, this indicates inadequate antibody transfer – it could be due to poor quality colostrum and/or poor intakes.'

'In the initial screening of Westmorland clients, only three out of 171 calves had poor antibody levels, and these were calves which had been left to suckle for themselves. It's also useful to look at the average reading for a batch of calves and the variation. Interestingly, those farms with a protocol to stomach-tube all newborn calves had the least variation in antibody transfer levels.'

Are you underfeeding CMR?

Kirsty believes milk replacer is being underfed on many farms, immediately limiting calves' growth potential. In fact, almost all of Westmorland's clients in the competition had not been feeding enough milk powder.

Kirsty advises: 'First of all, it's important to weigh the powder out. A set of electronic kitchen scales is not an expensive investment to ensure the correct amount of powder is used. The other error that is often made goes back to the time when whole milk used to be fed: calves would be given two litres, twice a day. But when the switch is made to powdered milk, a common mistake is to continue to feed the two litres, but follow the instructions on the bag label which might suggest 125g of milk powder per litre. This would mean calves would be getting only 500g per day from four litres.'



Measure milk powder

'However, if they are to achieve the required growth rate of 850g-1kg/day in the first eight weeks, then they need to be fed at least 850g of milk powder a day. So double the amount is going to be needed.'

Calf jacket benefits

Once the ambient temperature drops below 10°C then calves must burn energy just to maintain their core body temperature. This diverts energy away from 'powering' their immune system and from growth.

Fitting jackets to young calves will provide them with insulation, and protect them from draughts so they are not using energy just to keep warm. Studies have shown that calf jackets can reduce feed costs, and can improve weight gains by 5kg over 12 weeks.

Kirsty warns: 'Jackets should be made out of breathable fabric, and must be washed in-between calves to prevent disease spread.'



Calf jackets provide insulation in colder weather

Case study 1 Investment in weigh cell improves heifer breeding decisions

Amongst the farmers that participated in the Healthy Heifers competition were James Robinson and his father Henry who run an organic pedigree Shorthorn herd at Strickley Farm, near Kendal.

Their 110-cow herd averages yields of 7,000 litres/cow and is block calved from August to September.

There is a separate yoke and gate in the calving shed, which enables James or Henry to intervene and assist cows in labour more easily and earlier. A portable milker is nearby to ensure cows are milked straight away. In this way, calves receive their first 2 litres of colostrum by stomach-tubing, within about 10 minutes of life.

Top tip:

The Robinsons have two stomach-tubes – one for healthy newborn calves and one for sick calves, so there is no danger of spreading disease.

Newborn calves are put into individual pens and will receive 2.5-3 litres of milk from the dam within the first 24 hours. They are kept in individual pens for the first week to 10 days and then penned in small groups until weaning.



Bulling weights

At Strickley Farm, it's essential that cows calve down at 23-25 months of age so they stay within the two-month calving block. And ideally, heifers need to calve down at the start of the block, not the end.

James says: 'Heifers are our future. If we get it wrong, then it takes a lot of catching up. So the extra care in early life makes the difference all the way through.'

As part of their new focus on heifer rearing, the Robinsons purchased a weigh cell so that animals could be bred from as soon as they were suitable. 'We need to base decisions on their weight, and not by their age, or by eye,' explains James. 'Now, when they come inside in the autumn we put all of them over the weigh cell. And, knowing their actual weights, we have been able to calve a few down at 22 months of age.'

Cost-effective jackets

One of the recommendations made by Kirsty was to put jackets on calves. Thanks to weigh-banding, the benefits could be seen clearly; calves wearing jackets grew an extra 100-150g/day over the first eight weeks.

James adds: 'We reckon one jacket can be used, washed, and re-used for at least 10 calves. It works out at about £2/calf which is nothing compared to the extra growth of 5kg! It also reduces the cost of feeding them, as they are not eating to keep warm. We do get some cold nights in August, so we will put them on calves when the temperature cools.'



James and Kirsty weigh-banding

Maintaining good growth rates

Kirsty explains: 'A calf's rumen is relatively small so it can't cope with lots of long fibre. As a rule of thumb, for optimal digestion, the forage component in rations should be chopped so it is no longer than the muzzle

width of the animal eating it. This improves utilisation and increases dry matter intakes.' At Strickley Farm, after weaning, housed calves used to be fed big bale silage or clamp silage. But now they receive a TMR ration of chopped straw, haylage and 2kg/head/day of a 16% protein concentrate.



New TMR ration at Strickley Farm

'A lot of farms don't have the housing to enable a feeder wagon to put a TMR out for calves, but the Robinsons do. This means heifers eat more than they would have done on big bale silage, and also have a smoother transition onto this ration at weaning,' adds Kirsty.

Now that they had a means of weighing older heifers, the Robinsons were using it every time cattle were handled – for worming, vaccination, etc – and recording ages and weights. James says: 'As the saying goes, you have to measure to manage, otherwise you're just guessing.'

The Robinsons had a bit of a surprise last summer. Over the winter, the calves at Strickley Farm had been achieving their target growth rates (850g-1kg/day). After weaning they had been turned out onto grass, and given some concentrate every day.

When the heifers came back in to be wormed, and were weighed, the Robinsons were shocked to find that weight gains had fallen to around only 400g/day.

'This was a massive drop in growth,' says James. 'And we wouldn't have seen it without the weigh cell. We had been giving them a token amount of concentrate – around 0.5kg/head/day. But now they are getting 2kg - four times the amount.'

Kirsty adds: 'Weigh bands are only accurate for a liveweight of up to 100kg.

After that, unless you can weigh the animals, how can you measure their growth?

'As the Robinsons' experience shows, you can't expect heifers to eat enough at grass to keep growth on-track. So supplementary feeding is essential to maintain growth rates of 850g-1kg/day.'

10 minutes extra

The Robinsons receive fortnightly fertility checks during the breeding season. 'On the same visit, if we've got calves around, then Kirsty will take bloods and weigh band them. It only adds about 10 minutes to the visit,' says James.

Kirsty adds: 'Ideally, from a hygiene perspective, I ought to see the calves first, and then look at the cows to be PD-ed. But as farmers always want to get their cows back to the feed trough, I tend to examine them first. But then I'll wash down and wash my wellies before getting into the calf pens. This is because I could be taking bacteria like E.coli Salmonella, which is present in all adult dung, into the environment of the more vulnerable young animals.'

The benchmarking has proved very interesting for James, he adds: 'We can see we are doing quite well. But I think we can still do even better.'



Case study 2 **Faster growth rates are reducing heifer age at first calving**

Paying more attention to the actual – and not the perceived – growth rates of calves, and altering calf-rearing protocols, has enabled Darren Dodgson to reduce heifer age at first calving by 4 months (120 days) in the space of a year.

At Cracalt Farm near Kendal, Darren milks 100 cows, averaging yields of 8,000 litres/cow, and calving all year round.

As part of fortnightly routine fertility visits, Kirsty will now also take a look at the calves, take weigh band measurements, and advise on changes in management. Darren (like James Robinson) estimates this only adds about 10 minutes to her visit now, with most of the major changes already made.



Darren and Kirsty weigh-banding

Kirsty explains: 'Darren uses several buildings on the farm to keep calves in. Like many farms, some are not ideal, being limited in ventilation. And at lambing time, there's extra competition for space. So I've advised Darren to spread the calves around, rather than fill one building, to reduce any disease pressures. He's also purchased two calf igloos, which has also taken the pressure off the buildings.'

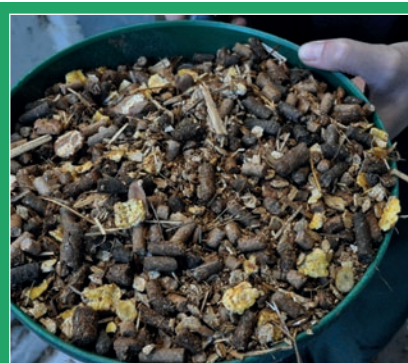
Darren has also started using calf jackets: 'These made a big difference through the winter,' he says.

Kirsty adds: 'They also allowed Darren to open more of the shed doors and improve the ventilation, as draughts were less of a concern now that calves had jackets on.'

Better nutrition

A change in concentrate ration was made at the beginning of the year. Darren used to

feed calves on whole milk, hay, water and a concentrate, but has now switched to giving them milk replacer from four days of age, and changing the concentrate to one which includes chopped straw, and is fed ad lib. Kirsty explains: 'This adds more fibre to the diet, and aids rumen development. The hay has been dropped out of the ration – it's poor in nutritional value.'



The new concentrate contains chopped straw to increase fibre intake

Darren adds: 'I used to keep calves penned individually up to weaning. But now I'm batching them into groups of four or five. It seems to encourage them to eat more feed.'

Proof of better growth!

At the start, back in August 2014, two batches of calves were measured and growth rates were calculated to be 760 and 790g/day.

By September, on Kirsty's advice, Darren had increased the daily milk powder ration to 850g per calf each day – to make a more concentrated milk than the bag label instructions advised. This led to growth rates increasing to 830g/d – not far off the target 850g-1kg/d.

In January 2015, Darren reached the target after switching to a better quality concentrate, fed ad lib. Calf jackets had been introduced too. Calves were now gaining 860g/d. Further weigh-banding in March showed gains of 870g/d, and in June they were achieving 920g/d.

Darren adds: 'The calves used to look like they were doing well; their coats were shiny and there weren't many problems with scour or pneumonia. But it's only been because of the measuring that I've been able to appreciate how much better they could do.'

'Now I'm feeding them better, they are growing better, and so they can go for breeding sooner. In fact, four months sooner than previously! And I notice that the heifers coming through now are larger in the frame, not just heavier.'



Calves at Cracalt Farm

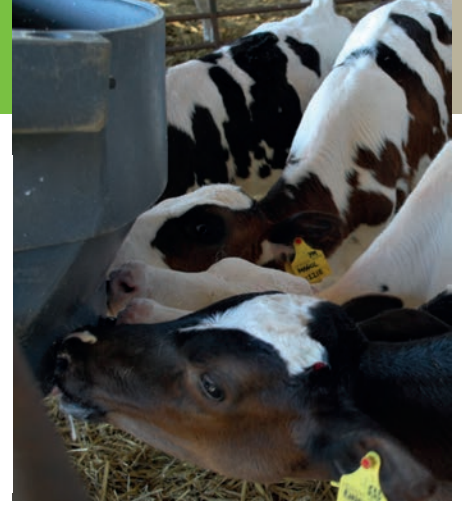
XLVets' Calf Tracker

From this autumn, XLVets will be running a similar initiative to help farmers – beef and dairy – to improve calf growth rates in the first eight weeks of life. The initiative is based on measuring and monitoring five key performance indicators (KPIs) as shown below.

KEY PERFORMANCE INDICATORS (KPIs) in first eight weeks:

- 1. Growth rate to weaning:** Record birthweight and date, record weaning age and weight
- 2. Total mortality:** Keep a tally of calves that die between 0 and eight weeks of age
- 3. Pneumonia rate:** Record the number of cases in a 3-month period and divide by the total number of calves on the ground.
- 4. Scour rate:** Record the number of cases in a 3-month period and divide by the total number of calves on the ground.
- 5. Total protein:** (optional for suckler herds) Vet to blood sample calves at 1-8 days of age; review the average and the variation

To learn more about the XLVets calf rearing initiative, or find out how to get involved contact your local XLVets practice.



FarmSkills

GROWING FARM BUSINESS SUCCESS

Calf rearing workshops

Successful calf production begins long before the birth of the heifer calf. Even before conception there are many things to consider in order to maximise your chance of making her life a success.

The health and nutrition of the dam is a key factor in this, ensuring that she has an appropriate body condition and is adequately supplied with all the trace elements and mineral she requires to carry a healthy calf.

Other factors to consider include the suitability of the calving environment available along with the steps taken during the first critical hours of a calf's life, which not only influence the chances of survival but may also determine how quickly she grows, at what age she gets in calf and how much milk she produces during her life.

With this in mind FarmSkills run 'Calf Rearing - Birth to Weaning' workshops to equip

delegates with the confidence, knowledge and practical skills to improve their calf production.

By the end of the workshop attendees will be able to; plan and prepare for a successful calving period, conduct basic first aid to resuscitate the newly born calf, provide appropriate management to maximise survival rates and outline the key steps required to produce a healthy well-grown calf which is in optimum condition to be weaned.

Focusing on the importance of early nutrition, immunity and weaning, the workshops are delivered on farm by XLVets practices.

What do the workshops cover?

- The calving environment and a practical assessment of facilities
- Colostrum management
- Environmental management
- Milk feeding/rumen development/calf rationing
- Importance of immunity and how to maximise it
- Weaning strategies and targets

The workshops are accompanied by our FarmSkills fact and workbooks which are designed for delegates to keep on farm and refer back to when necessary. They provide practical advice, tips and check lists covering all aspects of the course.

For further information on courses running near you visit our website www.farmskills.co.uk or call the FarmSkills team on 01765 608489.

If you have already attended a 'Calf Rearing Birth to Weaning' workshop, why not book on to attend 'Calf Rearing Stage Two - Weaning to First Calving workshop'? To register your interest complete an online enquiry form or contact the FarmSkills team.

"The workshop provided concise and useful information to take back and implement on my own farm. Both vets were very knowledgeable and enthusiastic and the location was perfect for the day."

"I now have plans to improve the ventilation in my calf sheds at home as well as to regularly monitor progress. The course has given me practical advice and tips that are easily followed to improve production."

Calf Rearing Delegates - Rosevean Vets workshop

FarmSkills
GROWING FARM BUSINESS SUCCESS

FarmSkills heifer rearing courses

Calf rearing part 1:

- Plan and prepare for successful heifer production.
- Maximising calf survival rates through good management.
- Understanding calf development and optimise growth from birth to weaning.

Calf rearing part 2:

- Planning for service.
- Care of the pregnant heifer.
- Disease management and routine preventative health measures.

Practical workshops delivered by vets on farm and tailor made for you.

To find out more about these courses or to book onto a course in your area contact your XLVets practice or visit www.farmskills.co.uk

WILLOWS FARM ANIMAL VETERINARY PRACTICE



Veterinary surgeon Owen Tunney

XLVets practice Willows Veterinary Group



Intervention strategies to improve pregnancy rates

OWEN TUNNEY, WILLOWS VETERINARY GROUP

The healthy functioning of a cow's reproductive system is fundamental to good fertility. However, stress factors can unbalance the system and lead to silent heats, delays in cows returning to cycling, or holding to conception. This extends the calving interval, increases average days in milk, and reduces the annual milk cheque.

However, through veterinary intervention, a variety of strategies can be employed to ensure cows do return to cycling again, and hormonal levels can be re-balanced to allow the production of a healthy oocyte (egg) and ultimately a healthy full term pregnancy.

Pregnancy rate

Pregnancy rate is a key performance indicator when measuring herd fertility. It is driven by heat detection/submission rates, and conception rate. Improving these parameters will directly improve the efficiency and profitability of the herd.

Vet Owen Tunney of Willows Vet Group in Cheshire has helped one dairy farmer to improve the herd's pregnancy rate by using a synchronisation and fixed time AI protocol to drive up submission and conception rates.

But first, a recap on the reproduction system of the cow and the hormonal influences that affect fertility.

Hormone interactions

The reproductive system of female mammals involves a complex series of inter-related hormonal feedback mechanisms.

Taking fertility back to the basics: in a healthy cycling cow ovulation occurs every 18-23 days, when the ovary releases an egg from a follicle.

Once an egg has been released, the follicle becomes a corpus luteum (CL) - and starts to release the hormone progesterone. If the egg is not fertilised, then more follicles continue to develop in waves, (hence the term 'follicular waves'), so that at any one time they are in different stages of maturity.

Healthy follicular development is reliant on a delicate hormonal balance within the ovary. Follicles develop under the influence of Follicle Stimulating Hormone (FSH) and waves of Luteinising Hormone (LH) which is, in turn, reliant on adequate progesterone being released from the CL.

The CL will disappear approximately 16 days after the previous heat, allowing a new dominant follicle to develop. This follicle will

produce oestrogens, which then cause the oestrus activity (bulling activity). When the LH pulses peak, this causes ovulation of the next egg, and the cycle continues with another follicle then becoming dominant and, 21 days later, another egg being released.

This cycle continues until the cow conceives. When she does, the corpus luteum does not disappear, but instead, continues to produce progesterone, which allows the pregnancy to be maintained.

Conception rate factors

Owen explains: 'Aside from a good AI technique, conception rate is affected by the health and quality of the follicles and eggs.'

'Good fertility requires healthy follicles which will then release good quality eggs so that once fertilised, they can result in a full term pregnancy.'

'The health of a follicle is dependent upon adequate levels of progesterone being produced by the corpus luteum, allowing an appropriate pulsatile release of luteinising hormone through the oestrus cycle. However, LH production is sensitive to stress factors such as inadequate nutrition, a difficult calving, uterine disease, lameness, extremes of temperature, or a poor environment.'

'So cows under stress can produce less LH which will reduce the quality of the follicles and the eggs they release.'

Submission rate challenges

'A key factor affecting submission rates is heat detection,' says Owen. 'This has become much more difficult in today's herds due to the extra production stresses and modern genetics which have decreased the period of oestrus.'

In fact, a comparison of oestrus behaviour of dairy cows in 1970 shows that, back then, a cow was likely to be in oestrus for 15 hours and would mount another animal 20 times. But modern dairy cows average only 8.5 mounts and seven hours of oestrus.

Moreover, these heats are more likely to occur at night.

Worse still, it is estimated that around 40% of heats are silent. 'So immediately, that's adding another 21 days until the cow may be served again,' says Owen. 'Cows may show heat again 21 days later if the next follicle produced is of better quality. Or they may not.'

'The main driver for oestrus activity is the hormone oestrogen, and levels of this are determined by the quality of the developing follicle.'

'Poor follicles tend to result in a corpus luteum which produces sub-optimal levels of progesterone thus reducing the quality of the next follicular wave. This circle of sub-oestrus continues until the stress factors are reduced, for instance, the cow comes out of negative energy balance, the diet improves, her lameness is resolved, or the weather improves, etc.'

'Further exacerbating this issue, is that the high metabolic rate of high yielding cows also means that oestrogen gets broken down very quickly. Hence this is another reason why a cow might only express oestrus for a short time, or not at all.'

'One way of stimulating oestrus behaviour and making heat detection easier, is to increase the cow's progesterone levels.'

'This allows an appropriate pulsatile release of LH leading to a healthy follicular wave resulting in a follicle producing good levels of oestrogen and promoting oestrus activity. This can be done using an intra-vaginal device to release a controlled flow of progesterone for a period of seven to nine days.'



Intra-vaginal device with progesterone

Quality issues

When cows are presented for PD-ing and luteal cysts are found, then vets can administer a prostaglandin-based product which will cause the corpus luteum to regress so that the cow can return to cycling again, and exhibit a normal oestrus, 2-5 days later.

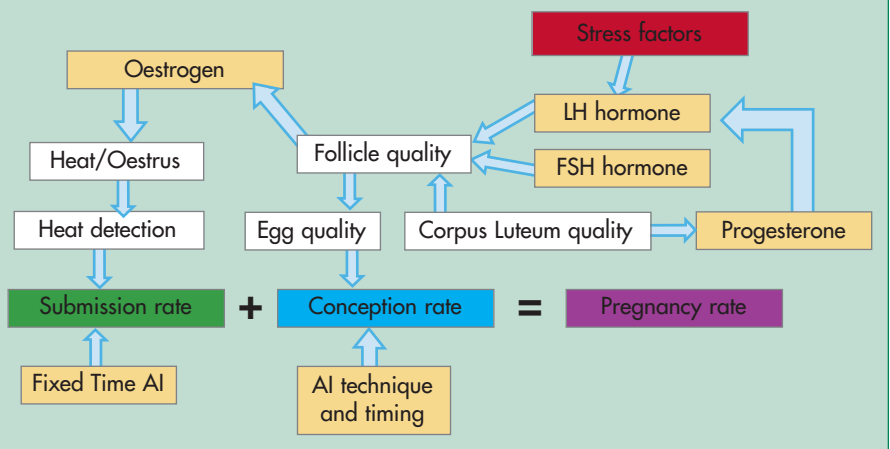
Owen explains: 'Although this creates a heat, if the corpus luteum has not been producing adequate progesterone - as is often the case in anoestrus or cystic cows - and so is not good quality, then the knock-on effect is a follicle of poorer quality, and consequent release of a poorer quality egg.'

'The animal may have a heat but not conceive, or the pregnancy may not be maintained - known as late embryonic death - resulting in a return to oestrus often 24-35 days post service.'

'So on some farms, with some cows, the use of progesterone and synchronisation programmes will be a faster route to a full term pregnancy.'

The diagram below outlines some of the key factors affecting pregnancy rate, and the factors that have an impact on them.

The inter-related factors affecting fertility (pregnancy rate)



Fixed Time AI

Owen explains: 'When non-bulling or non-pregnant cows are presented to me on a routine visit, the desired outcome of any treatment I administer should ultimately be the

creation of a pregnancy in as many of these animals as possible - ie a high pregnancy rate post-treatment.'

'To improve pregnancy rate the aim is to have submission rates as close to 100% as possible combined with ensuring a healthy follicle is produced in each case, allowing higher conception rates. High submission rates are best achieved when routine intervention results in a fixed time AI, so that 100% of treated cows are served.'

'Synchronisation of oestrus in healthy cycling cows with normal follicular dynamics is relatively straightforward and one common treatment is the ov-sync protocol which will yield good conception rates when appropriately used.'

'However, many cows presented as non-bullers to vets will have some form of stress-related disturbance to their ovarian cycle. This may result in poor quality egg production following ov-sync treatment and this will reduce conception rates in this type of patient.'

'So a preferred treatment protocol in those instances involves the combination of a progesterone releasing device in combination with an ov-sync type protocol. By improving the progesterone status in these 'broken' cows, a healthier follicle develops resulting in improved conception rates.'

Confidence to breed without seeing heat

For Richard Pilkington of Shordley Hall Farm near Wrexham, cows that were not seen bulling were being given synchronisation treatments to bring them into oestrus. But they would only be served if they were seen in heat. 'It didn't seem right to be AIing them without actually witnessing the heat,' explains Richard. 'It went against everything we've always done!'



Left to right: Owen Tunney-Richard Pilkington

The 250-cow herd calves all year round and is currently yielding 9,500 litres on twice a day milking.

To overcome the challenges of spotting heats, Richard had invested in activity collars for the cows back in 2007. He upgraded these two years later to include rumination monitors. These give a 24-hour picture of a cow's health and results are analysed to give an index of health, helping Richard and his staff focus their care.

But with silent heats, despite these extra monitoring devices, some cows would go unserved until the next heat, automatically delaying new pregnancies by at least another 21 days.

Owen explains: 'Because Richard was wary of the fixed time AI, he was missing opportunities to get the cows in-calf.'

'With a fixed time AI protocol, all interventions will result in a service rather than the more traditional 'wait and see' approach where animals exhibiting silent heats have no chance of conceiving, and every chance of requiring further hormone treatment. This not only results in higher treatment costs but substantially decreases farm profitability through increasing



Cows with rumination collars

the number of days empty and extending calving intervals.'

Owen persuaded Richard to take part in a trial in which the outcome of a range of two different intervention approaches would be assessed, and the value of Fixed Time AI demonstrated.

The trial took place last year with breeding decisions being made for the four months from August, and involved Owen making weekly fertility visits.

Cows were assigned to one of three treatments according to Owen's clinical assessment of the state of the ovaries, and body condition and general health of the cow. Those in good health and showing heat were AIed as usual.

Cows in good body condition with evidence of a corpus luteum and an apparently normal follicle development were put onto an ov-sync programme which would bring them into oestrus at a known time so they could be AIed at a fixed time.

The third treatment was given to cows which had not been seen bulling after 50 days, and had a history of post-partum disease, condition loss, or poor follicle presence.

These were given a synchronisation programme that included an intra-vaginal device (IVD+prog) to improve progesterone levels and improve reproductive function.

The AIed cows would be examined seven days later to ensure response to the initial treatment, and continuation of the next stage of the programme i.e. administering prostaglandin for the ov-sync for treatment and checking visible evidence of follicular development in the IVD+prog treatment.

Cows were then PD-ed at 28-35 days after service. The results are shown in the table (note: direct comparisons cannot be made between the two synchronisation programmes due to the differences in cow health).

Owen explains: 'Conception rates were significantly higher in the synchronisation

programmes with the Fixed Time AI – 43% and 36% compared to just 26% by normal AI service.

'Also, of the cows that received the intra-vaginal device, and hence the extra progesterone, 55% exhibited heat and so only 45% received a true blind service.'

In this trial, 66 cows out of 183 were not showing signs of heat, and were assigned to one of the two synchronisation programmes and were served using FTAI.

'This represents the potential to produce 10.5 more pregnancies per 100 cows in animals which without fixed time AI would not have been served. For Richard Pilkington's herd, that represents an extra 22 pregnancies per year.'

Another significant finding was the days to conception achieved using the synchronisation programmes: 32 and 39 days (see table below).

Owen explains: 'This indicates that those cows not conceiving to the first blind service, did conceive at the next oestrus. So the treatments would have had a positive effect on their reproductive functioning.'

Richard Pilkington comments: 'I did take a lot of convincing, but the proof is there. I think it would also be beneficial to be using the intra-vaginal devices in the cows not seen bulling, but am currently weighing up the cost:benefit of this.'

Owen adds: 'In healthy cycling cows, with normal follicular dynamics, it is easy to get great results. But when dealing with cows that are stressed and not cycling properly, then tailoring specific treatments for different animals gives far better results. And together with Fixed Time AI, then overall, fewer medicines are being used to achieve pregnancies.'

'So synchronisation programmes are a management tool and not blanket therapy. Communication needs to be very good between the farmer and vet, but every farm stands to gain something from their use.'

Service type	No. served	CR%	Heat detected %
Natural service	117	26	100
Ov-sync (healthy cycling cows)	44	43	27
Sync and IVD+prog (problem cows)	22	36	55

Service type	Blind service %	Days to conception
Natural service	0	
Ov-sync (healthy cycling cows)	73	32
Sync and IVD+prog (problem cows)	45	39

CR = conception rate; IVD – intra-vaginal device



Your opportunities to improve animal health on-farm through better knowledge and practical expertise

XLVets was formed when a small number of independent large animal veterinary practices joined forces to share knowledge and expertise. The motivation to collaborate was driven by the need to run their veterinary businesses more cost-effectively, and to ensure practice staff were fully equipped with skills to deliver 'excellence in practice' to their farm clients.

As XLVets has grown, member practices have embarked on delivering high quality practical training to farmers and industry workers through FarmSkills courses. More recently the launch of the Dairy Herdsman Certificate is supporting young people at the start of their careers, and brings together different FarmSkills courses into one combined programme.

Further opportunities for those working on farms to improve their own knowledge and expertise in animal health are also being provided through XLVets-led health initiatives such as BVD CHECK TAG and 'Stand up to Sheep Lameness'.

FarmSkills

XLVets' FarmSkills portfolio of training courses was formally launched in 2009. And over the past six years, 3,000 courses have been delivered to over 15,000 delegates.

All the courses are organised by XLVets Training Services and delivered by both XLVet members and industry specialists. They provide practical hands-on training across the UK and Ireland. The most popular courses are foot-trimming and DIY AI, however there is a wide range of course topics available for dairy, beef, sheep, pig and poultry enterprises. More details can be found at www.farmskills.co.uk.



XLVets training services manager Olivia Taylor explains: 'The FarmSkills courses are deliberately run with small numbers due to their very practical nature. And generally fit into the middle of the day, making it easier for everyone to take time out from the farm.'

'FarmSkills courses are very demand-led, and run according to the skills that people

want to develop. We have plenty of established courses now, but are always open to suggestions for new ones.

'At shows and events, the XLVets stand always gives people the opportunity to learn new skills. For example, tying a halter from a single piece of rope, or loading a DIY AI gun. At this year's Livestock Event we were promoting an alternative skill - visitors could come and try their hand at the art of cake-decorating!' adds Olivia. 'It was just one of the activities being carried out this year to celebrate the 10-year anniversary.'



Livestock event visitors demonstrating their cake decorating skills

FarmSkills courses are open to all, and not just farmers who are clients of XLVets practices. Any requests for new courses should be made to the FarmSkills team by calling 01765 608489.

The Dairy Herdsman's Certificate

A recent initiative, launched this year through FarmSkills, is the Dairy Herdsman's Certificate.

Olivia explains: 'This qualification is designed to equip students with some expertise in the more practical elements of a herdsman's job. It consists of eight of the dairy-focused FarmSkills workshops, amounting to 13 days of hands-on training. Moreover, it is available to students, via their college, at a subsidised rate.'

The modules cover DIY AI and fertility, foot-trimming and mobility, nutrition, safe and effective use of veterinary medicines, calving and calf rearing, heifer rearing, milking routines and mastitis, and emergency first aid on the farm.

Olivia adds: 'This was piloted at Newton Rigg College in Cumbria over the last academic year, and 50 students achieved the Certificate. We are now hoping to roll this out across other colleges, working in partnership with our XLVet practices to deliver training to many young people across a good geographical spread.'

'Prospective employers will be able to see that not only have these students gained an academic qualification, they have also gained some practical skills in key areas of dairy herd management.'



Moving towards BVD eradication

In addition to running training courses, over the years XLVets has also instigated a range of animal health initiatives which provide the opportunities for farmers to improve their knowledge of key diseases, welfare issues, and the strategies required to protect animal performance.



Currently running is BVD CHECK TAG – a nationwide health initiative, available to all cattle farmers. Behind the scenes, XLVets has been working with the suppliers of the special tissue-sampling white ear tags and BVD vaccine manufacturers. Through the collaboration of these companies, a single nationwide scheme has been created that any farmer or veterinary surgeon can access.



XLVets' Joanne Sharpe who manages the scheme explains: 'If BVD is to be eradicated, then vaccination alone is not enough. It's essential that Persistently Infected (PI)

animals are identified and removed from herds in order to control the disease.

'The scheme makes it easy for farmers to identify if newborn calves are PIs or not – by simply fitting a DEFRA-approved white ear tag that automatically collects a tissue sample which is sent for laboratory analysis. A copy of the results is also sent to the farm's vet to help guide strategies for disease eradication.

'All negative test results are uploaded onto a searchable online database, which now has over 20,000 cattle identified on it. The scheme is helping farmers to be proactive in identifying and removing PIs from the herd, and also encouraging buyers to demand that calves are BVD-tested. This will help, over time, to move the industry towards its target of a BVD-free cattle population.'

More information can be found at www.bvdfree.co.uk.

Less lameness in sheep

Another XLVets-led health initiative is focusing on helping sheep farmers to reduce the prevalence of lameness in flocks. The 'Stand up to Sheep Lameness' campaign was launched at North Sheep in June.



XLVets' farm brand manager Gemma Ayre explains: Sheep lameness is often seen as part of the parcel when sheep farming and this does not need to be the case, lameness

can be controlled. To make matters worse, conditions are often not identified correctly, and therefore some of the treatments given to resolve lameness are in fact worsening the problem. Everyone on the project steering group agreed that it was important to promote the message – 'Do Not Trim Feet'.

'We have collated a range of materials to help farmers with identifying what is causing lameness in their flock, utilising some of the information already available through organisations like AHDB Beef and Lamb and

FAI. We also sought out sponsorship for the production of literature and materials from the animal health industry.

'So far, 30 XLVets practices have joined the campaign, and will be holding meetings to help farmers differentiate the different causes of lameness and the best treatment strategies. Some new FarmSkills courses have also been devised, and sheep farmers can look out for articles in the press too.'



Millcroft host a farmer 'stand up to sheep lameness' meeting



The White 'BVD CHECK TAG'

Next...better calf health...

XLVets' latest health initiative puts the focus on the first eight weeks of a calf's life, and aims to help farmers and calf-rearers ensure that animals achieve the growth targets required for breeding which will benefit performance in later life.

For more information, turn to pages 9-12

Table 1: Results of initial survey data from AI flasks across North Yorkshire farms.

	% Viable	% Polarised mitochondria	% Intact Acrosome	% Motile	% Prog Motile
Min	18.80	11.25	10.34	13.10	3
Max	65.22	72.50	68.82	63.80	51.60
Mean	43.86	39.33	36.53	38.46	25.04

Table 2: Summary of results from second stage of project (n= 48)

	% Viable	% Polarised mitochondria	% Intact Acrosome	% Motile	% Prog Motile
Min	10.3	4.30	5.38	1.40	0
Max	89.94	91.56	87.44	89	75.50
Mean	50.65	44.9	41.79	47.51	35.65

The second stage of the project involved the XLVets network of practices who sent samples that had been collected on farm as part of breeding soundness examinations and then diluted with semen extender into the lab. This helped to establish the feasibility of this process where the CASA and flow cytometry could be used to enhance and reinforce what the vet had found at the time of the collection, the results are shown in Table 2.

The results from the project and market research done indicated to the RAFT Solutions team that there is a commercial role within the cattle farming and veterinary industries. It was therefore decided to launch this service 'SemenRate'.

SemenRate can provide veterinary practitioners with extra information alongside their on-farm evaluations to reinforce diagnosis for:

- Pre-sale fertility testing for bulls both dairy and beef which are to be sold for breeding (giving confidence to both buyer and seller alike).
- Infertility investigations in a natural service situation - to help include/eliminate the male from the equation.
- Investigation of poor performance of advanced breeding programmes e.g. ET or AI.

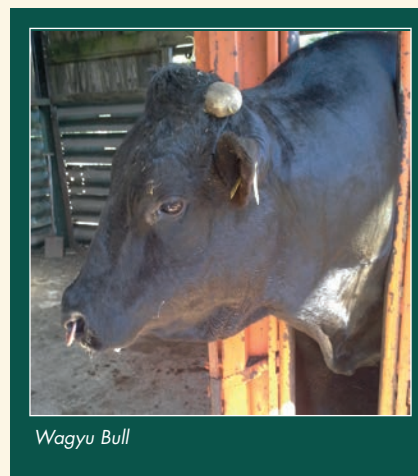
The SemenRate laboratory can provide a service to farmers to:

- Screen batches of semen prior to use, especially where there are concerns as to the cold chain, transport and handling of semen prior to arriving on the farm.
- Proactive screening/selection of semen prior to advanced breeding programmes to maximise chance of positive results.

Case study Yorkshire Wagyu

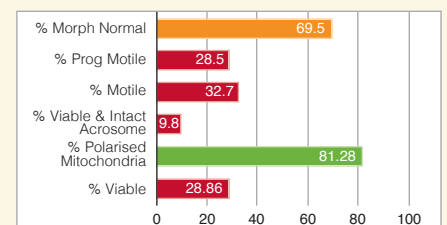
The Yorkshire Wagyu company rears Wagyu cross dairy calves through to finishing at 22 – 24 months of age, when the meat is then marketed to top quality restaurants and pubs. Wagyu meat is renowned for its eating quality due to the intense marbling that it possesses.

The Yorkshire Wagyu Company sells Fullblood Wagyu bulls or Fullblood Wagyu AI semen collected from their own bull to dairy farms and in return buys the calves back to rear and finish. This relationship relies on them providing highly fertile bulls or AI semen so that the fertility performance on the dairy farms is optimal and the supply of Wagyu calves back to Yorkshire Wagyu is constant.



Wagyu Bull

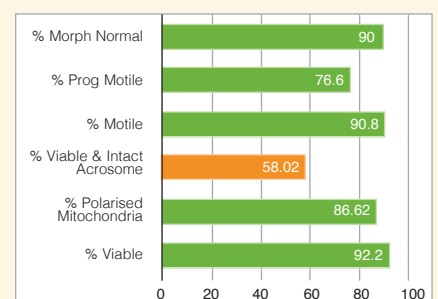
Figure 1: SemenRate laboratory results for Bull A



Also through the flow cytometer analysis this sample was identified as having a high proportion of disrupted acrosomal membranes that were not detectable through standard microscopy.

As a result of these evaluations it was possible to select the bulls that were likely to perform best in a natural service situation (Figure 2, Bull B) and therefore use them first, and retain the bulls that had not performed well in the analysis for re-testing in a further 60 days. Going forward Yorkshire Wagyu have a commitment to using SemenRate to ensure bulls they supply are as fertile as they should be.

Figure 2: SemenRate laboratory results for Bull B



With this in mind the first crop of six full blood Wagyu bulls that were going to be available to serve dairy females had a standard bull breeding soundness examination performed, and the semen collected was analysed through the SemenRate laboratory using CASA and Flow Cytometry.

The results of the analysis proved to be extremely useful as the standard breeding soundness evaluations did not reveal abnormal findings, in terms of mass motility, progressive motility or morphology. However motility when analysed back in the SemenRate laboratory revealed that compared with the other five bulls one bull's (Figure 1, Bull A) progressive motility had decreased significantly compared with on-farm evaluation, whilst the others had remained consistent with on-farm findings.



Collecting Data for diagnosis

GRADUATE DIARY

Katherine Lumb, BVSc MSc MRCVS

Bishopton Veterinary Group



About me

I graduated from the University of Liverpool in summer 2014 and joined the ten vet strong, ruminant team at Bishopton Vets shortly after. An interest in farm animal production and the maintenance and promotion of production efficiency was a key factor in my decision to become a vet and is something that I had a primary interest in throughout vet school training, pushing me to want to work in farm animal practice. I started the XLVets Graduate Programme in September 2014 alongside eleven other recently qualified vets to help develop our skills and interests in farm animal practice. I have a keen interest in infectious disease control and youngstock health and management and would like to develop my interests and skills in these areas further as my career develops. I also have a strong working link with RAFT Solutions Ltd regularly undertaking industry led research projects alongside clinical work. Outside of work I enjoy mountaineering and cycling and am a keen singer.

All in a day's work....

Over the course of vet school I became very interested in how research translates into practice on farms as well as in the herd health planning and fire fighting aspects of farm vetting. Working at Bishopton, a farm practice that plays a really active role within XLVets, as well as with RAFT solutions, the sister company to Bishopton and Synergy Farm Health, I've already had the opportunity to do work in all these areas on a daily basis.

Since I started work I have been involved in a variety of projects, each of which require different skills varying from the reading and writing of scientific literature, to the collection of blood samples for clinical trials. My main project to date has revolved around the impact mycotoxins are having on the livestock industry. This involved the design and distribution of surveys to ascertain what experiences farmers and vets alike had of dealing with mycotoxins. The XLVets network was vital in being able to distribute these surveys right across the country to help get a better geographical representation of people's experiences. This project has recently come to a close and I was invited to go and present my findings at a mycotoxin industry meeting in London. An early morning calving preceded a bit of a dash, via the shower, for the train, which typified the variety that I enjoy in my job! The work was really well received at the meeting and helped to highlight the experiences and knowledge gaps of farmers and vets on the topic of mycotoxins.

As my abilities and confidence with ambulatory work have improved I have started to get much more involved with regular herd health work and I've enjoyed routine fertility visits, metabolic health assessments and in particular mastitis investigation which has tied in nicely with my increased involvement with the in-house mastitis diagnostic lab we run. I hope that I can build on this and that it can lead on to me being able to help run XLVets FarmSkills mastitis workshops as part of the range of farm training courses we run at the practice.

Working as part of the XLVets network has already given me lots of opportunities I don't think I would have had elsewhere. The Graduate Development Programme really helped to settle me in to clinical work in the first few months of working and interacting with other member practices, particularly as being part of RAFT projects has brought me into contact with lots of great people. All of

these aspects together reflect the fact that I'm lucky enough to have a job where I can go and get my hands dirty while at the same time being involved in research and development; that I hope to see in action on farms in the years ahead.



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GRADUATE DIARY

Matthew Hylands, BVM BVS BVMedSci MRCVS

Lambert, Leonard & May



Go, Go, Go!

Since my last article we're down a vet up here at our Lancashire branch so it's been time for me to shed my new-grad wings and get well and truly stuck in!

In stark contrast to my last update when things were quiet during silage time and I was managing to catch up on some much needed herd health paperwork, this quarter has been non-stop, which for me mostly means routine fertility visits.

Losing a vet has become a great opportunity for me to increase my number of routine farms and multiplied the number of health and disease discussions I have daily on farm. My workload has grown exponentially and with it my knowledge of all things farm vetting, albeit along a very steep learning curve with some peaks and troughs along the way. The step up in workload seems to have coincided nicely with the next crop of veterinary graduates coming through the system, which means that I'm now officially free of my 'new grad' title although have nothing to fall back on when things go belly up!

Recently I've helped to develop and run a sheep discussion group for our sheep farmers

within the practice. We've managed to create a small but focused group of farmers who are keen to share knowledge and data alike in order to progress their flocks. In our most recent meeting I benchmarked and compared each farms' lambing and scanning figures both within the group and also with previous seasons. This allowed us to see how vaccination status, tup-to-ewe ratio and breed affected various parameters such as lambing percentages or number of abortions. Everyone was able to contribute in some way and I trust take something new home with them with the intention of improving their next lambing season. For me this has been a welcome break from the day to day dealings with dairy cows and I've really enjoyed the unique challenges involved in preventative sheep work, something which I hope will pay off come next lambing season. Who knows, with tighter margins being forced upon sheep farmers recently this may well become more important than ever.

About me

I graduated from Nottingham vet school in the summer of 2014 shortly before moving to the scenic North West to pursue a career in farm animal practice with the Lancashire branch of Lambert, Leonard and May. Coming from Northern Ireland I'm well used to the rain, however the rural Lancashire accent was another challenge altogether!

With most of our work being dairy based I'm lucky enough to find myself in a position of relative responsibility having a handful of regular routines to my name already. Having recently finished the XLVets Graduate Programme I feel much more confident in day-to-day practice life and have also managed to find myself in a larger network of farm animal new graduates sharing information and experiences on a regular basis.

Outside of work I enjoy shooting of any kind and I've recently bought a mountain bike to make the most of the beautiful fells and moors up here.





FarmSkills workshops coming up

Northern England and Scotland



6 October North Yorkshire
Controlling Sheep Lameness



8-9 October Cumbria
Foot Trimming (2 day)



13 October North Yorkshire
Foot Trimming



22 October North Yorkshire
Breeding and Genetics



27 October North Yorkshire
DIY AI



11 November North Yorkshire
DIY AI



17 November North Yorkshire
Mobility and Foot Trimming



24 November North Yorkshire
Beef Fertility Management and Selection



7 October Oxfordshire
Preparation for Calving

St Boniface Farm Vets

8 October Devon
Lambing

St Boniface Farm Vets

12 October Devon
DIY AI



14 October Oxfordshire
Controlling Sheep Lameness



4 November Oxfordshire
Calf Rearing - Birth to Weaning

Scarsdale Vets Farm

16 November Derby
DIY AI



18 November Oxfordshire
Mastitis Control

Central and Southern England

Please note dates are subject to change

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