Issue 39 | November 2020

Milk Manager NEWS

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Market Update

UK Wholesale Dairy Commodity Market

- Fonterra's latest on-line GDT auction (3rd November) resulted in a decrease of 2% in the weighted average price across all products, reaching US $3,096/t. The three previous auctions returned positive increases. Skim milk powder (SMP) saw the biggest drop, down 4.4% (to $2,722/t). Only butter and butter milk powder showed positive movements in price, up +3.9% (to $3,822/t) and +1.2% (to $2,617/t) respectively. Full results are available at https://www.globaldairytrade.info/en/product-results/

- UK wholesale markets for the month of October were fairly quiet, with little movement in prices from September and very similar to 12 months ago. Cream prices increased in the early part of October, mainly due to European demand, although demand has dropped since with increasing lockdown restrictions. UK supply was also affected with the closure of two plants, helping keep prices firm. During the last week in October, bulk cream was trading at £1.44 to £1.46/kg ex works. This has since dropped to £1.32 to £1.35/kg in early November as the English lockdown has reduced requirements.

Commodity	Oct 2020 £/T	Sep 2020 £/T	% Difference Monthly	Oct 2019 £/T	% Diff 2020-2019
Bulk Cream	£1,540	£1,530	1	£1,490	3
Butter	£3,140	£3,180	-1	£3,170	-1
SMP	£1,980	£1,940	2	£2,040	-3
Mild Cheddar	£2,920	£2,920	0	£2,830	3

Source: AHDB Dairy - based on trade agreed from 1st to 26th October 2020. Note these prices are indicative of values achieved over the reporting period for spot trade (excludes contracted prices)

- Butter saw a small drop in price due demand being affected by COVID restrictions. The availability of butter also increased due to older butter being released from European private storage aid.

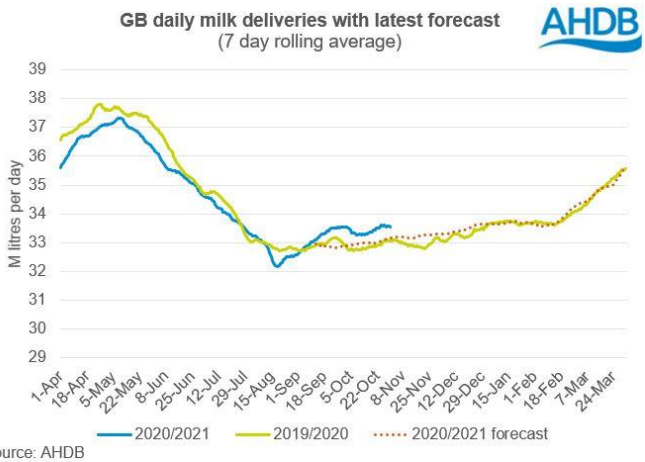
- Both AMPE and MCVE increased slightly in value in October, with AMPE up 0.21ppl on the back of the rise in SMP, which outweighed the slight decline in butter price. As MCVE is an indicator of returns from mild cheddar and whey powder/butter, and the cheddar price has remained very stable, the rise was marginal at 0.05ppl.

	Oct 2020	Sep 2020	12 months previously	Net amount less 2.4ppl average haulage – Oct 2020
AMPE	29.75ppl	29.54ppl	30.79ppl	*27.35ppl*
MCVE	31.64ppl	31.59ppl	30.69ppl	*29.24ppl*

Source: AHDB Dairy

UK Milk Deliveries and Global Production

- Milk deliveries in October have been running ahead of last year, up 0.1% for the week ending 31st October and 1.4% greater than the same week last year (by 470,000 litres more).



Source: AHDB

- Milk production is currently up on the forecast level for the year. Part of this is down to a higher proportion of cows being retained in the herd this Autumn on the back of cows being culling earlier than planned in April/May, when many producers were asked to reduce milk output. Fewer culls later in the year has helped keep milk production up, along with the fact that there is less concern over forage stocks now compared to back in August during the dry spell. As a result, the 20/21 season is expected to reach 12.48 billion litres, 14 million litres more milk than originally forecast back in June.

- Global production is also up by 1.7% from the six main milk producing regions (US, EU, UK, New Zealand, Australia and Argentina) from January to August 2020, compared to the same period last year. This is an increase of 3 billion litres and the additional volume is mainly from the US and EU. The UK was the only region with lower milk production compared to

2019, due to 2019 being an exceptional production year and milk output curbed by COVID restrictions at milk buyers' requests.

- Rabobank's senior dairy analyst has forecast that growth in milk production will continue into quarter 1 of 2021, with a 1.3% year-on-year rise in quarter 4 of 2020 from the main dairy producing regions, with 1% growth predicted for the first half of 2021, slowing to 0.8% in the 2nd half of the year. For the 2nd quarter of 2021, Rabobank anticipates global market fundamentals will remain weak, after which the amount of exportable surplus declines as domestic consumption rises.

Monthly Price Movements for November 2020

Commodity Produced	Company Contract	Price Change from Oct 2020	Standard Litre Price Nov 2020
Liquid & Cheese	**Arla Farmers UK**	*+0.9ppl*	29.52ppl liquid 30.66ppl manufacture
Cheese, Liquid & Brokered Milk	**First Milk**	*+0.5ppl liquid and +0.54ppl manufacture*	27.75ppl liquid 28.69ppl manufacture
Cheese	**Fresh Milk Company (Lactalis)**	*+0.75ppl liquid and 0.78ppl manufacture*	27.75ppl liquid 28.91ppl manufacture
Liquid & Manufacture	**Grahams**	*+1ppl*	27.0ppl
Liquid & Manufacture	**Müller Direct**	*+1ppl*	27.0ppl (includes 1ppl direct premium and -0.25ppl Scottish haulage charge)
Liquid & Manufacture	**Müller (Co-op)**	*+0.13ppl*	29.66ppl
Liquid & Manufacture	**Müller (Tesco)**	*-0.56ppl*	30.87pl
Liquid, Powder & Brokered	**Yew Tree Dairies**	*+1ppl*	27.1ppl Standard A litre price (to be paid on 81% deliveries)

Other News

- It is encouraging that many milk processors have announced price rises in November, with some holding their milk price until January (Freshways, Yew Tree, Grahams, Müller, Saputo to name but a few). However, the month long lockdown in England will cause concern for those processors heavily reliant on sales into the food service sector. Given that we are approaching the busiest time of year for the restaurant trade, the drop in demand for dairy is concerning. On the flip side, schools, colleges and universities remain open, meaning that demand may not fall as much as it did in the springtime. In addition, milk production is at a low point at this time of year and there is greater processing capacity. With spot milk currently around 30-32ppl delivered and cheese processors indicating good demand and low stocks it is hoped that some of the emergency actions taken earlier this year by some processors can be avoided this time round.

- The Tesco Sustainable Dairy Group is reducing its November milk price further by 0.56ppl (after a 0.08ppl drop in August this year) to 30.87ppl for Müller suppliers. Their latest cost of milk production data for April 20 to March 21 is broken down into variable costs at 17.2ppl, overhead costs at 11.68ppl (including a value of £61,189 for unpaid family labour) and depreciation at 2.17ppl. Further adjustment on feed, fuel and fertiliser for the 2020 calendar year is back 0.18ppl, setting the new quarterly price of 30.87ppl.

- The 2021 Dairy-Tech event will still go ahead but in the format of several on-line events run between 3rd-17th February. Switching to an on-line event has enabled organisers to bring in international speakers, and popular attractions from the previous events will still be showcased, such as a foot-trimming demonstration, on-line workshops, webinars and new product launches. So far, there are 55 new products to be launched by companies already signed up to the on-line event.

- AHDB's October survey of milk buyers in GB estimated that there were 8,310 dairy producers, which is a reduction of 4.7% (or 410 producers) from the same survey in 2019. Milk volumes have however increased, with the average farm output now over 1.5 million litres/year and over 50,000 litres higher than last year.

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Straights Update

Straights prices for delivery in artic loads as of early November are as follows (varies depending on location):

£/T for 29t loads delivery + £8/t haulage to central belt	Nov 20	Dec 20	Jan 21 - Apr 21	May 21 - Sep 21
Proteins				
Hipro Soya	405	405	Jan 405 Feb-Apr 401	365
Rapeseed Meal	300	270	Jan 270 Feb-Apr 265	May-Jul 267
Wheat Distillers Pellets	264	264	Jan 264 Feb-Apr 261	261
Starch				
Wheat	192	193	195	May-Jul 198 Aug-Sep 158
Barley	144	145	147	May-Jul 150 Aug-Sep 128
Maize	215	215	215	208
Fibre				
Home Produced Sugar Beet Pulp	206	206	206	-
Soya Hulls	191	191	191	-

Source: Straights Direct and Cefetra on 6th November. Barley and wheat prices are based on delivery to central belt (for North-East, deduct £5/t for wheat), courtesy of Julian Bell, Senior Rural Business Consultant, SAC Consulting. Prices do not include seller's margin.

Global News

- Global wheat prices have risen significantly since harvest on the back of strong global demand and the increased amount of exports from the Black Sea areas. There have also been concerns of dry weather on the newly planted winter wheat crops in the US and Russia. Since early August, total rainfall in the key wheat growing areas of Russia has been around 25% of normal, the lowest for 30 years. As of 26th October, only 41% of the US winter wheat crop was rated good to excellent in comparison to 56% at the same time last year (and 19% rated poor or very poor).

- Argentina is one of the world's biggest wheat exporters and the drought conditions has also led to the crop being rated as poor to very poor. Although recent rains are helping curb the rising wheat futures prices, prices are still supported on the back of poorer crop ratings.

- China continues to have a strong demand for wheat and other grain imports, as the country suffered a shortfall in home produced maize and soybeans due to flooding this summer, and imports may also increase with the risk of another trade war. Their rice production also dropped by 30% compared to previous years due to heavy rainfall. The USDA estimates that China will be the 3rd largest importer of wheat for the 2020/21 marketing year.

- The end of October saw declines in oilseed markets as a result of crude oil prices falling due to less demand from countries with stricter lockdown actions. Brent crude oil fell just over 10% in the week to $37.46/barrel on 30th October. The US presidential elections will also likely result in currency volatility affecting commodity markets.

UK and Scottish News

- A gradual tightening of global feed grain supplies in recent months led by smaller than expected world maize crops has helped underpin UK feed barley prices. The UK is expected to have another large feed barley surplus in 2020/21 of around 1.7mt and the pressure will remain to get this grain exported over the season. A rising world market for feed grains is helping exporters to sell UK barley overseas. The very large barley price discount to wheat in the UK is also helping compounders and on-farm feed users increase their use of feed barley.

- In terms of wheat, the very small UK crop of only 10.1mt (16.2mt in 2019) means that UK wheat prices are led by the cost of imports of milling wheat and maize for feed. And again higher world maize prices are boosting UK wheat prices too. The 2020/21 wheat balance sheet is the tightest it has been in over 20 years despite less domestic demand and a higher level of imports. Availability of wheat is 4.47mT below 2019/20 levels and estimated at 14.72mT.

- Looking ahead, a number of recently sown crops are under threat from adverse weather both in the UK from yet another wet autumn and in other areas such as the US, S. America,

Ukraine and Russia due to drought. In terms of Brexit, we await news of whether or not the UK and EU will agree a comprehensive trade deal. An EU Deal would bring more certainty, a No Deal may send ripples through grain markets by limiting barley exports to the EU. In all cases (both Deal and No Deal) the UK will have all protection from world maize markets removed with zero tariffs on maize imports from 1st January 2021. All we can say for sure is that this will make UK grain prices even more susceptible to global price swings in the global maize market than it is at present.

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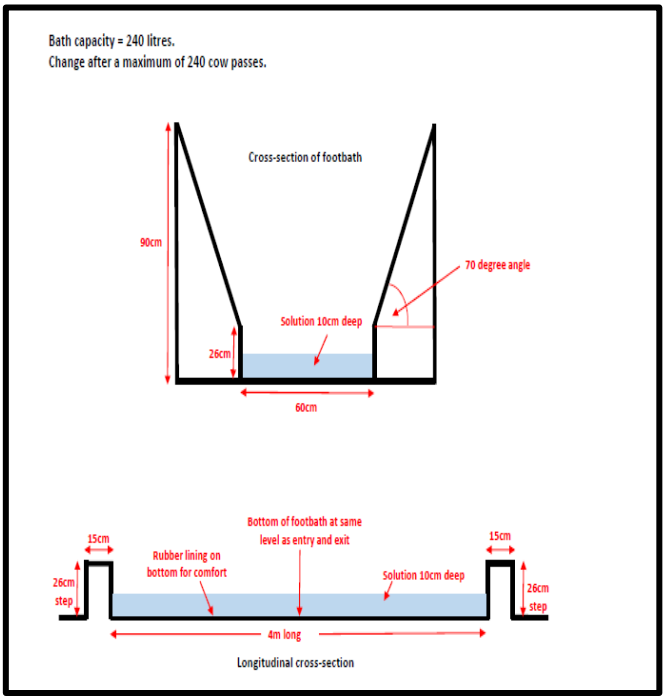
Good Design for Successful Footbathing

Footbathing is an important tool in every dairy farmers' armoury to maintain foot health in the dairy herd, but thought needs to be put into the design of the footbath to ensure that it is effective. The following diagrams show the ideal footbath design based on the following principles:

1. The bath should be long enough for each hind foot to dip three times in the solution.
2. A step at each end slows flow and ensures three dips per foot.
3. The solution must be deep enough to ensure full coverage of the foot.
4. The bath must be easy to fill and empty – a drain and bung at the exit/entrance step will help with emptying.
5. Sloped sides ensure the cows have to put all 4 feet in the footbath, as well as avoiding loss of solution.

Siting of the footbath is also critical and should ensure that it is easy to use on a regular basis when needed. If footbathing on exit from the parlour, make sure it is sited far enough away from the parlour exit so that cow flow from the parlour is not restricted. In robotic herds, footbaths sited at the entrance or exit to the robot can hinder cow visits and clutter up the robot area. An alternative would be to locate them in the cross over passages which cows either walk through every time they cross or have restricted access and then do whole herd bathing. In any system it is important that dry cows and youngstock can also be footbathed regularly.

Effective footbath design



Source: Sara Pederson, Farm Dynamics Ltd.

There are a wide range of chemicals available for use in footbaths as well as commercial products. NADIS recommend the following frequency of use and dilution:

Chemicals and usage recommendations for footbathing dairy cattle

Chemical in bath	Use	Frequency and concentration
Antibiotic	Treating digital dermatitis	Off-licence. Use as directed by your vet. Only for emergency use due to ethical concerns about antibiotic resistance. Not recommended as a routine.
Formalin[1]	Weekly "treatment" Daily disinfectant	3 consecutive days at 5% Daily at 2-4%
Copper sulphate [2]	Weekly "treatment" Daily disinfectant	1-2 days per week at 5% Daily at 2%, add mild, dilute acid
Organic acids	Daily disinfectant	Daily at 1-5%
Zinc sulphate	Weekly "treatment"	1-3 days at 10%
Commercial products	Varies according to product	Varies according to product

[1] Type 1b carcinogen Health and Safety precautions must be followed.
[2] Seek advice on soil biohazards.

Formalin is typically recommended at 5%. However, some vets maintain that lower concentrations can be just as effective. For cows with active lesions, 5% can be painful and make digital dermatitis lesions more severe. Therefore, lesions should be treated with topical antibiotic sprays until they are healing with black scabs before footbathing at 5% concentration.

Sara Pederson of Farm Dynamics Ltd states that formalin is still very effective at lower concentrations, with a number of farms using 2.5%. The lower concentration is absorbed by the skin more rapidly whilst also being less irritant. It is thought that formalin can create micro-abrasions in the skin which then increases the risk of digital dermatitis developing. Lots of proliferative dormant lesions in a herd are a good indication of formalin irritation.

An effective, regular footbathing regime can play a huge role in controlling lameness in your herd and maintaining foot health. For more advice on optimising the efficiency of your footbathing regime, please speak to your vet or contact the FAS Helpline.

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Importance of Teat Dipping

Covid-19 has taught us all how important hygiene is to prevent the spread of this disease. Farmers are under pressure to reduce antibiotic use on farm and so good udder preparation and milking routines are especially important to produce good clean quality milk free of environmental pathogens and to reduce spreading contagious mastitis pathogens such as Staphylococcus aureus between cows. Mastitis is estimated to cost up to £250 for severe cases so it is a costly problem, and its prevention should be a priority.

As a result, pre- and post-dipping are procedures everyone should pay particular attention to. There are variations in preparation and milking routines practiced by farmers, not all use a pre-dip and each has their preferred method. Udder preparation before milking may include one of the following:

- Paper towels - care is required as this method could smear bacteria on the teat.
- Wet wipes - may contain a disinfectant bactericide.
- Microfibre udder wipes - can be washed after each milking at 40˚C.
- Teat brush - uses a foam disinfectant to wash and sanitise the teat.

Regardless of the method used in udder preparation, all will stimulate milk let down and can even improve milk yields. However, teat disinfection is one of the most important preventative measures in mastitis control and if a disinfectant is not incorporated into products used to prepare the udder, pre-dipping should be practiced. Pre-dipping controls environmental mastitis and may also help control somatic cell counts and bactoscans. Post-dipping is very effective against the spread of contagious mastitis. If environmental mastitis cases exceed 5 cases/100 cows per month, pre-dipping is recommended and has been shown to reduce new infections caused by E.coli and streptococcal bacteria by up to 50%.

A study reported by Roger Blowey and Peter Edmondson in *In Practice* (issue June 1996) illustrated the benefits of pre-dipping on the reduction of infected quarters in the table below:

Effect of pre-dipping on the reduction of new intramammary environmental infections in four commercial dairy herds

		Number of infected quarters			
Treatment	***Number of quarters at risk***	***Strep uberis***	***Coliforms***	***Total***	***% reduction***
Control	553	31	41	72	-
Pre-dip	619	18	21	39	46

Special pre-dip products are designed to be fast acting to rapidly reduce the numbers of mastitis causing bacteria on the tea skin and around the teat orifice. Therefore, post-dips are not as suitable as they tend to have a much slower speed of action as they are designed to kill bacteria on the teat skin for a prolonged period of time after milking. Post-dips also contain teat conditioners such as glycerine and lanolin which prevent drying and irritation of the skin, and these are not necessary for pre-dipping. However, often some of the same active ingredients will be present in both products.

Post milking teat disinfection methods vary depending on the parlour set up:

- Teat spray - care must be taken to ensure all teats are sprayed correctly with good coverage.
- Teat dipping - this takes time and correct appliances used so that teats are completely covered.
- Some modern parlours have an ADF (automatic dipping and flushing) system fitted whereby the teats are sprayed and the cluster washed out for the next cow.

Teat spray will use more product than dipping by up to 5ml more per cow so, while more time consuming in the parlour, dipping is more cost-effective. In order to be effective, the pre-dip must cover the entire length of the teat and not just the teat end. The whole teat will be in contact with the milk liner so full coverage is important for reducing mastitis but also to benefit milk hygiene quality.

A consistent routine in the parlour is essential, where all protocols and standards must be adhered to by the operator to reduce the risk of contamination for the production of quality milk. This is especially important on larger farms where there are different staff responsible for milking.

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Quantifying the Effect of Calving Difficulties on Herd Performance

A recent paper by Eaglen et al. (2011), in the Journal of Dairy Science (vol 94: 5413-5423) looked at the effect of calving difficulty on fertility and milk production in over 32,000 dairy heifers. Calving difficulty was recorded on a scale of 1 to 4 where 1 = non assisted, 2 = moderate farmer assistance, 3 = difficult farmer assistance and 4 = very difficult vet assistance including caesareans.

The effect of calving difficulty on fertility was measured by days to first service, services per conception and the calving interval. Even just slight farmer assistance affected fertility compared with cows calving unassisted with a four day increase in calving interval (which was statistically significant). However, for vet assisted calvings the increase in calving interval was almost a month with an extra 0.7 services per conception (see table below).

Effect of calving difficulty in heifers on subsequent fertility compared to unassisted calving heifers

Calving Difficulty Score	2	3	4
Increased days to 1st AI	+1.7	+3.5	+7.8
Extra services per conception	+0.1	+0.2	+0.7
Increase in calving interval (days)	+4	+7	+28

The degree of calving difficulty on first lactation milk yield was also investigated. The greatest effect on milk yield was seen during the first 90 days of lactation, with cows requiring vet assistance producing 2kg of milk less per day. The differences in yield between the two groups gradually reduced after 90 days, with no difference by 190 days.

This large-scale study clearly shows that calving difficulties, even where just slight intervention is required, could affect getting cows back in calf at the appropriate time and extending the calving interval. Each day open is estimated to cost £2.00 to £2.30 so an increase of 28 days in the calving interval of a vet assisted calving is costing £56-£64/cow (NADIS 2015).

It is not surprising that a difficult calving has an impact on milk yield and fertility of the dam. However, the study also followed over 8,000 of the heifer calves born which were subsequently used as replacements. Not surprisingly, there was no significant effect on their subsequent fertility, possibly due to them being mated around 15 months after birth and having sufficient time to fully recover from even a vet assisted birth.

However, calves born with either veterinary assistance or by caesarean, showed a significant reduction in their first lactation milk yield, producing 710kg less milk compared with heifer replacements born without assistance. This is equivalent to a 9% reduction in a 305-day lactation yield. These assisted calves had a flatter peak in their lactation curve, peaked approximately one month later and their yield fell more gradually

compared to the lactation curves of heifer calves from a non-assisted calving.

The effects of calving difficulties on the dam and calf are both short- and long-term and being able to quantify these emphasises the importance of calving ease as a selection trait, but also indicates that the benefits gained by genetic improvement are also underestimated.

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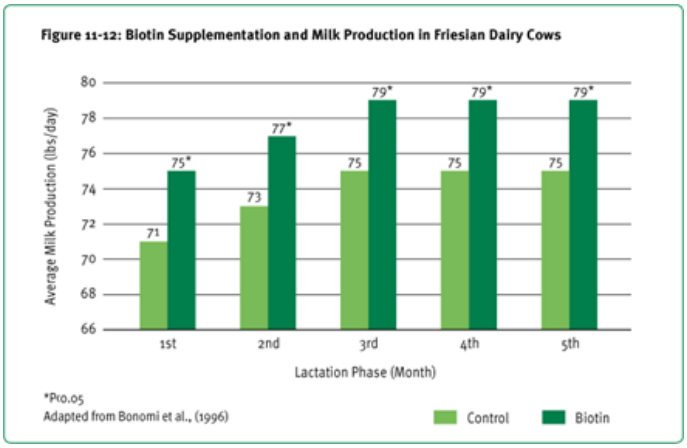
Biotin: Should I Consider Using it?

Lameness has massive financial and welfare implications on Scottish dairy farms and biotin has been proven to reduce the incidence of the common disorders; digital dermatitis, solar ulcers, white line disease and sandcracks.

Biotin is a water-soluble B vitamin which, like other B vitamins, can be produced in the rumen by microbes. However, rumen production is very low at only 2 to 4mg/day and this is well below the levels required to provide beneficial effects, such as improving long-term hoof hardness and positivity influencing milk yields (see graph below).

The effect of biotin supplementation on milk yield with parity



Source: DSM (https://www.dsm.com/markets/anh/en_US/Compendium/ruminants/biotin.html)

In order for healthy hoof growth and development to occur a number of vitamins and minerals are required such as vitamins A, D and E and minerals calcium, phosphorus, copper, zinc and selenium. Biotin also has a key role as it assists in the synthesis of keratin, a hard, structural protein involved in horn production. Biotin also helps with the formation of intracellular cement which bonds the cells of the hoof horn together, leading to hooves which are ultimately stronger. In times of stress (i.e. lameness) biotin reserves within the body deplete thus contributing to the overall lameness problem. It has also been found that feeding high levels of grain in the ration reduces the natural production of biotin within the rumen, potentially increasing the risk of lameness.

There are many studies that have investigated the link between biotin and lameness. A study by Licher *et al*. (2002) found that cattle that had uncomplicated sole ulcers and were fed 40mg/day of biotin for 50 days had significantly better quality of new horn tissue forming in comparison to those which were not supplemented with biotin. The researchers also thought that with longer supplementation of biotin the effects might have been greater. In another study Pözsch et al. (2003), looked at whether parity and duration of biotin supplementation affected white line disease incidence. It was found that in dairy heifers there was no effect on white line disease incidence. In multiparous cows, which were supplemented with biotin for at least six months, the annual incidence of white line disease fell from 48% to 8.5%. Therefore, for multiparous cows, long-term biotin supplementation has a significant effect.

Biotin has also been found to increase milk yield as it improves energy metabolism, in particular propionate production. It also increases fibre digestion in the rumen which has a knock-on effect on milk production. In a study by Chen et al. (2011), it was found that by feeding biotin the dry matter intake increased by 0.87kg/day and milk yield increased by 1.66kg/day, with no effect on milk composition.

Various studies into biotin's efficacy have been carried out and it certainly improves hoof quality reducing lameness, with the additional benefit of improved milk production. When feeding a product containing biotin it is important to feed it in accordance with the manufacturer's instructions in order to achieve the recommended intake of 20mg/day for milking cows and between 10-20mg/day for dry cows.

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Potential Opportunities for Reducing Methane Emissions

Farming has been highly criticised for its contribution to greenhouse gas emissions and global warming. Many farmers have already taken steps to help reduce emissions and cut their carbon footprint, which should also return a financial benefit to their business. One area where there is huge potential to make an impact is in the reduction of methane emissions. Most of the methane produced by ruminant animals comes from enteric fermentation of feeds in the rumen, which account for about 90-95% of methane emissions, with the remainder coming from flatulence and slurry storage. A dairy cow can emit as much as 500 litres of methane a day and this is equivalent to about 10% of energy lost that could be used for milk production.

Although methane does not remain in the atmosphere long, it is converted to CO_2 after about 12 years and it is estimated that every 1kg of methane equates to 25kg of CO_2 (IPCC 2006).

There are already some feed additives on the market that claim to reduce methane along with other potential benefits of better feed conversion efficiency and growth rates in beef cattle and more milk in dairy cows. These additives are based on mixtures of essential oils. However, there are two main types of feed additives that may be available on the market shortly, with the sole purpose of reducing methane emissions and trial work with these products has been very successful.

Asparagopsis is a type of seaweed found in the tropical waters of Australasia and has been shown to reduce methane production in dairy and beef cattle by 90%. The seaweed acts in the rumen by reacting with vitamin B_{12} during digestion to neutralise methane. The inclusion rate was very low at only 1% of the dry matter when trialled in feedlot cattle and there was a 20% improvement in daily liveweight gain, due to less energy required for waste gas production in the rumen. There has been significant investment by major companies in the Australian animal feed sector to get this product to market. The production of sufficient quantities of seaweed will be the biggest challenge to supply the industry both in Australia and abroad.

The other product, which is likely to be available to the European market sometime in 2021 is a feed additive produced by a Dutch based company. The product is based on the synthetic compound 3-NOP or nitrooxypropanol, which acts as a methane inhibitor by preventing certain bacteria from producing an enzyme that converts carbon into methane. Several trials have been carried out with this product and the reduction in methane emissions has ranged from 22-35%. There appears to be no effect on dry matter intake and milk yield but an increase in milk fat percentage and yield has been reported, resulting in >5% improvement in feed efficiency.

This research is very promising for the fight against greenhouse gases and although there will be cost to feed these types of products, it will be interesting to see what the farmer uptake will be and whether they will be incentivised to embrace these new feed additives.

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Dates for your Diary - Webinars and On-line Events

- 10th November - **Understanding Accounts**. Time 19.30. To book your place visit https://www.fas.scot/events/event/farm-business-toolkit/

- 11th November - **Lanark New Entrants - Fresh Air is Free**. Time 19.30. To book your place visit: https://www.fas.scot/events/event/lanark-new-entrants-fresh-air-is-free/

- 12th November - **Making a Success of Reseeding**. Time 19.30. To book your place visit: https://www.fas.scot/events/event/webinar-making-a-success-of-reseeding/

- 16th - 18th November - **Herdsman Foot Trimming Course**. Aberdeen. For more information please contact Stuart Martin at the Scottish Dairy Hub on 07500 766083.

- 17th November – **Autumn Mastitis Review**. Time 13.00-14.00. To book your place visit:

https://register.gotowebinar.com/register/3008674733744256 12?source=Webpage

- 18th November - **AgriScot On-line**. For more information visit: https://scottishdairyhub.org.uk/events/agriscot-2020

- 18th November - **Fodder Beet - A Focus on Dairy**. Time 20.00. To book your place visit: https://www.fas.scot/events/event/fodder-beet-a-focus-on-dairy/

- 19th November - **Dairy Efficiency**. Time 19.30-20.45. To book your place visit: https://www.fas.scot/events/event/dairy-efficiency/

- 23rd November - **The Latest Score on Lameness - Detection and Prevention Strategies**. Time 20.00-21.30. To book your place visit: https://attendee.gotowebinar.com/register/4644441979880704782

- 25th November - **Calculating and Reducing your Carbon Footprint**. Time 12.00. To book your place visit: https://ahdb.org.uk/events/calculating-and-reducing-your-carbon-footprint

For any further enquiries regarding the information in this newsletter please contact:

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