

PRODUCT INFORMATION

Rotavec™ Corona is a combined bovine rotavirus, coronavirus and *E. coli* K99 vaccine (inactivated)

Uses

For the active immunisation of pregnant cows and heifers to raise antibodies against *E. coli* adhesin F5 (K99) antigen, rotavirus and coronavirus. While calves are fed colostrum from vaccinated cows during the first two to four weeks of life, these antibodies have been demonstrated to:

- reduce the severity of diarrhoea caused by *E. coli* F5 (K99)
- reduce the incidence of scours caused by rotavirus
- reduce the shedding of virus by calves infected with rotavirus or coronavirus.

Dosage and administration

Dose

Cows and heifers 2 ml.

Administration

By intramuscular injection. The recommended site is the side of the neck.

The bottle should be well shaken before any vaccine is withdrawn.

A single injection should be given during each pregnancy between 12 and 3 weeks before calving is expected.

Colostrum feeding:

Protection of calves depends on the physical presence of colostrum antibodies (from vaccinated cows) within the gut for the duration of the first 2 - 3 weeks of life until calves develop their own immunity. Thus it is essential to ensure adequate colostrum feeding for the whole of this period to maximise the efficacy of vaccination

- All calves must receive adequate colostrum from their dams within 6 hours of birth. Suckled calves will continue to receive adequate colostrum naturally by feeding from vaccinated cows.
- The colostrum may be stored below 20°C but should be used as soon as possible as immunoglobulin levels may fall by up to 50% after storage for 28 days. Where possible, storage at 4°C is recommended. The calves should then be fed on this pool at the rate of 2½ to 3½ litres per day (according to body size) for the first two weeks of life. Discuss colostrum pooling with your veterinary surgeon.
- Optimal results will be obtained if a whole herd cow vaccination policy is adopted. This will ensure that in calves the level of infection and consequent virus excretion is kept to a minimum and consequently the overall level of disease challenge on the farm is kept to a minimum.

Contra-indications, warnings, etc

Warnings

Do not vaccinate unhealthy animals.

No information is available on the concurrent use of this vaccine with any other. It is therefore recommended that no other vaccine should be administered within 14 days before or after vaccination with this product.

Part used containers of the vaccine should be discarded within 8 hours of opening.

Side effects

The oil adjuvant provides the convenience of a single shot vaccine and has been carefully chosen to minimise any consequent side effects. It may produce a detectable swelling at the site of injection in a proportion of animals. The injection site reaction gradually reduces in size until it is no longer detectable, usually 14 to 21 days after treatment.

As with all vaccines occasional hypersensitivity reactions may occur. In such cases appropriate treatment such as adrenaline should be administered without delay.

Withdrawal period

Zero days.

Operator warning: To the user

If you inject yourself accidentally with this product, go at once to the nearest Accident and Emergency (Casualty) Department of a hospital and show the information printed below to the doctor (or nurse) on duty.

To the doctor

Accidental self-injection with this oil-based product can cause intense vascular spasm which may, for example result in the loss of a digit. Expert **PROMPT** surgical attention is required and may necessitate early incision and irrigation of the injected area, especially where there is involvement of finger pulp or tendon sheaths.

For animal treatment only. Keep out of reach of children.

Legal category

POM-V

Rotavec Corona is only available from your veterinary surgeon, from whom advice should be sought.

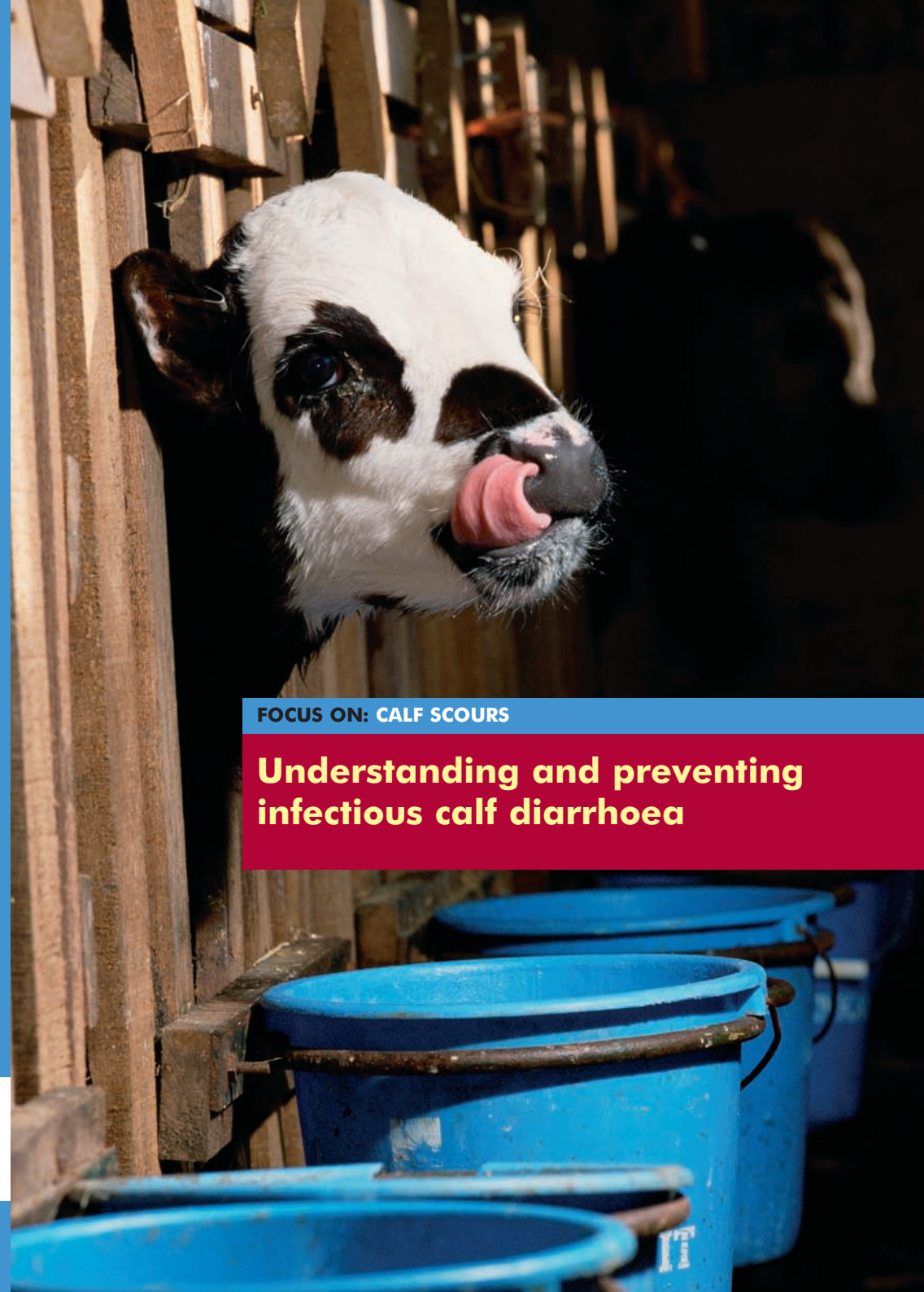
Further information is available from:

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Schering-Plough
Animal Health

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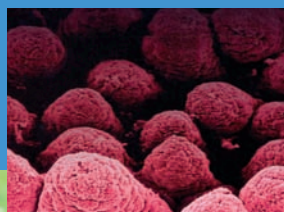


FOCUS ON: CALF SCOURS

Understanding and preventing infectious calf diarrhoea

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Introduction

An outbreak of infectious calf diarrhoea is often serious and invariably extremely costly for the cattle enterprise. In the current economic climate, the modern beef suckler producer and dairy farmer simply can't afford the stock losses and growth rate setbacks caused by this disease. It is vital that every practical step is taken to give calves the best start in life and minimising the potential impact of scour should be part of every youngstock rearing health plan.

When a calf is born it has no antibodies to fight disease. Without an adequate supply of cow 'first milk' or colostrum as a source of essential nutrients and antibodies, the calf is very vulnerable to infection from its environment and other cattle in its immediate vicinity. Ensuring the new-born animal receives plenty of high quality colostrum is an essential prerequisite for achieving maximum growth rate potential.

Most calves are surrounded from birth by the pathogens that cause most infectious scours so good hygiene is absolutely essential. It's extremely important to make sure the environment is kept as clean and dry as possible, and when mixing and handling milk and milk replacers do so with scrupulous attention to hygiene.

If there is an ongoing problem with calf scours it is worth asking your vet to take faecal samples to identify the pathogens responsible. Samples should be taken from both healthy and scouring animals to establish a true diagnosis and it is important that samples are taken in the early stages of the disease.

When it comes to scour prevention, there's no doubt that vaccination of the dam against the common pathogens - rotavirus, coronavirus and *E. coli* K99 - and then feeding the antibody-rich colostrum to new-born calves can play an important part in any disease control programme. And provided recommended practices are followed, there's no reason why calf rearers cannot limit the costly impact of scours caused by these particularly virulent bugs.

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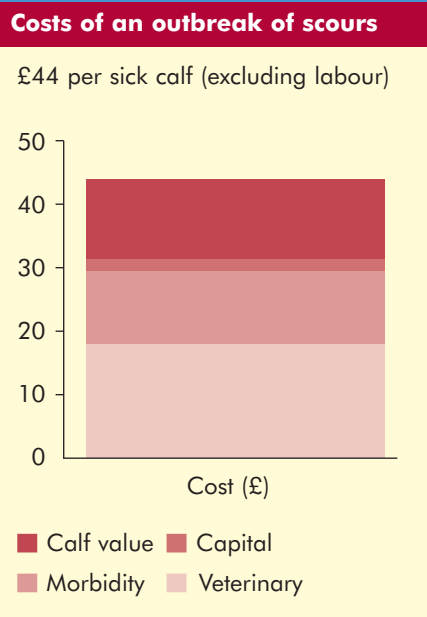
The Costs, Causes and Effects of Calf Scour

Calf scour remains one of the most widespread diseases affecting cattle livestock enterprises. Indeed, scour will affect virtually every dairy or beef unit that rears young calves at some time or other.

According to a recent nationwide survey of over 150 UK dairy farmers¹ - with responsibility for over 20,000 cows - over 90% had had calves affected by scour in the previous 12 months, with over half losing between one and six animals to the disease.

The costs of scour

In severe cases an outbreak of scour can kill up to a third of affected calves. But calf deaths only represent a small proportion of the financial damage an outbreak can cause. Research by SAC² looking at 212 actual scour outbreaks across 20 vet practices has demonstrated that scour will typically cost at least £44 per calf affected (see chart below), excluding labour. In addition, dairy calves can suffer a delay to bulling date and lower yields in their first lactation, and beef calves will take longer to finish.



Classic scour symptoms.

The causes and effects of calf scour

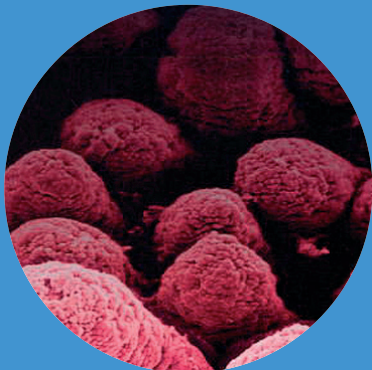
Viruses and bacteria are major causes of infectious calf scours. The single biggest cause is rotavirus - it can be found on most farms, affecting up to 90-100% of cattle - but other viruses (such as coronavirus), cryptosporidia and the bacteria *E. coli* and *S. dublin* also cause problems. Viruses like rotavirus and coronavirus cannot be cured with antibiotics - so prevention, through vaccination, is the only effective way of controlling these scours on your farm.

Causes and Effects of Infectious Calf Scour		
Scour Cause	Age of Calves Affected	Effects
Rotavirus	5-14 days	Destroys the cells that line the villi of the small intestine, reducing the digestive and absorptive capacity of the gut and causing diarrhoea.
Coronavirus	5-20 days	Affects both the small and large intestine. The damage to the bowel is permanent and the calf cannot compensate. Coronavirus is more severe and has a higher death rate than rotavirus.
Cryptosporidia	7-14 days	Cryptosporidia is a coccidia-type organism. Infection causes a green, watery intermittent diarrhoea, which can affect many calves although few will die. Calves affected can improve with good nursing.
E. coli K99	2-3 days	E. coli K99 causes disease by producing toxins. These toxins cause the calf to pump out its own body fluids, resulting in increased water and electrolyte loss from the bowel. Rapid dehydration and death inevitably follow, but quick involvement of your vet and the use of an appropriate antibiotic can kill the bug. Even calves that recover never perform as well as non-affected animals.
S. dublin	Various	New-born calves that are affected may die, but animals more than a week old tend to suffer acute scouring followed by chronic gut problems without prompt treatment. Affected animals will respond to good nursing, fluid therapy and treatment with antibiotics such as Nuflor.

Unseen damage caused by scour pathogens



Natural healthy gut lining.



Gut lining (villi) permanently damaged by scour pathogens. As a result, affected calves, even if they recover, will never grow as fast as healthy animals.

The Crucial Importance of Colostrum

When a calf is born it possesses no natural antibodies to fight disease. Fortunately, by drinking colostrum the calf receives food, fluid and antibodies all in one.

Colostrum contains 20% or more protein, a little more fat than normal milk and may be tinged pink due to blood cells. It is also normally rich in vitamins A and D, but of much greater importance is its ability to deliver the first supply of antibodies to the calf, which protects it against various bacteria and viruses.

However, it is important to remember that colostrum is only effective at protecting the calf from infectious scour if it gets into the calf before the bugs do. Unless the calf receives adequate quantities of good quality colostrum it will remain vulnerable to infection and lifetime performance could be significantly compromised.

How much colostrum is enough?

Up to 50% of calves do not get enough colostrum. Newborn calves need at least three litres (six pints) of quality colostrum within six hours of birth. This normally requires at least 20 minutes of sucking, but research has shown that if left alone to suckle the dam, 60% of dairy calves will not acquire sufficient antibodies. The easiest and most practical way of ensuring that a newborn dairy calf obtains sufficient colostrum is to milk the cow and administer three litres of good quality colostrum using a stomach tube as soon as possible after birth. The technique is easily learnt and causes minimal stress to the calf and stockperson.



Stomach tubing is a practical way of ensuring calves receive enough colostrum.

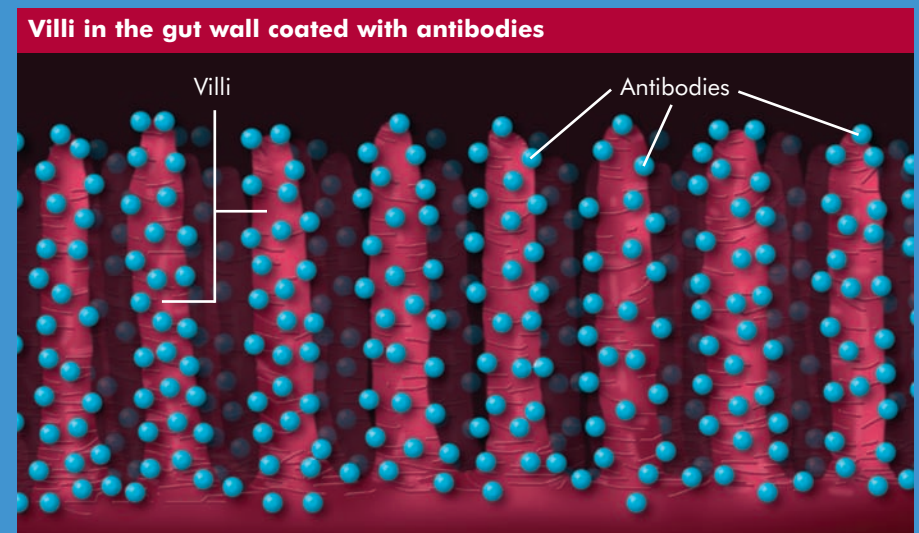
After six hours antibody absorption into the bloodstream significantly reduces. At approximately 12 hours after birth, the efficiency of absorption of these antibodies falls by as much as 50%. And 24 hours after birth, absorption efficiency is towards 10% of the level achieved in the first six hours.

What is good quality colostrum?

Quality and quantity are not necessarily the same thing. Higher yielding cows may produce more colostrum, but the higher volume leads to a lower antibody concentration. Periodically sampling colostrum using a colostrometer can help you determine its antibody content.

Prolonged colostrum feeding

There is a significant benefit in terms of scour prevention from prolonging colostrum feeding if this is practical. This is because colostral antibodies, as well as being absorbed into the blood, also offer the calf local protection in the form of an 'armour plating' over the villi lining the gut wall, preventing viruses and bacteria gaining a foothold and causing disease. But this 'armour plating' effect only persists for three to four days after stopping colostrum feeding, simply because the protected lining is continually shed and replaced. This is why it is beneficial to continually protect the gut with colostrum from vaccinated cows.



Scour caused by organisms like rotavirus, *E. coli* K99 and coronavirus predominates in the first two to three weeks of life. Optimum protection is only achieved through a continual local supply of antibodies in the intestine during this risk period and, secondly, the absorbed antibodies in serum.

Preventing Calf Scour

Hygiene

In addition to an appropriate vaccination regime, good hygiene and a clean calving environment will help prevent scours taking a hold on your unit. It is also extremely important that milk and milk replacers are prepared cleanly and accurately.



For dairy calves:

- Provide plenty of clean bedding
- Disinfect calving boxes and pens between calves
- Minimise contact with other calves' faeces



For beef calves:

- Consider calving outside

Most scour bugs come from the faeces of the dam and other mothers, so minimising exposure of the calf to cow dung significantly reduces risk of disease. On some farms, removing the calf from the cow to a clean pen after colostrum feeding may be the easiest way of improving the cleanliness of the calf's environment.

When it comes to cleaning up scour problems on your farm, prevention is very much better than cure.



The importance of vaccination

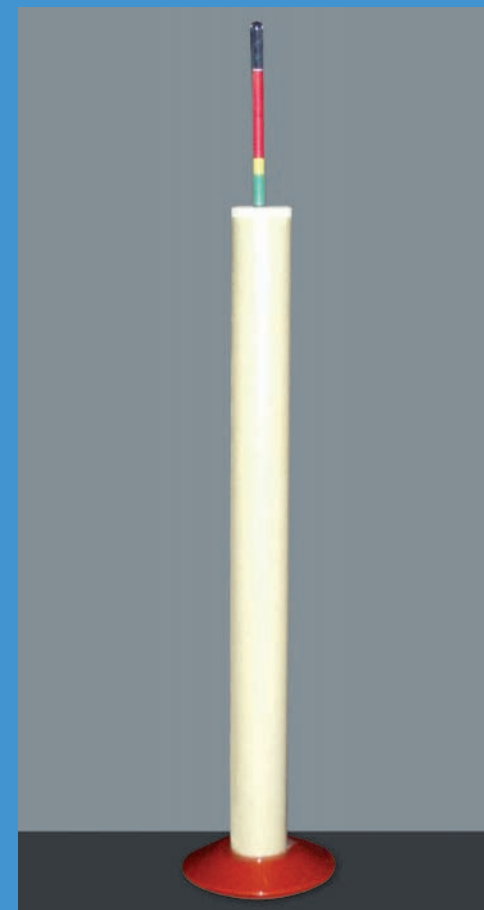
Calves are most at risk from the infectious scour pathogens in the first three to four weeks of life and need a source of continuous protection - through antibodies in the colostrum - to keep them healthy. Preventing calf scour is largely an antibodies numbers game! The more antibodies a calf has, the more secure the protection.

On many farms, normal colostrum does not provide sufficient antibodies. Vaccination of the calf's mother with Rotavec Corona before calving helps to ensure high levels of antibodies against rotavirus, coronavirus and *E. coli* K99 in the colostrum. It is these antibodies that confer immunity on the calf and act as a protective barrier to infection in the gut.

Upgrade Your Colostrum

Use a colostrometer to measure the quality of the colostrum on your farm. The test involves measuring the antibody level in a 250ml sample of colostrum and is very quick and easy. The results will provide useful information to help manage an infectious scour problem. If colostrum does not contain a sufficient level of antibodies then action can be taken. Discuss the results with your vet, especially if low levels are found.

Colostrum antibody numbers can be boosted with vaccination. A single 2ml shot of Rotavec Corona may be given at any time between 12 and 3 weeks before calving. This means that all cows calving over a 9-week period can be vaccinated on a single day - saving on labour and allowing minimal handling of in-calf cattle.



Treating Calf Scour

Discuss a practical scour treatment contingency plan with your vet. If scour hits the key to successful treatment is to avoid delay and start fluid therapy as soon as you see the first signs of scouring. Your vet will also be able to advise you whether antibiotic treatment is likely to be effective, but the main viral causes of scour - such as rotavirus and coronavirus - do not respond to antibiotic treatment.

Avoid dehydration

Calves are killed by dehydration and acidosis (digestive upset), and will probably have been ill for 24 hours before there are any signs of scouring. Milk should not be withheld for more than 12 hours because you will actually starve the calf. Ideally a reduced amount of milk or glucose should be fed alongside the fluid therapy to provide energy for the calf and the repair of the damaged gut lining. Providing the calf is bright and alert and you are providing 7-8 litres of fluid a day there is no need to panic if the animal still seems to be scouring for a few days. If a calf has collapsed or appears to be deteriorating, veterinary attention will be required to administer intravenous fluids.

How do we stop it happening again?

Find out what you are dealing with. It is very difficult to diagnose the cause of an outbreak of scour just by looking at affected calves. The first thing you should do is isolate the sick calf or calves and seek veterinary advice. Discuss with your vet taking faecal samples from affected animals. You are less likely to have an inconclusive result if you sample freshly scouring calves. Samples should be taken before animals are treated with antibiotics and must be taken from the calf and not the floor.

Label the sample with your farm name, the date the sample was taken and the identity of the animal. Take the sample to your vet who will send it to be tested and the results will help you plan the immediate actions required and the most effective long-term disease management strategy.



Scour Management Checklist

- Colostrum is pure liquid gold. It gives the calf food, fluid and antibodies all in one. Make sure your calves get enough.
- Newborn calves need at least three litres of good quality colostrum within six hours of birth.
- Try and feed colostrum for as long as possible. As well as being absorbed into the blood, colostral antibodies continually provide a local protective coating over the gut lining to prevent bacteria and viruses gaining a foothold.
- Periodically, use a colostrumeter to check the quality of your colostrum.
- Protecting calves against infectious scour is an antibodies numbers game. The more you can get into the calf, the more secure the protection. Boost antibodies in colostrum by vaccinating the calf's mother with Rotavec Corona. This will give the calf protection against rotavirus, coronavirus and *E. coli* K99 - the key causes of infectious scour.
- Do not rely on scour pastes - they do not provide enough antibodies.
- Most scour bugs come from cow faeces, so practising sound hygiene significantly reduces the risk of disease.
- If scour does break out, avoid delay and isolate any sick calves and administer fluid therapy as soon as possible. Seek veterinary advice and take scour samples to establish any bugs that are causing a problem.
- Scour prevention through good hygiene, vaccination and a sound colostrum-feeding regime is the best disease management strategy. Treating calves affected with infectious scour is rarely effective and even animals that recover never do as well as non-affected ones.

References

1. SPAH Scour Survey (March 2004)
2. Stott A W & Gunn. Scottish Agriculture Economics Review 1995; 8: 83-88
3. SPAH Antibody Level Comparison Investigation 2005