There are numerous other purveyors of knowledge who influence farmers. The range includes milk-buyer personnel, inspection officers, technical and trade representatives from the wide breadth of the supply trade and consultancy groups. In order to ensure the quality of advice, which currently varies considerably, the Forum urges industry to again consider some form of accreditation.

Comment

This document is based on the firm belief of the members of the Dairy Science Forum that there is an opportunity to build a profitable, innovative and competitive UK dairy industry, which will meet consumers' needs. The UK food chain, including the dairy sector is evolving as it consolidates and rationalises. There are many positives. Farmers are engaging more effectively with the food chain; an essential development as they are increasingly exposed to market forces and a competitive environment.

But dairy farming has to be profitable if there is to be investment for a future, and that must include successful training schemes. Biosecurity and food security are vital requirements. The days of food surpluses are past and for many countries, food supply is now paramount.

Given the opportunity, (and a number of important barriers to progress have been highlighted in this paper), the industry will make a net positive contribution to the environment and contribute to the long term sustainability of rural communities.

The Dairy Science Forum

5 March 2008

Appendix 1. Research requirements and opportunities

The Forum believes that dairy research should focus on healthy animals, quality product and sustainable environment. The following paragraphs are not intended as an exhaustive list of requirements but indicate key areas which contribute to the future sustainability of the industry.

Environment

- Climate change will influence world milk supplies and returns. The UK needs to be able to seize the emerging opportunities from this globally changing situation. Practical solutions to the problems relating to the carbon and environment impact of milk production are urgently needed. New technologies for carbon and methane reduction in dairy cow rations need to be identified.

Health and welfare

- Lameness, mastitis, fertility and behavioural issues, as well as a range of infectious diseases, continue to incur huge financial losses and thus rank highly in the list of priorities.
- Whilst there is a need for renewed emphasis on improving genetics (including genomics), longevity, the need for appropriate housing and management systems for present-day dairy animals is critical and impinges on the health issues. These will maintain the confidence of retail customers in terms of welfare, provenance and food safety which all remain critically important.
- The impact of animal health on milk quality needs further study, particularly from economic and ethical standpoints.
- There is also an urgent requirement to increase the understanding of the concept of proactive health planning, as opposed to the simple production of health plans. The opportunity exists to develop IT based systems to support the farmer/veterinary/adviser partnership, an essential element of any future sustainable farming business and to create reliable databases to allow delivery of more than anecdote. Economic benefits derived from positive health planning need to be more clearly defined to ensure that the concept is widely adopted.

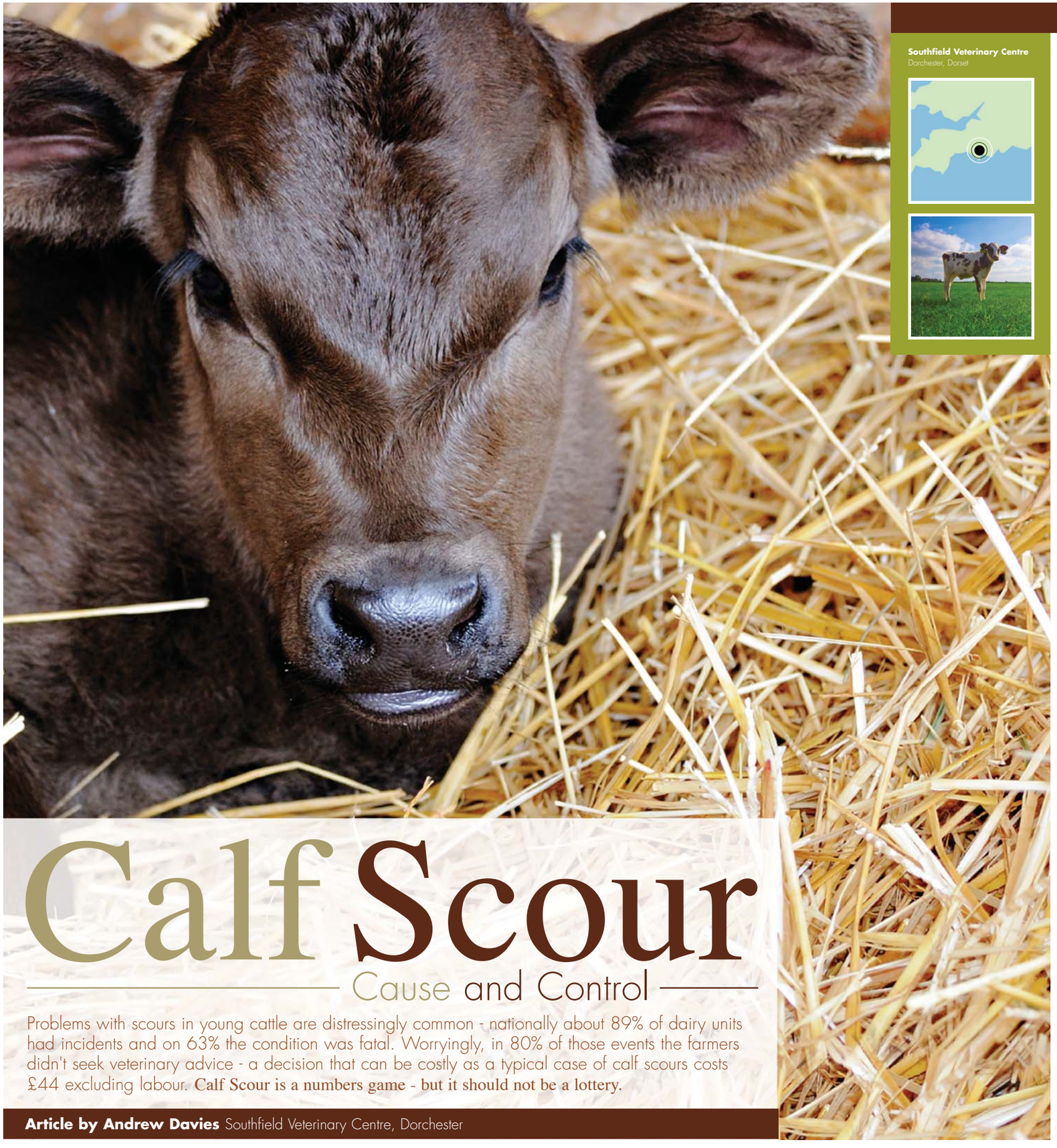
Production systems

- Advances in plant breeding have produced grass species that are more efficient and produce less nitrogen, but the changing climate raises the need for drought tolerant fodder crops, such as maize. There is also a need to counteract methane production.
- The longer-term effects of new systems (such as extended lactations, robot milking and all-year-round housing) require detailed examination both in terms of animal welfare, environmental impact and customer acceptability.
- Nutrition, as previously discussed, will have an increasing influence on not just the performance of dairy cattle, their fertility, health and welfare, but also on climate change, waste disposal and water quality. Improved nutrition is also one of the key steps to reduce the contribution of cattle to gas emissions (a seeming current pre-occupation of Government).

Agri-business

- An economic research base for a sustainable dairying business and supply chain should be a priority.

David Black (01228) 710208
Paragon Veterinary Group



Calf Scour

Cause and Control

Problems with scours in young cattle are distressingly common - nationally about 89% of dairy units had incidents and on 63% the condition was fatal. Worryingly, in 80% of those events the farmers didn't seek veterinary advice - a decision that can be costly as a typical case of calf scours costs £44 excluding labour. **Calf Scour is a numbers game - but it should not be a lottery.**

Article by Andrew Davies Southfield Veterinary Centre, Dorchester

Southfield Veterinary Centre
Dorchester, Dorset

If farmers can keep the population of dangerous bugs in the environment below a level where it can overwhelm an animal's immune defences, the disease will be kept in check. Then the business can look forward to better figures on its end of year balance sheet.

Moreover, losses can continue long after the animal has apparently regained its health - heifers that had suffered scours as calves typically produce £59 less milk in their first lactation. And although there is no definitive evidence, it is quite possible that early disease creates permanently 'runty stock'.

CAUSE

Many different pathogens can cause scours but Rotavirus is by far the most common, responsible for about 42% of cases. Second is Cryptosporidia with 23% of incidents, followed by Coronavirus (14%), Salmonella (12%) and E coli K99 (3%). Coccidiosis also causes scours typically in older calves but this is covered in a separate fact sheet.

With so many possibilities getting a definitive diagnosis is vital to determine appropriate treatment. Submitting 4 or so fresh faeces samples at the beginning of a scour problem can provide a rapid result and allow correct treatment and control measures. It is dangerous to assume that a one-off diagnosis will determine treatment in a protracted outbreak as the organisms involved may change and regular monitoring is recommended.

ORGANISMS

ORGANISM 1: ROTAVIRUS
ORGANISM 2: CRYPTOSPORIDIA
ORGANISM 3: CORONAVIRUS
ORGANISM 4: SALMONELLA
ORGANISM 5: E.COLI

KEY POINTS

- EARLY DETECTION
- SPECIFIC DIAGNOSIS
- PROMPT AND FREQUENT
- ORAL ELECTROLYTE THERAPY
- APPROPRIATE MEDICATION

Treatment...

Treatment will involve oral electrolytes or drips to correct the dehydration and acidosis that is the main cause of death. Calves will also need milk to provide energy to deal with the disease. Early fluids with energy source and bicarbonate against acidosis, fed frequently, are the key to successful treatment. In cases of bacterial scours (e.coli/salmonella) antibiotic treatment may be useful, and with Cryptosporidia a specific medicine will be prescribed. All of this reinforces the need for accurate diagnosis.

CONTROL

With calving patterns becoming less fixed, young calves are now contracting scours at all times of year. But early winter is a particularly vulnerable period because of a number of factors - recent housing, changes in diet and cold, damper weather may all increase the stress that can trigger an outbreak.

Hygiene:

The best defence against scours is simple hygiene to reduce exposure of vulnerable calves to another animal's faeces. Good stockmen know that attention to detail will minimise such risks, by disinfecting calving boxes, feeding utensils and providing plenty of clean bedding. They also watch that calves are feeding properly and will identify and isolate animals showing early signs of disease.

The major source of pathogens of the calf is its mother. Once the colostrum has been fed removing the calf from its mother to an individual pen will reduce the risk of disease. Use of calving hutches providing a controlled individual environment is now proving an effective tool against scours. They are also useful as isolation pens for infected calves to reduce spread.

Colostrum:

The main protection against intestinal infections and also septicaemia, joint ill, navel ill, etc is to ensure that the calves get adequate colostrum - 'Wonderful stuff! - food, fluid and antibodies all in one and the best thing about it is that it's free'. As a rule of thumb, it is necessary for a calf to receive 3 litres or 6 pints of good quality colostrum in its first six hours - failing to achieve that target could seriously compromise the calf's health. Any animal with inadequate antibody levels is four times more likely to die during a scours outbreak.

50% of calves do not receive enough quality colostrum e.g. those born after difficult calvings, heifers producing colostrum with low antibody levels, from older cows with pendulous udders, and also from cows suffering milk leakage. Ensure that all cows produce colostrum of the highest possible quality by ensuring correct dry cow nutrition and management.

Freezing some good quality colostrum, in 6 pint amounts, is a good idea as it means there is some on standby for any calves where the quality of the colostrum is suspect. Quality can be gauged using colostrometers measuring the specific density of the colostrum. See your vet for details. Colostrum can be stored frozen for up to a year with no loss of quality. Frozen colostrum should be thawed slowly in warm water to prevent it being damaged.
DO NOT USE THE MICROWAVE!

For any calves suspected of not receiving colostrum then administration by stomach tube will be the answer.

Prolonged colostrum feeding:

Calf diarrhoea usually starts 5-7 days after birth because not only is there a decline in the secretion of antibodies from the calf back to the gut there is also a reduction in the antibody levels in the mother's milk. It is possible to maintain antibody concentrations within the gut and have a significant scour prevention benefit by prolonging the feeding of colostrum. The colostrum can be stored in a lidded bin such as a plastic dustbin at room temperature where it will gradually acidify. This soured colostrum is then fed back to the calves for two to three weeks until the main risk period for scours has passed.

It is also important to ensure the correct teat positioning to ensure normal swallowing reflex and then correct digestion occurs, as well as keeping teats and feeding machines clean and problem free.

PLEASE NOTE if you are trying to control or eradicate Johnes Disease from your herd then there is the potential to spread infection by feeding pooled colostrum. Discuss with your vet the relative risks involved.

Vaccination:

An important factor in achieving immunity to specific organisms is vaccination of the dam against the main infectious agents.

For Rotavirus, E.coli and Coronavirus there is a single vaccine (RotavecCorona-S/P) given between 10 and 2 weeks before calving, treatment at drying off is therefore convenient from the management viewpoint. Feeding colostrum for the first 14 days aids prolonged protective immunity.

For Salmonella infections-vaccination with Bovivac-S (Intervet) during the dry period is also available.

No vaccination currently exists for Cryptosporidia so we are reliant on early diagnosis and treatment.

KEY CONTROL MEASURES

COLOSTRUM	2-3L in first 5-6 hours
HYGIENE	Calving Environment
HYGIENE	Calf Rearing Pens and Equipment
VACCINATION	

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CASE STUDY

CASE STUDY 1 **Callington** Cornwall

Miranda Josephson Calweton Veterinary Centre, Cornwall

In early April I attended two 1-week-old suckled calves at one of our pedigree beef herds. They had acute onset watery scour and were dehydrated; the worst affected was collapsed and had no suck reflex.

With such cases, it is not stopping the scour that is most important, but replacing the losses - with oral fluids containing bicarbonate precursors (alternated with feeds of milk, which is needed for a healthy gut and recovery), or in the collapsed calf's case, intravenous fluids. Good nursing is absolutely vital - lots of dry straw providing warmth. Pain relief has been shown to be hugely beneficial and often antibiotics are necessary.

Knowing the specific bug(s) causing the scour is unlikely to change the treatment, but can be useful in reducing the number of future cases and hence losses. A calf-side test found Cryptosporidium was involved, despite the clean and well-bedded housing.

The farm is to use an oo-cide, a specific disinfectant for this infection to reduce the environmental 'load'.

A similar situation had simultaneously arisen in a contract dairy-calf rearing unit receiving calves from 10 days old. Crypto was again diagnosed; in this case the other prime suspects - rotavirus, coronavirus and E.coli - were also isolated. This is a frequent finding as often crypto only becomes significant when other diseases are present.

On this basis, and as this was not the first case this year for the beef suckler farm, we have also decided to vaccinate all the cows before calving - the aim is to make scour one less thing to worry about!


Miranda Josephson

CASE STUDY 2 **Shepton Mallet** Somerset

Peter Morley Shepton Veterinary Group, Somerset

The problem was encountered in the winter of 2004/05 in an autumn calving herd of 200 Friesian/Holstein cows. Approximately halfway through the calving season calf losses started running at over 50% with surviving calves scouring and growing poorly.

Initial advice was given on overcrowding and the making of new calf pens away from the existing calves.

Blood samples and scour samples were taken from newborn calves.

Total protein in the blood samples was used to assess colostral antibody levels and the scour samples were tested for pathogens.

Total protein levels were found to be low indicating poor colostrum intake. Advice on feeding sufficient colostrums early enough was given. The farmer was also given a hygrometer to allow the identification of good colostrums which when identified were stored and used when a sample of poor colostrums was detected. Further blood sampling over the following weeks was used to indicate improvement and give encouragement.

Scour samples when tested indicated rotavirus was present as a major pathogen.

The use of a rotacorona virus vaccine in the dry cows to increase the antibody levels in the cow's colostrums was started.

The farmer was warned he might not get a complete resolution in the present calving season due to the very high levels of environmental challenge. Despite this within 3 weeks calf health had considerably improved.

Prior to the 2005/6 calving season new calf pens were erected, the cows were all vaccinated when dry and a refresher course on colostrum feeding was given.

Calf losses that season were minimal with the farmer commenting on how easy and quick it has been to rear good healthy calves.

CASE REPORT

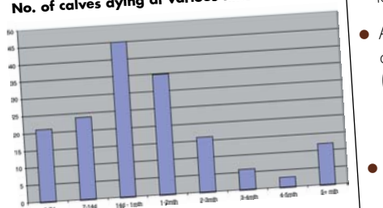
CASE STUDY 3 **Crewkerne** Somerset

Jon Reader Kingfisher Veterinary Practice, Somerset

A 350 cow dairy herd calving all year round was visited weekly for routine fertility visits. On arrival at nearly all these visits the Vet observed a pile of dead calves. The farm manager commented that there had been a recent problem but that the calves were 'on the mend.' By October 2007 the situation had not changed and the calf book was 'borrowed' to attach some figures to the problem.

For the 2 years leading up to October 2007 the number of calves that were born alive that subsequently died before one year old was 31%. For 2005/6 this figure was 37% and did not include stillbirths. The breakdown by age of the dead calves can be seen below.

No. of calves dying at various times after birth



The cost of removal of the dead calves alone by the local hunt was £2,000. A different farm in the practice recently sold 3 week heifer calves for £500 per head.

Calves were also weighed (using a Pennsylvania weigh band) to assess growth rates and were under weight at all stages of growth.

Expensive laboratory testing was not permitted. However 10 calves were blood sampled at 6 days of age and all showed sub normal levels of antibodies (colostrum deficiency). Furthermore the colostrum was tested from freshly calved cows and was shown to be of very poor quality.

A bulk milk sample from the cows was high for BVD antibodies. A bulk milk BVD PCR indicated the presence of persistently infected cows contributing to the milking herd. BVD vaccination was initiated in November 2007.

Before further tests were performed a strict Standard Operating procedure, specific to the farm, was put into place to try to improve calf survival.

Calf rearing

Standard Operating Procedure

- One person only to be responsible for calf management and given sufficient time to perform the task.
- All calves to have navels dipped immediately after birth with strong iodine/phenol solution (from the practice).
- All calves to receive 3 litres of good quality colostrum in first 6 hrs of life (cololstrum to be tested with colostrometer and used on older calves if of poor quality).
- If in doubt calves should be stomach tubed with dam's colostrum.
- Calves to receive Orolase tablets twice daily for 3 days.
- (Orolase contains Lactoferrin and Lactoperoxidase which boost immunity in young calves).
- Calves to be fed twice daily with powdered milk at regular time, to a critical temperature and concentration.
- Any calves not drinking or showing illness to be isolated immediately and treated as below.
- Wyedale feeders to be cleaned with hot water morning and night.
- Calves to receive pneumonia vaccination (5mls under skin) at 2 weeks of age.
- Second pneumonia vaccination at 6 weeks of age.
- All calves to be littered with straw daily.
- Weigh calves every 2 weeks and monitor growth.
- Wean calves when consuming at least 1 kg of concentrate per day.
- Calf pens to be cleaned out and disinfected between batches.

In addition, Standard operating procedures were put in place for dealing with scouring calves and coughing calves.

Most importantly, it was stressed that all treatments and/or deaths must be recorded!

Outcome:

In the four months following the intervention the mortality of calves has dropped to 8% and growth rates have been siginificantly improved. This is still not deemed to be acceptable. However this demonstrates that with attention to detail and following a strict routine calf rearing can be significantly improved improving both health and welfare of the calves leading to obvious financial rewards. This has been achieved without spending large sums on investigative lab tests.

The model used for this intervention can be copied when looking at any disease problem on farm. Firstly the disease incidence on the farm needs to be MEASURED. The situation then needs to be MANAGED with possible alterations to routine. Finally the ongoing situation needs to be closely MONITORED.

Nationally, heifer mortality is running at approximately 15% up to first calving. Colostrum intake is the most important determinant of heifer calf mortality.

'Nationally, heifer mortality is running at approximately 15% up to first calving. Colostrum intake is the most important determinant of heifer calf mortality.'

Kingfisher Veterinary Practice
Crewkerne, Somerset

Simon Wilson & Nick Lyons
Shepton Veterinary Group

Liver FLUKE IN DAIRY COWS

Simon Wilson and Nick Lyons Shepton Veterinary Group, Somerset

Liver fluke is a disease that is usually associated with unimproved pasture and extensively reared animals, rather than a problem of high input dairy herds. However following reports from our local VLA laboratory of fluke being a frequent finding at post mortem examination, and a warm wet summer, we decided to look at how widespread fluke infection was.

Testing can be simply carried out by looking at antibody levels in the milk and this was carried out on 74 herds with the assistance of Merial Animal Health.

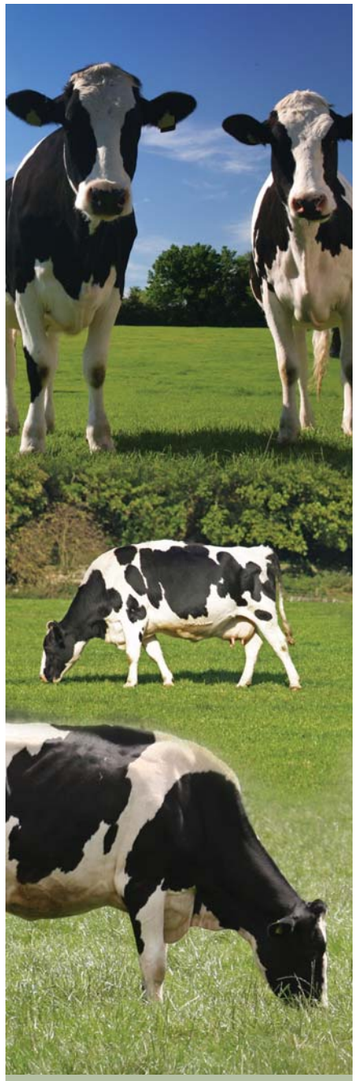
Milk antibody tests on 46 herds (62%) in Somerset and Dorset were found to be positive. A positive bulk milk antibody result predicts that 25% of the herds are affected by liver fluke. This was confirmed by a visit to a local abattoir where Nick Lyons, RVC Resident working in the practice, examined the livers of 20 barren cows from herds with a high bulk milk antibody level. Four of these cows had active liver fluke infection resulting in total condemnation of the liver.

No clinical disease had been seen in these herds but the findings do raise concerns as there is published evidence that fluke infection has effects on milk yield and quality, growth rates and fertility. In the practice we have seen clinical fluke cases recently resulting in poor condition and health at calving in affected animals, with higher levels of disease and infertility across the herd.

Liver fluke (Fasciola hepatica) is a parasite with a world-wide distribution. The fluke resides in the bile ducts of affected cattle from where it produces eggs that pass out in the faeces. These eggs subsequently hatch in warm and moist conditions to produce a larva that seeks out a snail host that resides in ditches and boggy areas of land. The larva undergoes further development before coming out of the snail and sticking onto blades of grass and nearby plants where they are ingested by cattle and migrate to the liver where they can cause extensive damage. In cattle, it is mainly the adult fluke which is responsible for this damage, which can lead to signs such as chronic weight loss, anaemia, ill-thrift and diarrhoea usually seen in late winter and spring.

Once a herd is infected, the problem is likely to be cumulative. It is essential to limit infection in both adult cows and youngstock. Flukicide preparations for adult dairy cattle must therefore be given under vet direction. Often the most opportune time is to treat cows at drying off. Youngstock should be treated for fluke at pasture, to minimize the output of fluke eggs, reduce infection of the mudsnails and so break the fluke cycle. Animals should also be treated at housing to stop fluke infection causing the symptoms described above. This treatment can be repeated in late winter to kill those younger fluke that are largely unaffected by treatment. For heifers in their second grazing season it makes sense to treat when in late pregnancy, perhaps when mixed with dry cows six weeks prior to calving.

This initiative with Merial Animal Health has helped raise awareness of the incidence of liver fluke around this area, which previously had been given little attention. Bulk milk testing is a quick, simple and cheap means of assessing whether a herd has a fluke problem. For herds where the bulk milk antibody level is inconclusive or low, we advise regular monitoring of bulk milk samples every autumn and winter. For infected herds, testing has given us an opportunity to discuss with our farmers a control plan targeting the effective decision making and use of anthelmintics, aimed at boosting performance and profitability.



Shepton Veterinary Group
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Liver fluke is a disease that is usually associated with unimproved pasture and extensively reared animals, rather than a problem of high input dairy herds.

Contact your local XLVets practice for further advice and information about Liver Fluke.

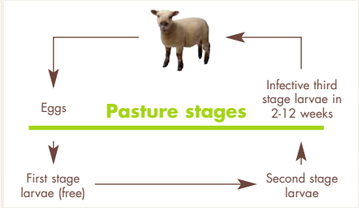
Over the last decade the problem of treating worms in sheep has been further challenged by two emerging problems, namely anthelmintic resistance (AR) and changes in the disease patterns of many of the common parasitic worms. Any worming regime must now take these factors into consideration if it is to remain effective in both the short and long term.

The prevalence of anthelmintic resistance to certain drugs is now fairly widespread in the UK, with recent studies reporting resistance to benzimidazoles (BZ) to be as high as 80% on lowland farms and 55% on hill/upland farms. Similarly resistance to levamisole (LM) was 47% on lowland and 29% on hill/upland farms. Only a very small amount of resistance to the ivermectin type drugs has been recorded, but if these drugs are to remain effective then it is essential that they are used as part of a planned worming regime rather than random indiscriminate dosing. There is therefore a very real need for farmers to act to slow down the emergence of resistant worm populations. The cause of the changes in the disease patterns of parasitic worms that have been seen throughout the UK in the last few years are uncertain, but may be due to climate change resulting in conditions that are more favourable to the survival of these parasites.

Nematodirus battus was traditionally a spring/early summer problem, but has now been seen at all times of the year. Haemonchus contortus 'Barber's pole worm' has extended its domain from originally in the South of England, to the far North of Scotland.

Basic life cycles

The life cycles of most of the parasitic gut worms are similar with one or two variations which are important to the control of these worms.



Nematodirus battus eggs can survive over winter in prolonged cold conditions and require a climatic stimulus (cold followed by warmth) before hatching. This allows Nematodirus infections to pass from one year's lambs to the next. Haemonchus is a prolific worm producing up to 10,000 eggs per day which develop to the infective larval stage very quickly in warm, wet conditions. The high egg production rate means that relatively clean pasture can become highly infective very quickly leading to significant and unexpected disease outbreaks.

Anthelmintics for use against Parasitic Gastrointestinal worms

There are three main groups of broad spectrum wormers:-

Benzimidazoles (BZ) 'white drenches'

These are effective against all the gut worms, but some vary in efficacy against N battus.

Levamisole/morantel (LM) 'yellow drenches'

Can also be given by injection, but tend to be high volume doses and can irritate. Overdosing can produce symptoms of hyperactivity and salivation.

Macrocyclic lactones (ML) 'clear drenches'

Include avermectins (ivermectin/doramectin) and milbemycins (moxidectin).

Can be given by drench or injection and due to their storage in fat tissue tend to have longer meat withdrawal periods.

Use of faecal worm egg counts

Worm egg counts are a useful tool in a worm control programme.

10 sheep from a group should be sampled. This is best done by loosely holding the group of sheep in a corner of a yard or field for 10 minutes then letting them go. The fresh dung samples can then be easily picked up and sent for analysis.

Worm egg counts can be used to:

- Diagnose a worm problem
- Estimate the level of infection (with some worms)
- Allow targeted timing of dosing
- Monitor efficacy of treatment or the emergence of resistance

OVER THE LAST DECADE THE PROBLEM OF TREATING WORMS IN SHEEP HAS BEEN FURTHER CHALLENGED!

There is therefore a very real need for farmers to act to slow down the emergence of resistant worm populations. The causes of the changes in the disease patterns of parasitic worms that have been seen throughout the UK in the last few years are uncertain.

WORMING REGIMES FOR SHEEP

By Bob Norquay
Northvet, Orkney

Northvet Veterinary Group
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GUIDELINES **for Controlling Worms** and avoiding development of resistance

Bob Norquay Northvet, Orkney

Effective control of worms on the farm, now and in the future, depends on developing a planned worming control strategy, that is reviewed and monitored for efficacy.

Quarantine treatments

These should be used for all new arrivals on the farm.

- Assume the sheep are carrying resistant worms (BZ & LM).
- Treat sequentially with an ML product followed by an LM product.
- Hold sheep off pasture for 24-48hrs to allow eggs in the gut to pass out.
- Turnout on to dirty pasture that is contaminated with eggs and larvae. This allows the remaining potentially resistant worms in the gut to be 'diluted' by infection with the 'home' population of worms.

Test for anthelmintic resistance

This is done by post dosing faecal egg counts from a sample of 10 sheep. Timing depends on the type of wormer used.

- LM - 7 days
- BZ - 10-14 days
- ML - 14-16 days

Administer the wormer effectively

- Dose at the recommended dose for the heaviest sheep in the group. Actually weigh some of the heavier sheep.
- Check the dosing gun is working properly.
- Use the correct technique. Dose onto the back of the tongue not just into the mouth.
- Restricting feed (where possible) enhances the activity of BZ & ML wormers. Do NOT do this with heavily pregnant ewes.

Use wormers only when necessary

- Pre tupping doses of ewes is not usually required as ewes at this time of year have a low worm burden. Dosing will tend to select for AR. Treat only gimmers and thin ewes.
- Dosing ewes after lambing. There is a dilemma here as dosing may select for AR but failure to dose will result in contamination of the pasture for the lambs.
- Dosing of lambs. The risk period can be very weather dependent. Make use of worm egg counts to accurately determine the time for dosing.

Select the appropriate wormer

- Avoid combination (fluke) wormers unless this is indicated.
- Rotate the type of wormer used. An ML wormer should be rotated with either a LM or BZ. However rotation should not take precedence over other factors such as the need to treat quarantined sheep.

Preserve susceptible worms on farm

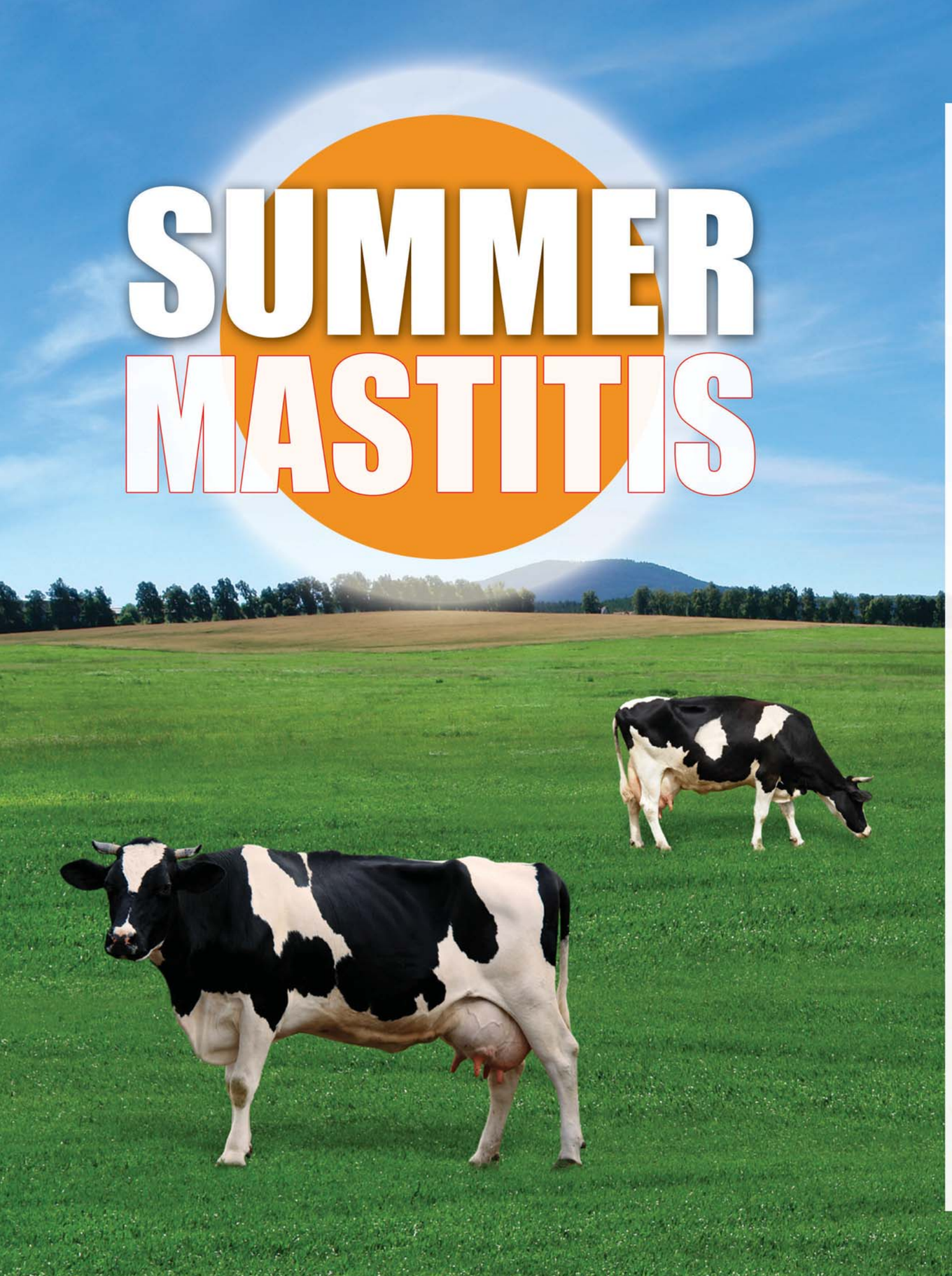
The traditional advice of dose then move is good for keeping fields with low levels of infections low for longer periods, however it does tend to select for AR by allowing the build up of resistant strains on the clean pasture. Research in this area is ongoing and possible solutions are to dose only part of the flock or to delay the move after the dosing to allow low levels of infections to re-establish. Consultation with your vet is essential before embarking on such policies.

Summary

Effective control of worms on the farm, now and in the future, depends on developing a planned worming control strategy, that is reviewed and monitored for efficacy.

- Consult with your vet to develop a control programme.
- Quarantine sheep on arrival and treat appropriately.
- Use worm egg counts.
- Administer the wormer effectively and only when necessary.
- Carefully select the type of wormer used.
- Use techniques that preserve susceptible worm populations on the farm.

SUMMER MASTITIS



Don McMillan Minster Veterinary Practice, York

British summer weather may be unpredictable but summer mastitis certainly isn't. It is a disease that changes little over the years, affecting the same farms year after year and often just certain fields within those holdings.

The basics are simple - it occurs in summer, it is spread by flies and it affects dry cows, heifers or young calves. It is an acute disease of the non-lactating mammary gland and is mainly caused by the bacterium Actinomyces pyogenes. Other organisms can increase its severity and allow infection to establish more readily.

Farmers should look out for an animal standing apart from the others, often lame, dull, anorexic and with a significantly raised temperature. Her teats become swollen and there are often large numbers of flies feeding around them. The disease progresses until the whole udder is swollen, hard and producing foul-smelling, thick, yellow secretions, often tinged with blood. If left untreated, abortion or death can follow.

But less typical cases will also occur - outside the fly season and in milking cows. It is possible to find a heifer 'blind' in one quarter, having suffered no obvious disease. Efforts to open the teat canal will prove useless and it is highly likely that many of these cases will be due to summer mastitis.

So how do we treat and prevent it? Very few affected quarters will recover and treatment is aimed at saving the animal and recovering as much as possible. That means saving the animal's life, saving the pregnancy, producing a viable calf or an animal that can milk to some extent on the remaining quarters. Treatment involves antibiotics to combat infection and anti-inflammatories to counter the swelling and reduce temperature. Getting antibiotics to where they are needed is a challenge, as large amounts of pus and dead tissue are present, hence the importance of anti-inflammatory drugs.

Actinomyces is sensitive to penicillin, but that is academic, as getting the antibiotic past the tissue reaction is the main issue. We are effectively dealing with an abscess. It is essential that as much material as possible is removed by frequent stripping, but while the organism is common in the environment, stripping can be a source of further infection.

Strippings should be discarded safely and not on to the ground. Occasionally, the udder may completely slough off in a similar way to gangrenous mastitis. There may also be occasions where it is necessary to split the teat lengthways to drain the udder of infection or it may be removed completely.

So any treatment is purely salvage and the main goal should be to avoid the disease, or at least minimise its incidence. The keys to prevention are antibiotic cover, fly control and avoidance, prevention of teat lesions, teat sealants and removal of susceptible animals.

Antibiotic cover - Dry cow antibiotics can reduce disease by up to 80 percent, but they may not be active for sufficient time and treatment must be repeated after three to four weeks, even with long-acting preparations. This may cause a serious problem if there is an insufficiently long dry period to be able to re-infuse after four weeks and still calve outside the withdrawal period. Shorter acting formulations, lasting seven days, should be used, but beware, good technique is essential when re-infusing dry cow tubes, otherwise a disastrous mastitis incident can occur.

Fly control - The sheep head fly, Hydrataea irritans, may also carry the bacteria causing summer mastitis, but it is probably only a secondary factor after something else has started the outbreak. This fly's eggs overwinter in sandy soils and emerge in June or July. There is only one generation of adult flies active in July, August and September. High winds and heavy rains inhibit fly activity.

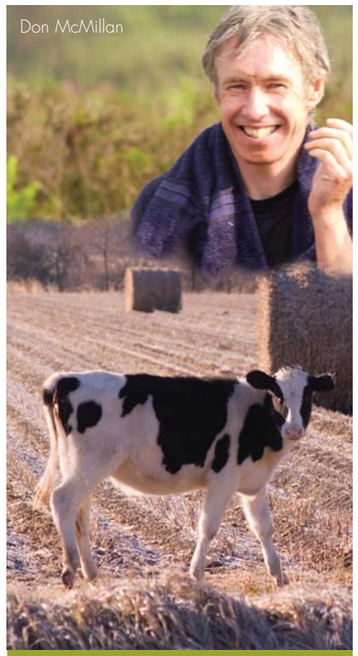
To minimise risks, it is important to identify and isolate cases early, watch out for teat lesions, control flies on cattle (especially around teats) and avoid areas with large fly populations. Controlling flies on cattle is best done using long acting pour-ons or tags.

Unfortunately these give little protection to the udder area and it is worth giving a half dose of a liquid product spread with a gloved hand over the whole udder surface. Where possible, avoiding pastures with sandy soils, tree cover and water should be the aim.

Teat skin lesions - Good teat condition will reduce or eliminate infection. It is important to check teats, ensuring any affected animals are treated and preferably kept away from the rest of the herd. Additional fly protection can also be given. The initial source of summer mastitis is usually by infection tracking into the teat-end from a sore harbouring the organism.

Teat seals - Stockholm tar used to be popular, but is messy to apply and needs repeating at two weeks. Taping teats is laborious and difficult to do properly. The new silicone teat sealants have revolutionised this form of management as they are easy to apply and last for the whole dry period.

If, after all these control measures have been applied and evaluated, there is no improvement try calving during a low risk period. Summer mastitis will continue to be a problem on certain farms for years to come, but although control measures can be expensive on time and materials, the savings are well worthwhile.



Minster Veterinary Practice
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HERD HEALTH PLANNING IS AN INVESTMENT IN HEALTH WHICH EVERY FARM SHOULD BE MAKING

FARM HEALTH PLANNING

Proactive health planning and teamwork improves herd performance

Better fertility and more calves, better housing and less pneumonia and mastitis, better biosecurity and less disease - these are just some examples of what has been achieved on the beef and dairy farms which took part in the Defra-funded Herd Health Planning initiatives, organised by XLVets.

Farm Health Planning

Healthy Animals Healthy Profits

Endell Veterinary Group
Salisbury, Wiltshire

These farms are just completing the end of 12 months of proactive health planning through their XLVets veterinary practice. During this time, herds have benefited from disease-testing, fertility testing, and also advice on herd management and nutrition from independent consultants, working closely with the farm's vet and the farmer and/or herdsman. These farms have then shared their experiences with others through on-farm walks and discussion groups. More meetings are planned - see the Health Planning Events Diary.

On each farm, the starting point to herd health planning, has been to assess what the current situation is on the farm, before prioritising which areas to focus on to bring disease under control or improve performance. Following the maxim: 'Measure, Manage, Monitor', once changes have been made and improvements seen, the situation is then being monitored on an ongoing basis. Herd health after all, is dynamic. Different circumstances - weather, feed quality, stress, environment - can alter the production challenges, month by month, year by year.

Assessing the risks from new or existing disease, and implementation of biosecurity measures have been issues across beef and dairy farms, and have proven especially topical with the advent of bluetongue in the UK. Vet Steve Borsberry from the 608 Vet Group says: "Through blood sampling and/or bulk milk testing, evidence has been obtained of the degree of infection in the herd for diseases like BVD, IBR and leptospirosis. Some herds have tested totally naïve to certain diseases - whether or not to vaccinate as a precaution, or establish tight biosecurity is a decision which is made between the farmer, herdsman and the vet involved. Blanket vaccination of all animals could be the proposal, as complete biosecurity is often impossible - for example the times when animals end up sharing grazing with uninvited four-legged visitors from neighbouring farms!"

"On all farms, whatever the disease status, vets have been advising on protocols to prevent entry of new disease into herds, through stricter biosecurity."

Beef health

Vet Keith Cutler from the Endell Vet Group is running one of the XLVets beef projects. He says: "Traditionally vets have got more involved with working in dairy herds, however, health planning is just as important on beef enterprises."

"For beef suckler herds, the key output is the calf. So profit is directly related to the number of calves born in a herd - and this is dictated by the health of the herd - in particular the fertility of the bull and the cow. "

"As a starting point in any health planning, basic performance data is collected. For beef suckler herds this includes the number of calves born per year, the ratio born live:dead, calf losses from birth to weaning, and a calculation of growth rates from the difference between weights at weaning and slaughter."

"Using this information the herd can then be benchmarked against other farms to assess whether performance is already near peak potential or whether there is scope for improvement. By interrogating this basic data, it's possible to find out where maximum gains for a set input, can be achieved. Efforts can then be targeted in those specific areas."

Mr Cutler adds: "Farmers shouldn't be put off by the task of starting up herd health planning, it just requires the involvement of the farm's vet and a proactive joint approach. Just don't try and tackle too many things in one go. Instead, start planning in bite-sized pieces and make progress on one area of health before moving on to the next one."

Other key areas of focus for beef suckler herds involved in the XLVets initiatives have been tightening of the calving block, testing bull fertility and soundness, and herd management changes, for example: improving handling facilities, culling aggressive animals. Herd nutrition is another area where attention to detail has helped ensure mineral requirements are met, and forage quality analyses have enabled more effective use of home-grown feeds and better balanced rations.

Dairy Health

Overseeing the XLVets dairy projects is Brian Pocknee of ADAS, he says: "The healthier the herd, the better its performance and the better the margins."

"On dairy units, like any business, there are areas in which little extra improvement can be made, and at the same time areas which could benefit from a focus on improving. For dairy farmers, key herd health issues often centre on reducing the incidence of mastitis or improving fertility. However, the XLVets dairy projects have also encompassed the role of nutrition in health issues. Vets, farmers and nutritionists have collaborated to bring about change - this team approach is the foundation to successful herd health planning."

Nutritionist Richard Vecqueray of Evidence-based Veterinary Consultancy has worked with several of the XLVets project farms. He thinks producers can rely too much on the nutritionist's word and theory, and should also be auditing the nutritional status of the herd using blood testing and urine testing.

"Blood samples should be taken regularly from a representative number of animals from a target group," says Mr Vecqueray. "This is a job for the farm vet - the results of the tests can then be discussed between the vet and the nutritionist, along with the farmer."

"For instance, taking blood samples from dry cows allows urea levels to be measured to check rumen protein balance and intakes. Additionally, the fat levels in the blood of dry cows are a measure of their energy status and indicate how well an animal will cope with the post-calving demands of milk production. With this type of knowledge, informed decisions can be made on subsequent diet formulation and, critically, the cows' management."

"There's a lot of value for producers to sit down for a strategic overview of the herd's health and performance, at least once a year, with their nutritionist, vet and any relevant specialists, depending on the specifics of the farm." Amongst the advisers made available to the XLVets dairy project farms was Ian Ohnstad of The Dairy Group, tasked with a particular focus on mastitis control.

"Every farm had its own unique challenges," says Mr Ohnstad. "Some of the farms had a relatively small mastitis problem to control and just needed some fine tuning to milking routines, while others had more significant problems including environmental management. A significant factor affecting the overall incidence of mastitis is cow cleanliness. On one farm all cows were scored for cleanliness and re-scored two weeks after the udders were flamed to singe off the hairs. Cow cleanliness improved significantly and there has been a marked reduction in the number of new cases of mastitis."

"The advice needs to be dynamic. You implement what you consider to be appropriate changes to address the problems identified. Then you monitor the situation and if there's no improvement then you re-evaluate and review your advice to ensure benefits are obtained."

"Herd health planning is recognising where the weaknesses exist within a system and implementing action plans to address them - it's so much more than just reaching for treatments or a vaccine," adds Mr Ohnstad.

XLVets' Andrew Curwen says: "Herd health plans have had some pretty poor press in the past, often being used only as tick-box exercises to satisfy the requirements of farm assurance schemes. However, the XLVets dairy and beef projects have been all about herd health planning - which is proactive and ongoing. Changes are made to improve health - the cost of which is nothing compared to the financial benefits that will result."

"Getting started in health planning is easy: talk to your vet, and agree the first steps. Decide where the health priorities lie for your herd, and set about taking action right away."

Standfirst: David Black, Managing Director of Paragon Veterinary Group and XLVets, is a member of the Dairy Science Forum.

PROVISION OF A SCIENTIFIC KNOWLEDGE TRANSFER-BASE FOR 21ST CENTURY DAIRY FARMING IN THE UK:

A document for progress prepared by the Dairy Science Forum 2008

Executive Summary

- Milk and dairy products are nutritionally valuable parts of the human diet, the demand for which is set to grow, globally.
- The UK dairy industry has been allowed to diminish dramatically in scale over the last decade under conventional market pressures; the recent upturn in milk prices provides some respite, but without a clear national strategy to ensure its medium term future it remains very fragile.
- In the medium to long term dairy production in the UK will be important to help ensure local food supply security and to contribute to a growing global demand for dairy products.
- At present, and in the short term future, the UK dairy industry sits between a deteriorating past, and a promising future.
- Over the last decade (or more) of decline there has been a parallel loss of expertise, support skills, research investment and research infrastructure.
- Veterinary and other provision to ensure good health and welfare has weakened (as the industry scale to support viable practices has eroded).
- Research capacity in basic and applied sciences germane to genetics, nutrition and management techniques for the delivery of effective and innovative production systems needs to be maintained (and in some areas rebuilt).
- Future production systems will call for ever more intelligent approaches to the simultaneous achievement of quality systems that minimise environmental burdens, sustain high standards of health and welfare and deliver nutritionally valuable products into well organised food supply chains.
- Equipping farmers, their employees, their advisors and their supply industries with relevant skills to do this is a priority.

Introduction

This paper sets out the collective views of the members of the Dairy Science Forum on some of the challenges facing the UK dairy industry. The Dairy Science Forum is a long-established, ad hoc group of individuals, each well recognised and specialised in a particular segment of the industry. Membership is limited and by invitation to ensure representation at an appropriate level across the breadth of the industry. The objectives of the Forum include:

- understanding and disseminating the contribution of research, development and extension to dairy science and practice,
- defining future areas of activity that may enhance efficient productivity and improve the well-being of the cow to fortify a viable dairy industry.

Production of this document is the result of the increasing concern by the membership over the future profitability and sustainability of the dairy industry. The lack of a national strategic forward plan for the UK dairy industry has, in the view of the Forum, placed the industry in a weak and vulnerable position. It comes at a time when there is increasing concern about the national and international food supply as well as about the potential impact of world food demand on environmental resources. The devolved regions of the UK have produced vision statements in various forms and the Forum believes there should be a UK-wide forward strategy.

The Forum firmly believes that there are excellent opportunities for a profitable and sustainable future, but that achievement is dependent on positive action both by the industry and Government. The document highlights areas requiring consideration set in a framework of the current and likely future situation. It also intends to be a catalyst to develop strategic studies for the benefit of the whole dairy industry by highlighting the main research issues that need to be addressed in both the near future and long term.

The Challenge

The UK needs a competitive and profitable dairy farming industry, not just for economic reasons, but also environmentally and socially. Furthermore, real concerns over the security of food supply and potential food sources cannot be ignored as demonstrated by the recent seismic shifts in soft commodity markets. Food scarcities in various highly populated areas of the world are likely to grow. This presents European and particularly UK producers with the challenge to produce enough food in a sustainable manner to meet these needs. Energy, environment and food are clearly interlinked. Farmers will play a key role in creating the required balance for markets and human needs, both now and in the future.

A background framework

Production resource

The steady reduction in the number of production units in the UK over the last half-century is well documented but it has accelerated over the last five years. It is inescapable that the economic and political circumstances prevailing in recent years have resulted in many efficient, business-minded farmers leaving the industry. For most of the last decade, the UK has been at the bottom of the EU milk price league table, thus management and forward planning of farm businesses has proved difficult in the face of rising costs, volatility in the market and a high regulatory burden. At the time of publication, farm gate milk prices have risen considerably. However, long term planning remains difficult due to market volatility and the complexity of price forecasting.

Dairy UK's 'The White Paper' published in July 2007 reported on the state of the UK Dairy Industry. It recognised that "many farmers have encountered acute business difficulties and the challenges they have faced cannot be underestimated". The joint NFU and RABDF publication, 'British Milk - What Price 2007?' reported that the costs of milk production between 2002/03 and 2006/07 increased by 16.43%. The figures did not account for exceptional costs incurred and did not provide scope for investment.

Re-structuring of the production side of the industry is bringing benefits from scale of enterprise, improved management and further efficiencies. The dramatic reduction in the number of production units and the general uncertainty also has implications for the supply and service industries. Since dairying has been one of the mainstays of agricultural veterinary practice (and other supply businesses), many areas of the country now have fewer farm animal vets and in some cases, there is less than satisfactory veterinary cover. This has clear welfare and disease surveillance implications.

Government resource

To review the background to this document, the role of Government has to be considered. Historically, the public purse has played a substantial role in encouraging the development of a viable dairy industry including investment in research and development with grant-aid for structural farm development and support by advisory services. Government is encouraged to review its current apparently negative position on agriculture and realise its key position in providing secure food for the nation's future. Concern has also been expressed over the apparent lack of understanding in Government of the rural economy.

The position is evolving. Whilst not wishing to enter the 'level playing field argument', the Forum urges Government to consider that issues such as investment in environmental improvements (e.g. slurry and waste management) could be considered as an element of rural development and thus qualify for financial support under Pillar 2. The Forum is aware that other EU states take a different approach (from the UK) to grant-aid, which provides others with competitive advantage.

The dairy industry as a whole has 'signed up' to the UK Animal Health and Welfare Strategy but it would welcome further consultation and opportunities to contribute to issues of such significance and importance.

The issue of food security has been raised above when considering the challenges facing the industry. The Forum recognises the need for 'a flexible, skilled and market-orientated agriculture, able to flex production in extreme circumstances' as concluded by the Sustainable Farming and Food Strategy (SFFS) produced in England; this point of principle applies to the whole of the UK. However, it is a matter of concern to the Forum, the membership of which is drawn from across the UK, that the devolved regions adopt different positions in relation to food security matters. There should surely be one position for an island of this size.

The UK's ballooning trade deficit is a neglected area of food security. One of the big questions relating to sustainable growth and security is which sectors of food production can respond to the need for increasing output? The dairy sector is clearly one that could readily grow given the appropriate incentives.

R and D resource

There is no doubt that the real value of scientific input to agriculture, especially dairy research and development, has fallen dramatically in the last 20 years. Two national dairy research institutes have been closed in recent times, as have several dairy herds on experimental husbandry farms. Facilities for research with dairy cows are now concentrated at CEDAR and a few university and college farms.

The encouragement of so-called 'high quality' publications, as a determinant of output, in Universities and Research Institutes has resulted in a general drift away from farm-relevant research. Universities now do much less research that directly impacts on agriculture. Many research funders have changed their agendas leaving all applied research establishments increasingly fragile. Furthermore the lack of investment in infrastructure and staffing in some establishments has serious consequences (as illustrated by the last year's problems at Pirbright).

Research is a continuum; passing from fundamental to strategic to applied to transfer. The Forum's major concern is that the model is broken. There are serious weaknesses in the ways by which the available funding is allocated resulting in an uncoordinated approach. The need for the current funding bodies to review their approaches in order to extract better value for money, we believe, is self evident.

Skill resource

The dairy industry relies on a continuing supply of a wide range of people and skills. For the industry to be profitable and sustainable, the future supply of appropriate, adequately qualified and trained people must be assured. Whilst a full assessment of all requirements would be worthy of analysis, the Forum has identified three key groups which are vital to the future wellbeing of the production industry:-

a) Scientists

Whilst the training capacity may be adequate to meet general needs, experience of the Forum members involved in research indicates a growing shortage of skilled and motivated young scientists in the UK who want to address applied issues in the dairy sector. In recent years, a large gap has developed between basic research (which is reasonably well supported) and application.

The number of science graduates is increasing but financial incentives are greater in other areas of society than in dairy industry research. Currently, there is a strong reliance on overseas PhD students who eventually return to their country of origin. Research groups and establishments themselves should encourage training of their own postgraduate/postdocs and it is up to scientific leaders to value and excite postgraduates into the opportunities provided by the dairy industry.

b) Farmers and their employees

The Forum shares the concern of many others in the industry over the current and future shortage of skilled labour. Historically, increasing mechanisation replaced labour inputs but the industry now needs to consider alternatives such as much greater automation to replace the labour shortages.

However, the issues relating to human resource to support agriculture are still very important. At farm level, there is a need for a framework for developing the grass-roots skill base and for co-ordinated training programmes. In particular, the current shortage of farmers and farm employees with well-developed farm management skills to achieve appropriate analysis and planning could be addressed by a training framework. There is merit in considering the need for a register of trainers to ensure adequacy or a Chartered Institute for Agriculture to encourage best practice. Consideration could also be given to a voluntary licensing system for farms, with appropriate requirements for training of all involved in livestock in relation to health and welfare of animals, and HCCP procedures.

Continuing Professional Development (CPD) is a concept not yet accepted by farmers but should be addressed as the needs of businesses will be increasingly demanding. In this context, it is important to recognise the changes that have taken place in the commercialised advisory sector and that appropriate highly skilled unbiased support is not always available.

c) Professional and technical advisors.

The serious concerns over the future of rural mixed veterinary practices, highlighted in various central reviews on the profession, cannot be underestimated. Other countries, such as the USA, have recognised the problem and now have specific programmes encouraging food animal veterinarians. Such approaches are worthy of consideration in the UK. Veterinarians continue to adapt to the needs of livestock farmers in that they have moved from being reactive to being more interactive and will in the future, have to be proactive. The opportunity to work with other specialist advisors in support of individual farms or with groups of farmers is proving beneficial and should be encouraged.

Over the last two decades, considerable progress has been made in genetics which has contributed to increased milk production. However, it is argued that nutritional practices have not shown the same rate of development. Whilst genetics have created the potential, nutrition has failed on many farms to deliver opportunities. The Forum considers that there is an acute shortage of well-trained animal nutritionists and geneticists who understand the science of ruminant nutrition and the need for an integrated farm planning strategy to balance nutrition, genetics, management, environment, animal health and welfare, with product quality and provenance.

Continued...