# Farm Veterinary Solutions

## Newsletter Winter 2020

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Mike has been helping out in drought

resulted in the wild animals not having

enough body reserves to get through

we have been supplementary feeding

(intervening in nature) to help prevent

stricken Mana Pools National Park (world heritage site) for VAWZ (Veterinarians for

## MIKE UPDATE FROM AFRICA **Michael Thorne BVSc CertCHP MRCVS**

A member of

lactating females who are feeding their young are the worst affected followed by their babies. Heartbreaking, as the mother Animal Welfare Zimbabwe) this last month. elephants collapse for a couple of days It's been pretty grim. Poor rains last season before passing away leaving their orphans to the predators. Temperatures have been in the 40s consistently as well. this dry season. Somewhat controversially

Good news is they had rain in the last week so hopefully we are at the end of this period of difficulty for the animals!

Farm





## REDUCING ADULT DAIRY COW MORTALITY ON FARM Chris Watton BVetMed BSc MRCVS

Adult cow mortality is a major welfare and financial issue in the dairy industry. On the basis of producer responses to survey questions, mortality rates reported are lower than those obtained from dairy record systems. This suggests that in many cases, dairy producers underestimate the operational costs, or value lost due to adult cow deaths.

Causes of on-farm mortality can be broken down into the categories listed below:

Calving Problems	Body condition scoring (BCS), breed and bull selection, dystocia training, calving yard set up, post-calving treatment for cow (NSAIDs, fluids etc).				
Transition Health	Housing (space, comfort, group changes), length of dry period, nutrition, monitoring via BCS, ketones, urine pH, etc.				
Lameness	Early intervention is key, recording incidence and type of lesion to help when looking at prevention.				
Toxic Mastitis	Environment, parlour, selective dry cow therapy, treatment protocols.				
Johne's Disease	Early recognition, prompt culling, trigger for other diseases.				
Accidents	Slippery yards, turning points, low gates, etc. High risk cows.				
Sudden Death	Anthrax awareness, clostridial disease, value of post mortems.				

Following a recent survey of dairy producers, over 40% felt concrete grooving was the major cause of on-farm mortalities; there are several factors which can be addressed to reduce this risk. Like all things, concrete grooving will wear out with age and it is vital that concrete is regrooved once it starts to wear out. Cow flow is also another priority; avoiding pinch points will reduce the risk of cows pushing others out the way, knocking them down and causing them to slip. Entrances and exits from the collecting yard and parlour should be wide enough for two cows to get side by side. Slopes should be avoided as much as possible and cows should be allowed to move down them at their own speed and not pushed.

Overstocking increases the probability of accidents and therefore mortality on-farm, making sure you know how many animals your shed can house is paramount. From experience it is likely that the majority of farms are overstocked.

Staff training and record keeping is another area, across producers, that has been highlighted for improvement. It has been shown that adequate training can reduce mortality significantly. It is worth spending time with all members of staff and your vet, once yearly, to train new members of staff on farm protocols and to review current protocols. Protocols are especially important around the transition period, whether it's treating the milk fever cow, dealing with bad calvings or treating the toxic cow; making sure that animals are turned three times daily, appropriate pain relief is

administered (ketaprofen due to short withdrawals) and oral fluids. If you don't already have one, I would advise every dairy farm to purchase a drenching kit; they cost less than £300 +VAT and can save you thousands in losses. They are easy to use and training can be provided by your vet, just ask! Dairy cows become dehydrated very quickly and a boost of oral fluids and electrolytes will make a massive



difference. It's also a great support for when a cow is toxic as the fluids help to clear the toxins from the blood at a faster rate and improve outcomes.

#### Costs:

The costs associated with an on-farm death are higher than most producers believe. Not only is there the lost cull value of the animal, but also the replacement cost of a new heifer. With the average UK rearing cost of a heifer currently at £1800 and the cull value around £1000 this is a £2800 deficit, before taking into account disposal costs of the carcass and the loss of milk yield with a heifer compared to a cow.

- Do you know your current number of deaths on-farm in the past 12 months?
- What is it?
- What percentage of the herd is it?
- Which quartile do you fit in?
- 1st quartile 0-2%
- 2nd quartile 2.1-4%
- 3rd quartile 4.1-7%
- 4th guartile >7%
- What is your main cause of mortality?
- What can you do to minimise the risk?

There isn't a "one bullet will fix all problems"; with mortalities it requires a targeted approach, dependant on the cause of the mortalities, and will most likely need to incorporate several different areas. These areas will be very farm specific and will vary massively across our clients. So consider what you think are the three main causes of mortality on your farm and please don't hesitate to discuss your mortality rates with your vet, as it may be a small change could make a massive difference.



## AUTUMN ROUND-UP 2019 Max Hardy BVSc MRCVS

Well what can we say; this autumn is one to forget but it certainly made up for the dry spring! Hopefully by the time you read this, colder and drier conditions will have kicked in to allow the rest of the maize and beet to be harvested.

With incredibly damp environmental conditions throughout October and November the usual suspects have been causing high levels of problems.

**Calf Pneumonia** – High residual lung worm burdens at housing, damp days and mild temperatures have led to the worst pneumonia outbreaks we have seen for years. Several cases have had over 50% acute infection rate in weaned calves and dairy replacements, which lead to deaths, expensive treatment costs and severe drops in live weight gain. With beef price so poor it is always tempting to reduce vet spend but really, this is when there must be even greater focus on efficiency to achieve any margin. Financial losses from pneumonia will always far outweigh vaccine spend in the event of an outbreak. Please talk to us for follow-up diagnostic blood samples and future prevention advice if you have had any pneumonia outbreaks in groups of cattle this autumn.

**Mastitis** – The damp conditions have led to an increase in environmental cases with toxic *E. coli*. Even though teats may look clean, it's crucial to ensure they are thoroughly disinfected and dried as part of your pre-milking routine.

Although taxing, in these conditions any straw yards for dry or milking cows must be religiously cleaned out every three weeks to prevent fresh cow mastitis cases. For the spring calving cows please take extra care at drying-off to ensure you are not sealing in any bacteria.

As part of our commitment to reducing antibiotic usage, we have completed an audit on mastitis tube usage and selective dry cow therapy across our dairy clients, revealing some interesting figures.

- Average of 28 clinical cases per 100 cows per year are in line with national averages.
- ~85% of our dairy clients are using teat sealants.
- ~65% of our total dairy cows received sealants versus ~40% receiving dry cow antibiotics in the last 12 months.

We still have considerable room for improvement so if any of the above statistics don't apply to you, please get in touch so we can discuss suitable dry off protocols.

**Mastering Medicines Evenings** – I would personally like to say a huge thank you to Paul Uglow our Norbrook® territory manager for all his help in making the medicines evenings a great success. We have hosted nine of these meetings now, with over 400 attendees in the last 12 months. As Red Tractor have made attendance of a suitable course now compulsory for dairy farmers and advisory for all other farmers, if you still haven't attended a meeting, please give the office a call so we can register any further interest.

**Faecal Egg Count Service** – Launched in summer 2019 our in-house faecal egg counting service has proven popular for both routine sampling and scour diagnosis in cattle and sheep. In many cases we have been able to advise non-treatment saving costs and early treatment before clinical signs, thereby preventing drops in weight gain. Over the winter months faecal egg counts must be used carefully as high levels of encysted roundworms, that don't produce any eggs, can cause significant damage when re-emerging in early spring. Please speak to your vet or one of our SQPs in the office if you have any queries about parasite diagnosis and control.



### COLOSTRUM OVERVIEW Freddie Watchorn BVM BVS MRCVS and Andrew Thomas BVSc MRCVS



# What is **Colostrum?**

Colostrum is the first milk produced by a cow/ewe and contains more antibodies (immunoglobulins), energy, nutrients and other factors for growth and immunity compared to normal milk.

#### Why is colostrum important?

- Colostrum is essential for the health and survival of newborn calves and lambs. They rely on it for the antibodies passed from the dam to protect them from disease until their own active immunity begins to work.
- Key point: Calves that do not receive colostrum are at an increased risk of developing scours and 74 times more likely to die in the first 21 days of life. (www.teagasc.ie/media/website/animals/beef/dairy-beef/Segment-002-of-Section1-The-Newborn-Calf.pdf)

#### Considerations before calving/lambing

• Considerations before calving/lambing that can affect the quality or quantity of colostrum produced:

#### Cattle

- Vaccinations (*E. coli*, coronavirus, rotavirus).
- Nutrition (proteins malnourished cows produce poorer colostrum).
- Body condition score (dairy 3-3.5, beef 2.5-3).
- Disease status (inc. mastitis, Johne's one Johne's infected cow in a calving pen can infect the calves of 20 other cows).
- Udder conformation (reduced colostrum intake due to difficult access).
- Age (lower parity age tend to have lower antibody levels).
- Breed (Holstein dilution effect due to excessive production).
- Milking ease (cows that run milk prior to calving have poorer colostrum quality).

#### Ewes

- Vaccinations (clostridial Heptavac booster four weeks prior to lambing).
- Body condition score (2.5-3.5).
- Nutrition (proteins malnourished ewes produce poorer colostrum).
- Number of lambs (poorer body condition of triple and quad carrying ewes).
- Disease status (mastitis).
- Udder conformation (reduced colostrum intake due to difficult access).
- Mothering ability (inexperienced/poor mothering ability leads to reduced colostrum intake).

#### What are the main factors that influence how much antibody the newborn gets from the colostrum?

- 1. The volume of colostrum consumed (either by suckling or stomach tube).
- 2. The calf's ability to absorb the antibody (the length of time from calving to first feed).
- 3. The quality of the colostrum.

#### How much colostrum do they need?

• 10% bodyweight ideally in the first two hours of life, but definitely within six hours for calves and lambs. This can be split into multiple feeds as the abomasum of a calf has a capacity of 1.5-2L. So any more milk fed in one feed will end up overflowing into the rumen.

- For lambs, 200-300ml (triplet to single) for the first feed and a total of 0.8-1.2L over the first 24 hours. Equating to 50ml/kg over the first 24 hours.
- Ideally suckled but tubed if necessary (see later for best tubing technique).

#### Why is the timing so critical?

- When born, the gut of a new born is sterile. Straight after birth, colonisation with bacteria commences.
- The gut of calves and lambs becomes unable to absorb their mother's antibodies by passive transfer after 20 hours of life. The permeability of gut to antibody passage reduces at first and then ceases.
- The sooner colostrum is fed the faster the gut closes. This is important as it reduces the length of time the gut is also permeable to bacterial translocation.
- Absorption levels are greatest after birth as shown by the graph below. But rapidly fall 10 hours post parturition.



#### Colostrometer

- Floats in a sample of colostrum to measure the density in order to give an estimate of quality. The more dense the better the quality.
- Consists of a probe with a scale and coloured regions that work like a traffic light system.
- The denser the colostrum the less the probe sinks → the green region at the bottom will be visible → the colostrum is a good quality and contains a large amount of antibodies (IgA).
- GREEN: More than 50mg/ml indicates good quality colostrum.
- **RED:** Less than 20mg/ml indicates poor quality and this colostrum should be discarded.
- AMBER: Samples between these readings indicate marginal quality.

• Failure to do this will lead to a failure of passive transfer (FPT) of antibodies from dam to neonate.

#### How do you know if the colostrum is any good?

- There are two common methods used to measure the quality of the colostrum itself; the Colostrometer and the Brix Refractometer.
- Blood antibody levels may also be used to indirectly test the quality of colostrum.

#### **The Brix Refractometer**

- This method requires the use of a refractometer with a Brix 0-32% scale.
- A couple of drops of colostrum are placed on the glass surface after calibration.
- Using the Brix % scale a reading above 22% is good and the colostrum should be used.
- Below 22% the colostrum quality is poor and the colostrum should be discarded and another source used for feeding.

# COLOSTRUM OVERVIEW



#### **Blood Antibody Levels**

- This is an indirect measure for colostrum quality and is more commonly used to assess if there has been a failure of passive transfer (FPT) of antibodies. This can be due to a number of reasons such as: inadequate colostrum quality, new born not suckling soon enough or consuming enough colostrum.
- The test measures the amount of Immunoglobulin G (IgG) protein. Which is the main antibody transferred in colostrum or total proteins (TP) present in the new born blood.
- The only source of IgG at this age is the dam's colostrum and therefore a low level of IgG indicates that FPT has occurred.
- Blood samples from 12 calves/lambs up to seven days old should be taken.
- A target of 80% of the samples should be the range of 'good' based on the table below, otherwise action should be taken to investigate the cause of the FPT.

Quality	lgG g/L	TP g/L	
Good	>12	<55	
Marginal	10-12	50-55	
Poor	<10	<50	

Antibody (IgG) and Total Protein (TP) Blood Test, AHDB Calf Management

#### What can affect the quality of the colostrum?

- There are several factors that can influence how many antibodies are present in the colostrum of the dam, these include;
- Number of lactations.
- First and second lactation cows produce colostrum with a lower concentration of antibodies, compared to cows with a greater number of lactations. Time in the herd increases pathogen exposure and therefore immune response.
- Breed of dam.
- Holstein colostrum is more dilute due to large volume of production. So concentration of antibodies will be less and hence quality will be lower.
- Dry period length in dairy cattle (if less than three weeks).
- Time between calving to first milking.
- As soon as parturition has occurred normal milk production commences and therefore dilution effect begins. Colostrum from cows milked up to six hours post-calving will have the greatest number of antibodies present.
- Colostrum taken more than nine hours post-calving will have less antibodies.
- Month of calving.
- Cows that calve down later (April/May) will produce colostrum with less antibodies than those calving in early spring or autumn.

#### How should you try to get colostrum into them?

- If the newborn will suckle and the dam's colostrum is a good quality then leaving it to suckle itself is best. As long as you think it will consume the correct volume in the correct time period.
- If you have any concerns about colostrum intake, it is best to strip the dam or use stored colostrum. This is then fed from a bottle and teat for the first feed, to ensure the calf or lamb consumes the correct volume in the correct time.
- If the newborn has a poor suck reflex or is a bit slow, a stomach tube should be passed. However, where possible, suckling either from its dam or a bottle is better than tubing as it promotes better development of the stomachs of the newborn. There are also associated risks with tubing, such as drowning, damage to the oesophagus and bypassing the newborns, true stomach (abomasum), leading to fermentation of the milk in the rumen rather than digestion. Stomach tubing is a skilled technique that requires training before attempting, to ensure it is placed correctly.

#### Please see below for the best method for doing this.

#### How to stomach tube:

- 1. Handle the newborn calmly, quietly and with proper restraint. For a calf, position it in a corner and place one hand under its muzzle to keep its head and neck upright.
- 2. Prior to placing the tube, measure the length on the outside of the calf and place a mark on the tube, to prevent inserting it too far (see image 1).
  - a. An easy way to do this is measure the distance from the tip of the calf's nose to the point of its elbow behind the front leg, usually 45cm or more.
- 3. Ensure the tip of the tube is smooth and not damaged or sharp.
- 4. Place the tip in warm water to make it more pliable, before dipping it into the colostrum to moisten it and help it pass more easily.
- 5. Raise the calf's head and squeeze the sides of the mouth gently to open it.
- 6. Slowly pass the tube along the tongue to the back of the mouth, aiming to the left side of the throat.
- 7. Once the tube is over the back of the tongue the calf should start chewing and swallowing it. The tube can then be passed slowly down into the oesophagus.
- 8. If the tube is correctly placed, you should be able to feel the rings of the trachea and the rigid enlarged oesophagus also. The exposed end of the tube should be checked for spurts of air which would indicate it has gone into the lungs. In which case it should be removed and re-placed.
- 9. Once you are happy with the placement of the tube it can be unclipped or straightened to allow the fluid to flow <u>slowly</u> down into the stomach. The liquid should be at body temperature (38°C) to prevent thermal shock and optimise antibody absorption.
- 10. It can take a few minutes to administer the volume required. If given slower the risk of regurgitation will also decrease.



- 11. Once feeding is completed. Kink the tube to prevent further flow. Slowly remove in one action and clean, before leaving to drain and dry.
- 12. **DO NOT** stomach tube calves lying down as this increases the risk of putting the tube into the lungs and drowning the newborn.
- 13. Also **NEVER** force the tube. If correctly placed it should slide down easily.

If you have further questions, or would like assistance with tubing a newborn, please contact the surgery and we will be happy to help.





# COLOSTRUM OVERVIEW

#### Are colostrum replacers good enough?

- Ideally the newborn should receive the dam's colostrum as this is likely to be the best:
- Consuming other dams' colostrum can risk spreading diseases such as Johne's in cattle.
- The newborn will acquire immunity to fight diseases specific to their environment, giving them a better chance of survival.
- If the dam's colostrum isn't of good enough quality, the next best source is a dam from the same herd/flock of which the disease status and quality is known to be good. They will have been exposed to the same diseases as the true dam and therefore will contain similar antibodies to the true dam's colostrum.
- When neither of these is available, colostrum replacement (CR) products can be used. However, these will not contain antibodies to diseases specific to the farm and the newborns may lack relevant antibodies, making them more susceptible to disease. CR should be used as a last resort only and freezing high quality colostrum should be routinely done.

#### How should you store and prepare spare colostrum?

- Colostrum can be stored at 4°C for two days without negatively affecting the transfer of antibodies to the newborn.
- If the colostrum is stored at a higher temperature, less antibodies will be transferred to the newborn. This is due to there being a greater number of bacteria present as multiplication will have taken place.
- Colostrum can also be frozen.

#### What to do when wanting to use stored colostrum:

• Thawing frozen colostrum should be done slowly and at temperatures less than 50°C to prevent destruction of the antibodies. This can be done in a warm water bath. Alternatively it can be thawed in the fridge overnight.

- Cold colostrum stored in a fridge should be warmed in a water bath before feeding. This will help to increase the amount of antibodies transferred to the newborn and prevent the risk of thermal shock.
- Once warmed, the colostrum should be used within 30 minutes and should ideally be 38°C when fed to the newborn.
- NEVER use a microwave to thaw frozen colostrum, this will destroy the antibodies in the colostrum and lower the quality.

#### Key take home messages (The 4 Qs of colostrum)

- 1. Quality
  - a. Measure antibody levels
  - b. Consider factors affecting quality
  - c. Maintain good hygiene throughout
  - d. Feed or freeze quickly

#### 2. Quantity



a. Feed a minimum of 3L per calf or 10% bodyweight of lambs for first feed

#### 3. Quickly

a. First feed within six hours of birth (ideally within two hours)

#### 4. Quietly

a. Minimise stress to maximise antibody transfer

Please contact us if you would like any more information regarding the topics discussed in this article.



## SMALLHOLDERS CLUB UPDATE Rebecca Davenport BVM BVS MRCVS

The Smallholders Club met in September to discuss intestinal parasites of sheep and cattle and the different treatment options. Kindly sponsored by Zoetis, the evening focused on anthelmintic resistance, correct use of products and financial implications on daily live weight gains. We discussed utilising faecal egg counts (FEC) both pre and post treatment to assess resistance and help create a suitable treatment plan on a farm by farm basis. This FEC service is available to all clients at the Melton, Market Harborough and Uppingham practices and helps to understand the worm burden, increase vet discussion and find the most suitable treatment.

We recently met in early December to discuss liver fluke and the implications on health and fertility. With such a wet summer and autumn, many farms with no previous evidence of fluke are seeing a problem especially in store lambs. Frequently, issues are not detected until a low scanning percentage is noted in ewes.

Our Smallholders Club is for anyone, whatever your flock or herd size, wishing to gain further information and knowledge about key diseases affecting your livestock, as well as management ideas. If you are interested in joining, please email **smallholdersclub@rutlandvets.co.uk**.



# **MEET THE STAFF**



#### Nick Watson – Farm Animal Practice Manager

**Introduce yourself:** I was born and raised in South Leicestershire and developed a passion for livestock working on local farms. I have spent the last seven years working in the bovine genetics and artificial insemination industry, primarily in the daily management of reproductive performance across herds in the East Midlands. I was also a service team leader looking after a team of AI technicians. I am really excited to be given the opportunity to join the FVS team and I am looking forward to transferring my skill set into this new role whilst being part of a busy practice as it continues to develop.

What made you want to work for Farm Veterinary Solutions? After seeing how the FVS team operates proactively and professionally within the farming community but also how an independently owned practice continues to build a really forward thinking team whilst looking after its growing client base.

What do you do in your spare time? I enjoy spending family time with my wife and two daughters on our smallholding, shooting, fly fishing and the odd game of rugby for Market Harborough.

Where have you been to in the world? The furthest I have been to is New Zealand where I spent a year milking cows and a season contracting. I have also visited a bit of Europe but Norfolk still remains a firm family favourite.

Tea or Coffee? Coffee AM / Tea PM.

**Beer or Wine?** Beer maybe followed by a glass of red, I'll drink most things but you can't beat a good pint of Guinness.

Rugby or Football? Rugby 100%.

Interesting fact about yourself? I was ball boy and mascot for Leicester City Football when I was 12!





Farm Veterinary Solutions Caring for the health of your business

# Lutterworth Branch



## Your local independent practice

Our team of 19 veterinary surgeons provide farm services across the East Midlands, 24 hours a day, 365 days a year.

Proactive approach to livestock health through diagnosis and disease prevention.

Herd and flock health plans Fertility services Parasite control plans & products Vet Tech services including mobility & condition scoring Gamebird health Competitive medicines & next day delivery service In-house faecal egg count testing Smallholders club and client evenings

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Opening hours: Monday to Friday 8.30am - 12.30pm, 1.30pm - 4.30pm Farm Veterinary Solutions, Elms Farm Industrial Estate, Bitteswell, Lutterworth, Leicestershire LE17 4LR Tel: 01455 248500 • Email: info@farmvetsolutions.com • www.farmvetsolutions.com

# WINTER VPS PRODUCTS 2020

Deals	Details/Uses	Withdrawal	Dose	Pack Sizes	Price (Excl. Vat)
Enovex Pour On for Cattle	<b>Ivermectin</b> pour-on for control of adult and inhibited larval stage roundworms, mange mites and sucking lice in cattle.	Cattle Meat 28 days Milk – Do not use	1ml/10kg	2.5L	£28
Eprizero	<b>Eprinomectin</b> pour-on for control of adult and inhibited larval stage roundworms, mites and sucking lice in cattle.	Cattle Meat 10 days Milk 0 hours	1ml/10kg	2.5L 6L	£125 £225
<b>Taurador</b> Smg/ml POUR-ON SOLUTION for Cattle Doramectin	New Product Dectomax equivalent - doramectin pour-on for control of roundworms, mange mites and lice in cattle for up to five weeks.	Cattle Meat 35 days Milk – Do not use	1ml/10kg	1L 2.5L 5L	£75 £115 £200
Noromectin	<b>Ivermectin</b> injection for control of adult and inhibited larval stage roundworms, mange mites and sucking lice in cattle, sheep and pigs.	Cattle Meat 49 days Sheep Meat 42 days Milk - Do not use	1ml	50ml 300ml 750ml	£14 £35 £65
<b>Closamectin</b>	Ivermectin + closantel pour-on for control of adult and inhibited larval stage roundworms, mange mites and lice, late immature and adult liver fluke in cattle.	Cattle Meat 58 days Milk - Do not use (>150 days)	1ml/10kg	2.5L 4L 6L	£215 £310 £420
Fasinex 240	<b>Triclabendazole</b> oral drench for control of early immature to adult fluke in cattle.	Cattle Meat 52 days Milk 50 days	5ml/100kg	2.2L 5L	£165 £315
Zanil	<b>Oxyclozanide</b> oral drench for cattle and sheep for control of adult liver and rumen fluke only.	Cattle Meat 13 days Sheep Meat 14 days Milk 108 hours	Cattle 3ml/10kg	5L	£95
Endospec 10% SC drench	Albendazole +Se/Co drench for control of adult liver fluke and roundworms in sheep and cattle.	Cattle Meat 14 days Sheep Meat 4 days Milk 60 hours	See pack for fluke/ worm dose	2.5L 5L 10L	£55 £96 £160
Triglafas Drench Fluke Drench for Sheep	<b>Triclabendazole</b> drench for control of early immature to adult liver fluke in sheep (Fasinex 5% alternative).	Sheep Meat 56 days	1ml/5kg	2.5L 5L	£45 £65
Solantel M	<b>Closantel</b> drench for control of late immature and adult liver fluke and <i>Haemonchus</i> (barber's pole worm) in sheep (Flukiver alternative).	Sheep Meat 42 days	1ml/5kg	1L 2.5L 5L	£34 £64 £99
Bovigen Scour	Vaccine for cattle in late pregnancy to improve colostrum antibody levels against common causes of calf scour.	Cattle Meat 0 days Milk 0 days	3ml s/c	15ml (5ds) 90ml (30ds)	£35 £210

To place orders or for further information please contact the Melton branch on 01664 567481



# Farm Veterinary Solutions



A member of



## Winter 2020 Newsletter

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Kindly designed





4237-Winter2020-v1e-04/02/20