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Milk Manager NEWS



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Advisory
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Lorna MacPherson	



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Market Update

UK Wholesale Dairy Commodity Market

- Fonterra's last on-line GDT auction for 2017 resulted in a 3.9% fall in the weighted average price across all products, reaching US \$2,969/t (a 14 month low). However, the first auction of 2018 returned a small increase of 2.2% on the 2nd January, with an average price of \$3,124/t. Whole milk powder, skim milk powder (SMP) and butter showed positive movements (+4.2%, 1.6% and 0.6% respectively), with cheddar dropping 2.1% from the previous auction.
- In the UK, wholesale prices of dairy commodities all fell in December (see table below), and it is likely that downward pressure will continue to be applied with the expectation of a milk flush.

Commodity	Dec 2017 £/T	Nov 2017 £/T	% Difference Monthly	Dec 2016 £/T	% Diff 2016-2017
Bulk Cream	1,800	2,100	-14	1,800	0
Butter	4,000	4,500	-11	3,700	8
SMP	1,230	1,270	-3	1,850	-34
Mild Cheddar	3,000	3,265	-8	3,080	-3

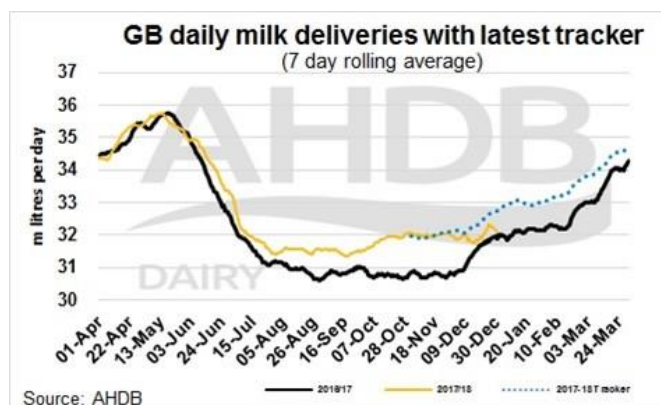
Source: AHDB Dairy - based on trade agreed from 1st to 21st December 2017. Note these are average prices indicating prices traded across the whole of the past month.

- Little butter was traded in December, with spot values ranging from £3,600/t to £4,700/t. Prices generally fell throughout the month.
- A similar trend was seen in cream prices during the month, with around a 30% variation in traded prices throughout December, ranging from £1,550/t to £2,110/t. The £300/t drop from November has reduced the cream income to a liquid processor to 10.47ppl, which is 0.15ppl less than December 2016.
- AMPE fell by 10% in December as a result of butter and SMP prices decreasing by 11% and 3% respectively from the previous month.
- Despite a very small increase (2%) in whey powder, whey butter fell by 12% and mild cheddar continued to drop in price by £265/t from November. The result was a 9% reduction in MCVE for December.

	Dec 2017	Nov 2017	12 months previously	Net Amount less 2ppl Haulage – DEC 17
AMPE	26.4ppl	29.2ppl	31.0ppl	24.4ppl
MCVE	31.9ppl	34.9ppl	33.5ppl	29.9ppl

Source: AHDB Dairy

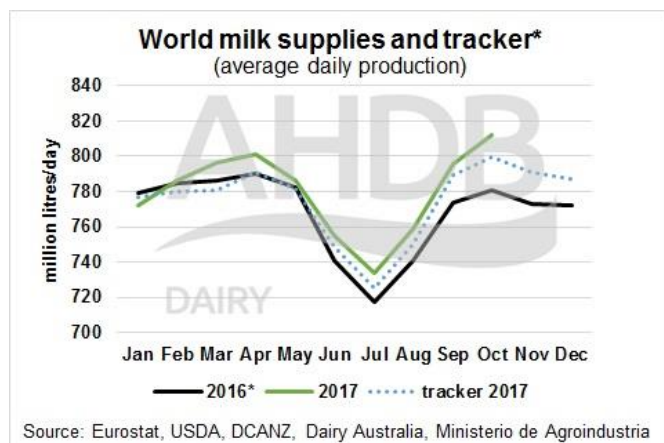
UK Milk Deliveries and Global Production



- The graph above shows a decline in milk production towards the end of the year, with a week-on-week fall of 0.2% for the week ending 30th December. However, deliveries are still above the same week last year by 0.7%, equivalent to 200,000 litres. Daily average milk production for the last week of 2017 was 32.1 million litres, compared to 31.87 million litres for the same week in 2016.
- Latest production figures from the EU-28 for October 2017 were at 12,229 million litres for the month, which was 5% up on the previous October.
- Fonterra has reduced its forecast for New Zealand's milk production, expecting to collect 3% less milk for its 2017/2018 season compared to last season on the back of dry weather. Grass growth has been stunted, with soil moisture levels and grass quality being affected across the country. The November forecast for the season was 1,525 million kgs of milk solids and has since been revised down to 1,480 million kgs (as of 29th December).
- Global milk supplies were up significantly in 2017, compared to 2016, particularly in the latter half of the year (see following graph). Deliveries for October were 4.1% up on October 2016, averaging 817m litres/day, due to production rising in the EU and seasonal growth

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in New Zealand. Stronger milk prices compared to 2016 also contributed to the higher production, as well as the EU milk reduction scheme at the end of 2016.



Monthly Price Movements for January 2018

Commodity Produced	Company Contract	Price Change	Standard Litre Price Jan 2018
Liquid & Cheese	Arla Farmers UK	-1.23ppl liquid -1.3ppl manufacture	29.82ppl liquid, 31.00ppl manufacture
Liquid & Cheese	Arla Direct	-1ppl liquid -1.04ppl manufacture	28ppl liquid, 29.12ppl manufacture
Liquid & Brokered Milk	First Milk Mainland Scotland	No change	29.09ppl
Cheese	Fresh Milk Company (Lactalis)	No change	29.0ppl liquid 30.03ppl manufacture
Liquid & Manufacture	Grahams	-0.5ppl	29.25ppl
Liquid & Manufacture	Müller Direct	-1.5ppl	29.00 ppl
Liquid & Manufacture	Müller (Co-op)	No change	29.39ppl
Liquid & Manufacture	Müller (Tesco)	No change	29.45ppl
Liquid, Powder & Brokered	Yew Tree Dairies	No change	30.0ppl Standard A litre price

- Müller have announced that their standard liquid litre price of 29ppl for January will be held throughout February.
- Lactalis are holding their current milk price until 1st April 2018. They are the only milk buyer in the UK to have offered a minimum milk price guarantee to its suppliers in 2017 and this current offer looks favourable, given several

milk price reductions for January and the continued fall in commodity prices.

- Arla has already announced a further 1ppl reduction for their direct suppliers from 1st February, bringing their standard liquid litre price down to 27ppl.
- Yew Tree Dairies have also confirmed a 1ppl drop from 1st February, giving 29ppl for their standard litre price. This is their first price change since October last year.
- Müller has lost more ground with the supermarkets, with Arla winning the tender to supply Aldi stores in two regions of England and Wales with liquid milk, previously supplied by Müller. This contract is worth around 100 million litres. This means that Arla will be responsible for providing 80% of Aldi's liquid milk and cream, equivalent to 320 million litres. In Scotland, Graham's continues to supply all Aldi stores with liquid milk and cream.
- Looking forward, it is difficult to remain optimistic about the farm-gate milk price. 2018 has started with higher global production compared to this time last year, very high levels of SMP in intervention, market returns falling for butter, cream, SMP and cheese and many milk price cuts for January and February. Unless milk supply is greatly reduced, milk price is likely to suffer, although this will very much depend on how farmers respond to the poor signals in the market and weather conditions in the EU this spring and summer.
- A recent article in the Daily Express newspaper (4th January 2018) revealed worrying results from a survey of Briton's attitudes to dairy products. The poll was conducted by Blue Diamond Almonds (Californian based company producing healthy almond snacks and drinks) and reported that 19% of young adults will try a dairy-free or vegan diet at some point in 2018 and that 28% will try and give up milk and cheese this year. Clearly there is still a need to emphasis the health benefits of dairy products as part of a healthy, balanced diet.

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Straights Update

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

£/T for 29t loads delivery + £7/t haulage to central belt	Jan 18	Feb 18	Mar 18 - Apr 18	May 18 - Sep 18
Proteins				
Hipro Soya	310	307	307	303
Rapeseed Meal	195	198	198	May-Jul 203
Wheat Distillers Pellets	POA	220	220	-
Starch				
Wheat	152	155	155	May-Jul 157 Aug-Sep 154
Barley	137	140	140	May-Jul 142 Aug-Sep 135
Maize	171	172	172	176
Fibre				
Sugar Beet Pulp	184	184	184	187
Soya Hulls	181	174	174	156

Source: Straights Direct and Cefetra on 11th January. 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

- US grain futures have been pushed up as a result of freezing temperatures in many states over the New Year. Kansas, one of the key grain growing states had temperatures falling to -24°C. Frost damage is a big concern, given the lack of snow cover this winter. In Oklahoma, ratings of good to excellent have dropped to 15% from 30% in November.
- Any losses to the soyabean crop in the US from winter weather issues are thought to have little impact as there are plentiful stocks and exports have reduced year-on-year, helping to balance out global supply and demand.
- Weather conditions in South America and the La Niña phenomenon is still causing concerns, with Argentina currently experiencing 40% less rainfall and Brazil 10% less than normal at this time of year, which could potentially impact on soyabean meal price. The hot dry weather is also impacting on oilseed rape plantings,

currently at 82% complete (as of 4th January, Gleadall) but with further progress very slow as rain is desired for more favourable seedbed conditions.

- Soyabean plantings in Argentina are slightly behind for the time of year according to BAGE, being 87.5% complete as of 3rd January, compared to the average of 90.3% at this time of year.

UK and Scottish News

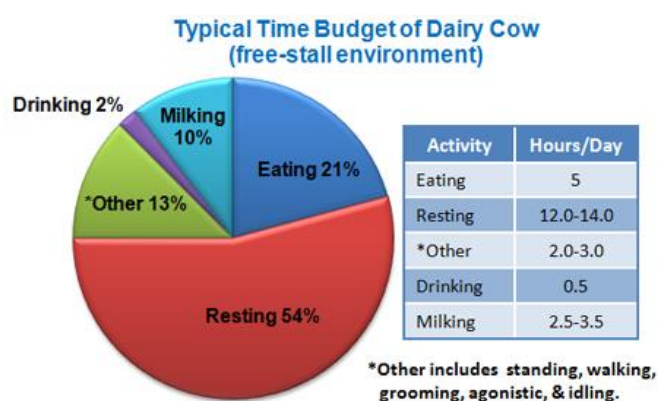
- DEFRA have released the final figures on the 2017 crop area, yields and production. Wheat yields were 5% greater than 2016 at 8.3t/ha. Apart from Merseyside and the North West, all regions showed an increase in wheat yield. Despite the 1.7% reduction in acreage planted, the provisional production was calculated at 3.2% higher than 2016 harvest, at 14.8mt.
- There has been little volatility in wheat price throughout 2017, largely due to record world stocks of maize, wheat and soyabeans. For example, at the beginning of 2017, the May 2018 UK wheat futures closed at £140.10/t and as of the 11th January, it was £142.25/t. In the short to medium term, global markets are thought to remain weak as there are ample stocks of grain in the world.

- Compared to other areas, UK wheat farmers have benefited from weakness in Sterling due to Brexit. Over the past 18 months, Sterling has dropped 18% against the Euro, which equates to £20 to £25/t extra on wheat prices. Strong demand and lower carry-in stocks this year has created tightness in the UK market, with wheat trading much closer to import levels than competitive export levels so far this season.
- Malting barley prices remain firm in the UK as maltsters are looking for quality barley to cover new malt sales from February onwards. However, there appears to be variable quality in barley stocks on farm and this will likely enter the feed barley market. A larger spring barley crop is expected in the UK and northern Europe for the 2018 harvest. It is likely that rather than using variable quality barley, maltsters will hold off until better quality new crop arrives.

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Assessing Cow Comfort

Studies of time budgets for milking cows show that they will lie down and rest for at least 12 hours a day (see diagram below). When a cow is lying down, there is 30% more blood being pumped through the udder than when she is standing, making her more efficient at producing milk. Anything that impacts on resting time will reduce milk production, in the region of 2 to 3lb of milk per hour of rest lost. Longer-term, this can lead to increased lameness and poorer fertility. Therefore, maximising cow comfort and lying time is important to the bottom line.



Source: Rick Grant of the Miner Institute

Cubicle size and comfort can be easily assessed and can give clues as to whether cow comfort could be improved:

- The **Cubicle Comfort Index** (or CCI) is a measure of lying comfort and is “the proportion of cows touching a cubicle that are standing with all four feet on the cubicle platform or perching with the front two feet in the cubicle and rear two feet in the alley”. The target is less than 20%. Lying behaviour changes throughout the day so determine the CCI two hours before milking.
- **Perching**, where the cow’s back feet are in the passageway, can indicate the neck rail is either too low or set too far back (or both). Perching increases the weight on the back feet, increasing the risk of lameness. Incidence should be less than 10%.
- **Lying down/rising behaviour** - watch cows as they lie down and get up in cubicles, which can be as much as 12 times a day. If they come into contact with cubicle frame, then the

dimensions are not appropriate for your cows. Look for shiny pieces of metal that the cow has come into contact with, commonly on the underside of the neckrail.

- **Lunging space** is also important and may be inadequate where cubicles are against a wall. Inadequate lunging space (or an obstruction to lunging space) is indicated by cows lying diagonally, cows lunging to the side or shiny partitions where metal has been rubbed. Also ensure that the brisket board is not too high (no more than 10cm above the bedding). Typical Holstein Friesian cows require a bed length of 1.7m and at least 1m lunging space.
- **Knuckle test** – make a fist and rub your knuckles firmly across the cubicle bedding. If it is uncomfortable and results in rubbed/scraped skin, it will also be uncomfortable for the cow’s skin, making her less likely to lie down.
- **Knee drop test** – drop to your knees from a standing position onto the bedding surface of the cubicle. If it hurts your knees, it will also hurt the cows! Bear in mind that when a cow lies down, approximately 2/3rds of her weight goes onto her front knees, which drop from a height of 20 to 30cm. Your knees should also be dry. If wet, then conditions are more favourable for bacterial growth and the higher the risk of environmental mastitis. Wet bedding will also significantly reduce lying time.

Hock injury is another indicator that cow comfort is not optimal and ideally should be less than 10%. This can include hair loss, lesions and swollen hocks. Swelling indicates the bed is too hard, whereas hock sores or lesions suggest that beds are too abrasive. A greater incidence requires either more bedding or a change in the type of bedding (to a less abrasive material). The mats or mattresses may also be worn out and need replacing. Generally, as the softness of the bed increases, lying time also increases. Deep bedded cubicles tend to have good hock scores with little or no hock lesions or swellings. Cubicles with a stable surface, i.e. mats or mattresses will tend to produce higher hock scores.

Observe your cows and ask your self the following questions:

1. Are some cubicles never used?

2. Are cows mostly standing half in/half out of the cubicles?
3. Do cows make abortive attempts to lie down and take longer than 5 minutes to lie down?
4. Do cows lie in passageways or backwards in cubicles?
5. Do cows sit back on their haunches like a dog?
6. During quieter periods in the shed, are there more than 30 per cent of the cows not lying?

If you answer yes to any of the above, then a cow comfort problem exists and steps should be taken to identify and correct the problem.

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Encouraging Uptake of Selective Dry Cow Therapy

A Scottish Government funded project is currently looking at encouraging dairy farmers to reduce antibiotic use at drying off through the practice of selective dry cow therapy (SDCT). SDCT is where antibiotics are only given at drying off, if there is evidence of infection in the udder. Antibiotics may also be administered if a cow has had a history of mastitis during lactation. Every cow is treated with an internal teat sealant, which has been shown to reduce clinical mastitis levels by around 30%.

There is increasing concern about antimicrobial resistance, both in livestock and in humans. Of particular concern is the use of 3rd and 4th generation cephalosporins for mastitis prevention and treatment, which are critically important in human medicine. The British Cattle Veterinary Association recommends minimal use of these products and they should only be used as a last resort, if they are the only suitable antibiotic to avoid unnecessary suffering. Other antibiotics that fall into this category are Fluoroquinolones and Colistin.

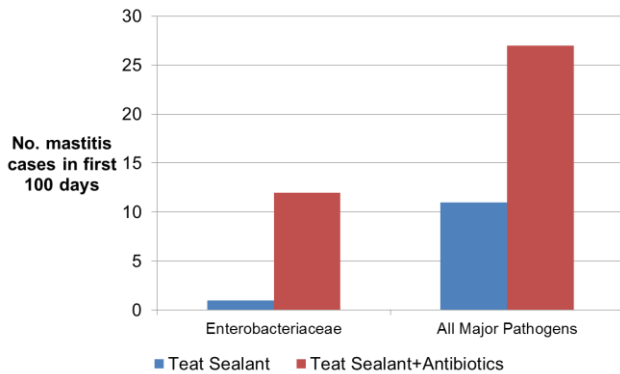
The project is a joint collaboration between SAC Consulting, Zoetis, University of Edinburgh and Müller. Currently Müller milk suppliers in Ayrshire and Aberdeenshire are participating in the project and the effect of SDCT in individual herds is being monitored through the dry period performance in terms of cell counts pre and post-calving and mastitis rates. There is a high probability that mastitis cases occurring within the first month of lactation originate in the dry period and the project will investigate whether there is any difference in

“dry period” mastitis cases between cows on SDCT and those that receive antibiotics at drying off.

Initial observations to date are:

- There is no negative effect of SDCT on bulk tank cell counts. Bulk tank cell counts appear to increase in the summer months on many farms. This is a common seasonal trend and has been seen in both housed herds and those at grass. There are several farms that are currently drying off anywhere between 50 to 80% of cows without antibiotics each month, with no evidence that SDCT has increased bulk tank cell counts since starting SDCT. Therefore, there is little risk of going into penalty with their milk buyer on milk hygiene quality.
- There has been very little difference in dry period performance between cows on SDCT and those receiving antibiotics at drying off. The percentage of cows being dried off with a low cell count and calving down with a low cell count (dry period protection rate) was very similar across the Aberdeenshire group (84% on SDCT and 82% with antibiotics, very close to the 90% target). In the Ayrshire group, cows on SDCT had a dry period protection rate of 84% versus 89% for cows on antibiotic dry cow therapy.
- Clinical mastitis of dry period origin (cases occurring within the first month of lactation) varied from farm to farm but ranged from 0 to 29% over the period from March to September 2017. The target should be 1 in 12 or <8% of dry period cases per 30 day period.
- On some farms there was a higher percentage of dry period cases from cows on SDCT. On other farms there were more cases of dry period origin in cows that received antibiotics at drying off. From this it can be concluded there is no definite effect of SDCT on the incidence of dry period mastitis cases and the effect of drying off treatment varies from farm to farm. In fact, research shows that administering antibiotics to cows with low cell counts at the end of lactation (<200 at last 3 recordings) can actually increase the risk of mastitis (see graph below):

Impact of reducing antibiotic dry cow therapy in uninfected cows



Source: Bradley et al, 2010

The effect of milk yield at last recording will be looked at over time to investigate whether higher yielding cows are more at risk of mastitis depending on their dry cow treatment. Often, high milk yield at drying off is a barrier to the uptake of SDCT, with fear of more infections during the dry period and cows calving down with high cell counts or mastitis. Ultimately, it is hoped that this project will reduce the reliance on antibiotics, and increase farmer engagement in this area and build confidence in SDCT, showing that this practice is not detrimental to cow health and performance.

Reference: Bradley, A.J. *et al*, 2010. The use of a cephalonium containing dry cow therapy and an internal teat sealant, both alone and in combination. *Journal of Dairy Science*, 93: 1566-1577.

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Genomic Improvement in Dairy Cows – How it is being taken up by Farmers

Genomics is based on using DNA from an animal to predict its breeding value. The so called conventional way of evaluating animals (genetic evaluation) is based on performance records (milk yield, live weight, number of eggs etc.) of the animal, its offspring and those of other relatives. The advent of low cost genotyping around 5 years ago has led to an explosion in its use in the dairy industry. The power of genomics is established.

How does it work?

It starts with a group of animals we call the reference population. These animals have very good phenotypic records for the traits of interest

(production, health, reproduction etc.) and have also been genotyped. Genotyping involves determining what the DNA is at specific points across the whole bunch of chromosomes at about 50,000 locations. At each location is a single nucleotide (molecule) that can be one of four different types - Adenine, Cytosine, Thymine or Guanine. This gives rise to the very familiar ACTG denomination that most people relate to DNA. The whole genome is made up of around three billion ACTG in varying orders. The fact that genetic variation is down to the difference in sequence (morph) of these ACTG single nucleotides gives rise to the acronym SNP – single nucleotide polymorphism! It is pronounced SNIP.

Clearly, dairy bulls do not have production records of their own but their conventional PTAs (similar to EBVs used in beef evaluations) can be used as a phenotype. This is part one of the connection between conventional breeding values and genomic breeding values.

After ranking bulls by their conventional PTA, complex computer algorithms analyse the DNA and production records looking for patterns that connect them. Once these patterns have been identified, prediction equations are produced and these are often referred to as the SNP key. A young animal with no production records can be genotyped and the DNA compared to the SNP key to produce a genomic PTA (gPTA).

What's the difference between gPTA and PTA?

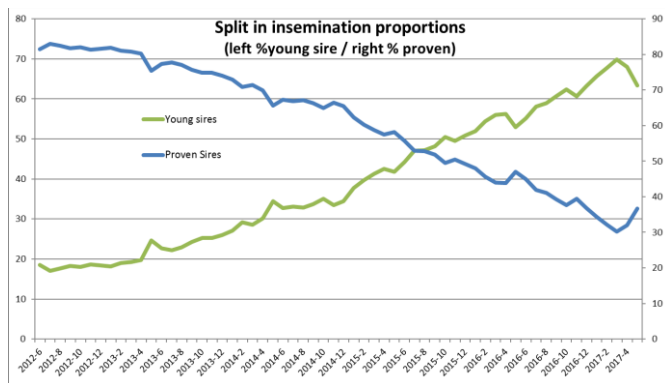
In use by farmers and breeding companies there is no difference at all. They mean the same thing, are expressed on the same scale and can be used in exactly the same way. Users will be familiar with accuracy (or reliability) figures attached to PTAs. The higher the accuracy, the less likely the PTA will change in future as more information is added. gPTAs occupy an accuracy range of around 30% - 70% and so are similar to low to moderate accuracy PTA. The main difference is that gPTAs are available very early in an animal's life, allowing economically important decisions to be taken sooner.

Historically, dairy farmers would have used young bulls sparingly across the herd and usually in teams of four to spread the risk of any one of them coming out bad. These bulls would typically have a reliability of around 35% based on their parents PTAs. Once a bull got his first crop progeny test

results the accuracy was often around 75%. Thus a gPTA is around the accuracy of an initial proof on a conventionally tested bull. Time has shown that gPTAs are a good predictor of final PTA and so farmers have switched to using them almost completely.

How has genomics been used?

Since the introduction of gPTAs, dairy farmers have responded by shifting the bulls they use in their herds. You can see in the graph that nearly 70% of all inseminations in the UK are by a young genomically tested bull.



Source: AHDB Dairy

An example trait – feed intake

Genomics provides opportunities to select for traits that have been difficult to do so in the past, because the recording is too expensive on a widespread scale. Feed intake is one such trait but genomics allows us to concentrate efforts into recording a few animals and then use genomic breeding values to disseminate the value of that recording to large numbers of farmers. AHDB Dairy expect to publish gPTAs for dairy cow feed intake early in 2018 after calculation and validation by EGENES. These will be based on cows from the SRUC Langhill herd and others from research herds around the world. More details will follow in the February issue.

Genomic selection is very powerful at changing animals for traits that have been difficult to change in the past especially. Its use is increasing in dairy cows and dairy goats rapidly and is spreading to beef (Limousin) and sheep (Texels).

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Forward Milk Pricing

Milk prices

Average GB milk prices have moved sharply in recent years, dropping 15ppl from 35ppl in autumn 2013 to a low of 20ppl in June 2016, before rebounding to over 31ppl in autumn 2017. Current spot prices are around 29ppl. The sharp moves in milk prices have been unprecedented and have caused great uncertainty for producers not knowing what price they will receive. Given the massive investment required in modern dairying such uncertainty represents a major threat to viability. What if dairy farmers could guarantee their milk price for a year's time? Well now they can.

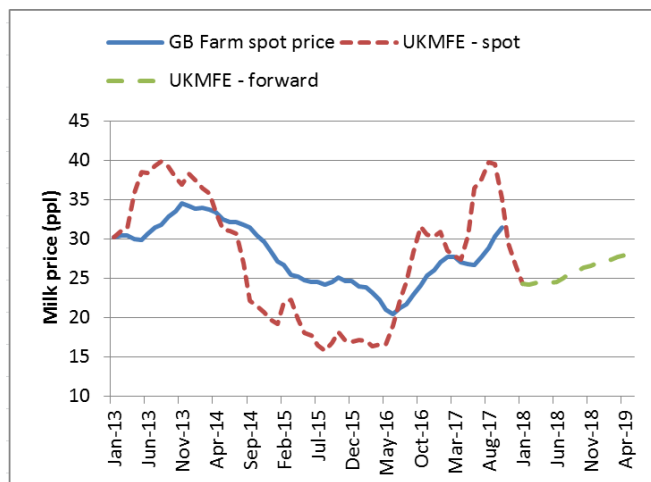
Forward pricing of milk

Over the last year or so, UK dairy farmers have started to be offered forward prices for milk for specific delivery periods. The first milk processor to offer these contracts was Yew Tree Dairy who offer producers periodic opportunities to commit up to 60% of their expected output on forward contracts typically one year ahead. More recently they have been joined by other buyers offering forward pricing including Lactalis, Müller and Credent Dairy.

These contracts are often referred to as futures contracts. However, as far as the farmer is concerned, these are really only forward contracts with the milk processor. As such they do not represent any contract between the farmer and the futures market. The responsibilities for the farmer are that they must deliver the agreed quantities of milk on the agreed dates to their processor, otherwise penalties and contract breaches will apply.

Futures broker FC Stone calculates regular forward milk prices based on European milk futures contracts and currency exchange rates. The farm values will be lower than these futures values, once adjusted to reflect transport and other costs. The following chart shows how these futures market based values (UKMFE – UK Milk Futures Equivalent) compare with GB ex-farm spot prices (AHDB). At times the UKMFE has offered a strong premium over the average GB ex-farm spot price, at other times such as right now, the UKMFE has fallen below and forward selling is less attractive.

Spot and forward milk price estimates



Source: AHDB, FC Stone, SAC Consulting

Farmer strategies

Scottish dairy farmers have been getting used to using these forward contracts over the last year and a number of strategies have emerged.

Locking in 50% of milk output one year ahead on a rolling basis is a simple strategy, giving a working average price, and requiring very little management time. It will not deliver the highest price but it will also keep farmers out of any price troughs that occur. For many dairy producers this allows them to concentrate on lifting dairy herd performance, knowing that they are cushioned from any sharp price fall that might come along.

Right now forward milk prices are lower than the 29p spot value so currently uptake of forward contracts is less, but this can change quickly. Dairy farmers should therefore be aware of the potential of forward pricing. It may also be something that comes into its own in a de-regulated post-Brexit world. With less subsidy and potentially less protected markets, the only way to keep (fresh) milk on the supermarket shelves will be by forward contracting with dairy farmers. Coupling forward milk sales with simultaneous forward purchasing of key inputs such as feed and fertiliser can also enable dairy farmers to lock in margins in advance, a major step forward in business stability.

Forward selling summary

- Forward contracts enable farmers to fix milk prices for a year or more in advance. Feed and other costs can also be fixed at the same time

to lock in margins.

- These contracts will not necessarily deliver the highest price but enable farmers to bring stability to their business in the face of volatile world market and UK exchange rates.
- Before signing forward contracts seek professional advice.
- It is vitally important that the farm is able and willing to deliver the future volume of milk contracted whatever happens to the wider market.
- Forward milk prices can go up as well as down!

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Carbon Auditing on Dairy Farms

Under the Climate Change (Scotland) Act (2009), Scotland is committed to reduce greenhouse gas (GHG) emissions by 80% from 1990 levels by 2050. With around 20% of GHG emissions in Scotland attributed to agriculture and related land use, the rural sector has an important role to play in helping Scotland and the UK meet its commitments.

The three main GHGs produced from agriculture include:

- Carbon dioxide (CO₂) - produced by burning fossil fuels such as coal, oil and diesel to produce energy and disposal of waste.
- Methane (CH₄) - produced as a natural by-product of ruminant digestion and from organic manure.
- Nitrous oxide (N₂O) - which is released during the application of inorganic and organic fertiliser to the soil, from urine deposition by grazing animals, cultivations of soils and changes in land use and vegetation.

At the farm level, reducing GHG emissions will also improve farm efficiency and profitability. Before any potential improvements can be identified, it is necessary to establish a baseline for the production of GHG emissions and resource use efficiency.

The amount of GHG emissions produced from on-farm activities can be determined using a carbon calculator. This measure of emissions is known as a carbon footprint, also referred to as a carbon audit and can be prepared for the whole farm,

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individual enterprises or products. Once a baseline carbon footprint has been established, it can be benchmarked against similar enterprises or crops. This process highlights areas where improvements can potentially be made, helping to reduce emissions and improve efficiency of a farm business. Farms with a low carbon footprint are generally the most efficient.

AgRE Calc®, SAC Consulting's Agricultural Resource Efficiency Calculator is an example of a tool that will calculate and benchmark emissions and highlight areas for improvement. An example of a report produced by AgRE Calc® for a dairy enterprise benchmarked against similar enterprises is shown below.

This shows that overall emissions per kg of output from the dairy enterprise are lower than comparable enterprises, indicating the business is generally making efficient use of its inputs and resources. There are however, still some sources of emissions that are slightly higher, namely enteric fermentation, manure management and fertiliser, indicating there may still be scope for improvements. For example, increasing milk yields will increase output, helping to reduce emissions from enteric fermentation. Manure management and regular soil analysis, combined with nutrient budgeting and making best use of organic manures will help to ensure that excess fertiliser is not applied, reducing emissions from fertiliser and manure.

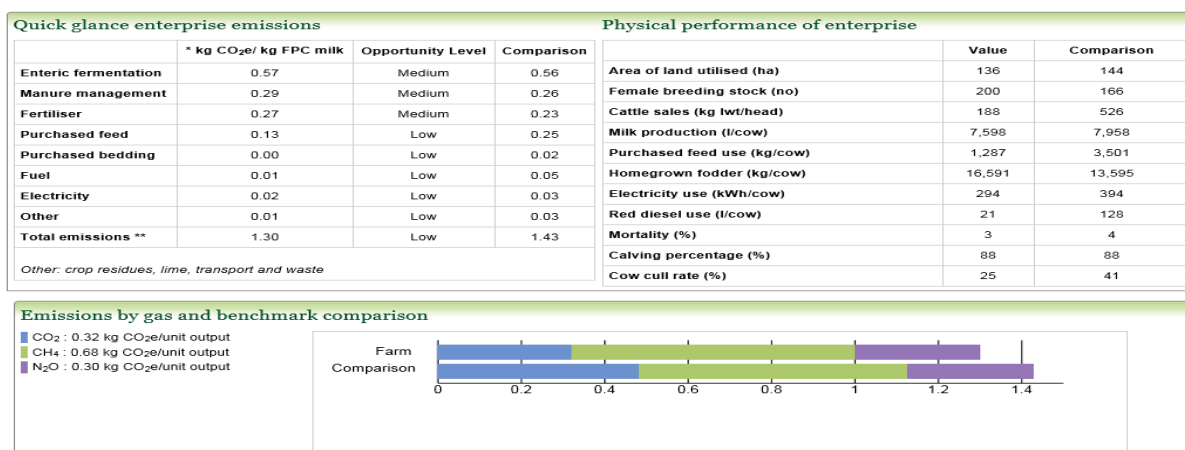
Through programmes such as the Farming for a Better Climate Initiative and Monitor Farms, AgRE Calc® has been used to identify areas for improvement which have led to management changes and emission and financial savings.

Some examples include:

- Producing high quality silage and knowing its nutritional value aided accurate rations, reducing concentrate use over a 182 day winter by 32.0 tonnes, saving £10,355 and 10.9 tonnes of Carbon Dioxide equivalents (CO₂e).
- Ensuring the feed mixer wagon was only operational for the minimum time and not left running whilst carrying out other jobs e.g. bedding cattle, reduced fuel use by 600 litres, saving £450 and 1.9 tonnes of CO₂e.
- Improving energy use in the dairy by replacing the constant speed milk pump with a variable speed milk pump, saved around £700 and nearly 5.0 tonnes of CO₂e.

Are you interested in knowing how efficient your farm is? Funded through the Farm Advisory Service, the Scottish Government is providing up to £500 for the preparation of a whole farm carbon audit. The audit must be carried out by an Agricultural Advisor using AgRE Calc®. Applications can be downloaded from the FAS website (<https://www.fas.scot/carbon-audits/>) or by contacting the Farm Advisory Service advice line on 0300 323 0161. Once the analysis is done, the results will be discussed with you and a relevant mitigation action plan will be drawn up. This plan will simply make some suggestions of actions that will reduce emissions and improve efficiency of the business. Alternatively farmers can register at www.agrecalc.com to use the tool for free.

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Example AgRE Calc® report for a Dairy enterprise

Milk Manager NEWS

Dates for your Diary

- 16th January - **Agronomy 2018**. Thainstone House Hotel and Spa, Inverurie, Aberdeenshire, AB51 5NT. Time 9.30-15.30. To register visit http://comms.ahdb.org.uk/lz/EventMgr_ShowEvent1.aspx?eID=13759
- 17th January - **LAMMA Show**. East of England Showground, Peterborough, PE2 6XE.
- 18th January - **Webinar: Reintroduction of grazing for dairy cows on a mixed farm in Northern Germany - Eco-efficient milk production inspired by the Irish rotational grazing system**. Time 18.00-19.00. Register at <https://dairy.ahdb.org.uk/events/january2018/webinar-reintroduction-of-grazing-for-dairy-cows-on-a-mixed-farm-in-northern-germany-eco-efficient-milk-production-inspired-by-the-irish-rotational-grazing-system/#.WkzwU03cvlV>
- 18th January - **SAC Consulting Brexit Discussion Event for Farmers**. SRUC Barony Campus, Parkgate, Dumfries, DG1 3NE. Time 19.00. To book your place contact: SAC Consulting Dumfries office on 01387 261172 or frbsdumfries@sac.co.uk
- 22nd - 24th January - **British Cattle Breeders Conference**. Telford Hotel & Golf Resort, Great Hay Drive, Sutton Heights, Telford, TF7 4DT.
- 1st February - **Precision Technologies in Dairy Farming**. SRUC Barony Dairy Technology Centre, Parkgate, Dumfries, DG1 3NE. Time 10.00-15.00. To book your place contact janis.forrest@sac.co.uk, t: 0131 603 7525.
- 6th February - **Lameness and Foot Trimming Course**. Longhouse Farm, Carnell, Hurlford, Ayrshire, KA1 5JS. Organiser: Farm Skills t: 01765 608 489 farmskills@xlvets.co.uk
- 7th February - **Dairy Tech**. Stoneleigh Park, Kenilworth, Warwickshire, CV8 2TL.
- 28th February - **RNAS Spring Show**. Thainstone Agriculture Centre, Inverurie, Aberdeenshire, AB51 5WU.
- 10th March - **UK Dairy Expo 2018**, Borderway Mart, Montgomery Way, Rosehill Industrial Estate, Carlisle, CA1 2RS.

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



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