



Milk Manager NEWS

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Market Update

UK Wholesale Dairy Commodity Market

- Fonterra's latest on-line GDT auction (5th January) resulted in an increase of 3.9% in the weighted average price across all products, reaching US \$3,420/t. The three previous auctions also returned positive increases. All products on offer returned price increases from the previous auction, with lactose and butter showing the biggest movements, up 7.7% (to \$1,099/t) and +7.2% (to \$4,526/t) respectively. Full results are available at <https://www.globaldairytrade.info/en/product-results/>
- Logistical issues arising from EU borders being closed to UK transport prior to Christmas and further COVID restrictions seriously affected cream prices at the end of 2020. At the beginning of December, cream was trading at £1,300-£1,350/t but this plummeted to just below £1,000/t just before Christmas. For the week ending 19th December, cream was trading at £1.25-£1.30/kg ex works and spot milk at 25-30ppl delivered. However, for the week ending 2nd January, cream was down to £1.05-£1.15/kg, with the odd unplanned load fetching only 75p/kg. Milk was trading at 17-19ppl with any unplanned loads fetching only 10-12ppl. Prices rallied slightly in the first week of January, with cream back up to £1.15-£1.20/kg and spot milk at 25-27ppl.

Commodity	Dec 2020 £/T	Nov 2020 £/T	% Difference Monthly	Dec 2019 £/T	% Diff 2020- 2019
Bulk Cream	£1,150	£1,370	-16	£1,320	-13
Butter	£3,000	£3,050	-2	£3,070	-2
SMP	£1,970	£1,960	+1	£2,190	-10
Mild Cheddar	£2,940	£2,920	+1	£2,830	+4

Source: AHDB Dairy - based on trade agreed from 1st to 21st December 2020. Note these prices are indicative of values achieved over the reporting period for spot trade (excludes contracted prices)

- December was a quiet month for trade in butter, with uncertainty around pricing in the New Year and buyers unwilling to commit. There was only a £50/t drop on average from November on the back of falling cream prices.
- Prices of skim milk powder were supported in December by currency fluctuations, with a

weaker pound against the euro and firmness in EU markets.

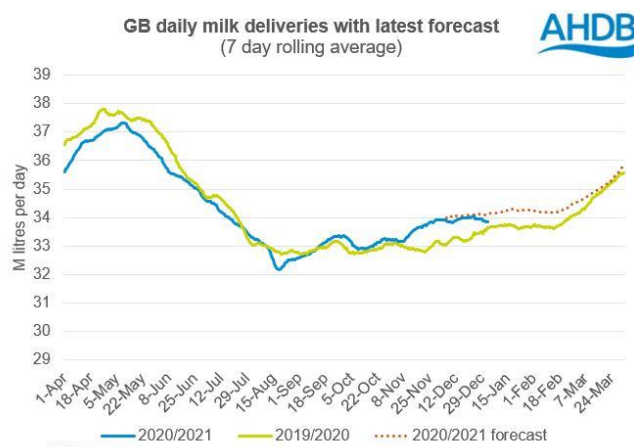
- Cheese prices increased marginally, mainly from demand by domestic buyers. However, there was little trade on spot markets, again due to uncertainty of trading arrangements.
- Market indicators moved in opposite directions in December, with AMPE slightly down by 0.1ppl on the back of a lower butter price and MCVE rose by 0.39ppl due to increases in the mild cheddar and whey powder components.

	Dec 2020	Nov 2020	12 months previously	Net amount less 2.4ppl average haulage – Dec 2020
AMPE	29.05ppl	29.15ppl	31.78ppl	26.65ppl
MCVE	31.94ppl	31.55ppl	30.77ppl	29.54ppl

Source: AHDB Dairy

UK Milk Deliveries and Global Production

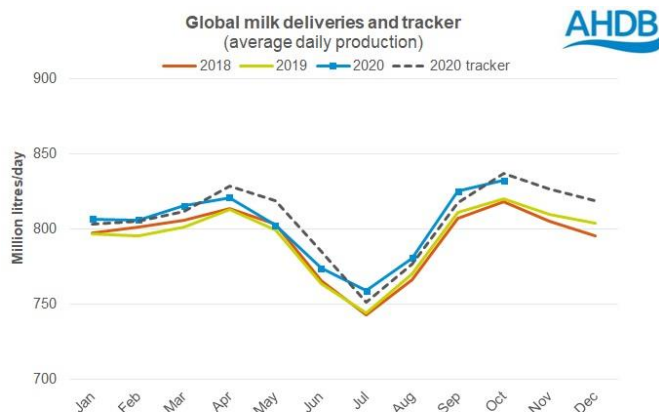
- Milk deliveries throughout November and December have been running well ahead of last year and for the week ending 02/01/21 deliveries were up 0.6% (+0.21mlitres) on the same week in 2019, although were 0.4% back on the previous week ending 26/12/20.



- The gap in global production compared to last year is increasing, with October deliveries from the six key producing regions up by 1.5% compared to October 2019. This is an increase of 12.2m litres more per day. The biggest increases in production have come from the US and EU, up 2.3% and 0.8% respectively. Argentina has recovered from low production in 2018 and 2019, with October production up 5.7% compared to the same

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month last year, equating to an extra 1.9m litres/day.



Source: AHDB, Ministerio de Agroindustria, Dairy Australia, DCANZ, Defra, Eurostat, USDA

Monthly Price Movements for January 2021

Commodity Produced	Company Contract	Price Change from Dec 2020	Standard Litre Price Jan 2021
Liquid & Cheese	Arla Farmers UK	-1.0ppl liquid and -1.08ppl manufacture	28.50ppl liquid 29.50ppl manufacture
Cheese, Liquid & Brokered Milk	First Milk	+0.25ppl liquid and +0.26ppl manufacture	28.0ppl liquid 28.93ppl manufacture
Cheese	Fresh Milk Company (Lactalis)	No change	27.75ppl liquid 28.91ppl manufacture
Liquid & Manufacture	Grahams	No change	27.0ppl
Liquid & Manufacture	Müller Direct	No change	27.0ppl (includes 1ppl direct premium and -0.25ppl Scottish haulage charge)
Liquid & Manufacture	Müller (Co-op)	No change	29.66ppl
Liquid & Manufacture	Müller (Tesco)	No change	30.87pl
Liquid, Powder & Brokered	Yew Tree Dairies	No change	27.1ppl Standard A litre price (to be paid on 81% deliveries)

Other News

- The Defra average UK farmgate milk price for November 2020 was 30.54ppl, which is 0.67ppl more than the average November

2019 price (29.87ppl), but not as high as the 31.6ppl price recorded in November 2018.

- Farmers in the Sainsbury's Dairy Development Group will receive a 0.27ppl increase from 1st January, taking their milk price up to 31.12ppl for Müller suppliers and 31ppl for Arla producers (-0.12ppl haulage charge). This price includes an average bonus of 0.62ppl for Herd Health and Efficiency measures. The increase is based on changes in feed, fuel and fertiliser prices as follows:
 - Feed costed at 10.57ppl (up 0.25ppl, based on average feed costs in the 6 months up to October 20).
 - Fertiliser costed at 0.76ppl (down 0.03ppl, based on the average price of ammonium nitrate fertilisers in the 12-month period ending October 20).
 - Fuel costed at 0.72ppl (up 0.05ppl, based on average red diesel price in the 3-month period up to October 20).
- The Tesco Sustainable Dairy Group is increasing its February milk price by 0.4ppl to 31.27ppl for Müller suppliers. Their latest cost tracker review in December put the cost of milk production at 31.05ppl before adjusting for feed, fuel and fertiliser. Variable costs were 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 from April 20 to March 21 was up by 0.22ppl, replacing the previous negative adjustment of 0.18ppl and setting the new quarterly price up by 0.4ppl to 31.27ppl.
- On the back of increases in the Tesco and Sainsbury's group and a price hold by Müller Group Direct, the Co-operative Dairy Group is also seeing a price increase of 0.22ppl from February, bringing their price up to 29.88ppl.
- Müller have launched an optional new bonus opportunity for its 600 Direct suppliers. Farmers can earn an extra 1ppl annually if they take part in a programme to help address important issues including antibiotic use reduction, sustainable sourcing of animal feed, decreases in power and water usage, recycling and increasing biodiversity. The Advantage Programme starts in January 2021 and the bonus is applied to all litres produced this year.

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- Many farmers will be breathing a sigh of relief at the free trade deal agreed with the EU, which came into force on 1st January 2021. This means that farm goods traded between the UK and the EU will be free from tariffs, which would have topped 40% under WTO terms for some meat and dairy products. Zero-quota terms have also been agreed, although extra checks on UK agri-foods will be required at member states' border inspection posts (including health certificates and sanitary and phytosanitary controls, designed to protect animal, plant or public health). It is possible that the high cost of this increased regulatory burden could be a disincentive to trade, and along with rising domestic production, could cause milk prices to ease back further.

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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 + £8/t haulage to central belt	Jan 21	Feb 21	Mar 21 - Apr 21	May 21 - Sep 21
Proteins				
Hipro Soya	448	444	439	asa 414
Rapeseed Meal	POA	303	303	May-Jul 282 Aug-Sep 247
Maize Distillers	POA	303	303	May-Jul 273 Aug-Sep 264
Starch				
Wheat	203	204	205	May-Jul 207 Aug-Sep 170
Barley	151	152	153	May-Jul 155 Aug-Sep 140
Maize	218	218	218	asa 214
Fibre				
Home Produced Sugar Beet Pulp	POA	229	231	-
Soya Hulls	POA	POA	POA	186

Source: Straights Direct and Cefetra on 12th 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

- Global grain prices have been partly supported by cuts to Russia's grain export forecasts through a €25/t tax on wheat exports in an attempt to stabilise domestic food prices. The export tax will be in place from the 15th February until the end of June. Similarly, in Argentina, there is a ban on maize exports until the end of February, in order to help curb rising food prices and ensure domestic food supplies. In addition, tighter world grain stocks and increased purchasing of both wheat and maize by China are also putting upward pressure on grain prices.
- Continued dry weather in South America is causing concern for the maize and soyabean crop and has generated increased activity in fund buying. The long-range forecast is to remain dry and above average temperatures. Only 15% of Argentina's maize crop is rated good to excellent and the USDA's production report for South America due out in the middle of January is expected to show lower projections for soyabean production due to lack of rain during planting and development.

UK and Scottish News

- The gap between barley and wheat prices continues to expand as ex farm wheat prices increased throughout December, with the difference now just over £50/t. Domestic supply of wheat is very tight and global grain prices have also been rising, which has helped support barley prices as well.
- The 2020 final UK crop estimates were revised down by Defra on 22nd December, with wheat production at 9.66mT, 475kT down from the October estimate and the smallest wheat crop since 1981. Compared to harvest 2019, the 2020 wheat crop is back 40.5%. Changes to the estimated 2021 plantings and year-on-year change are shown below:

Crop	Planting area (kha)	Change in area from 2020
Wheat	1,776	+28%
Winter barley	389	+25%
Spring barley	756	-30%

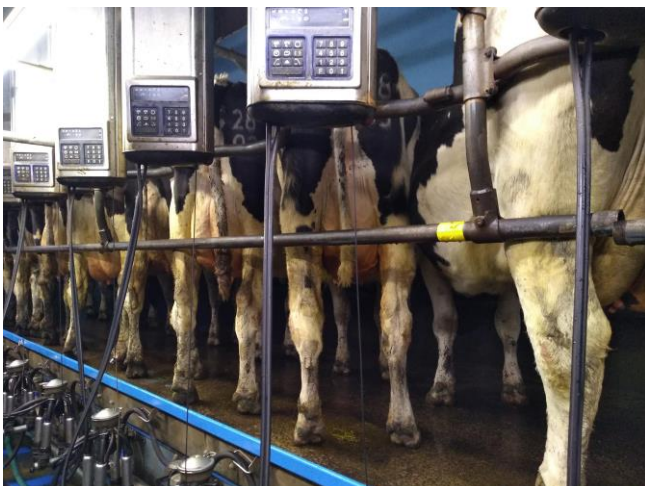
Source: AHDB

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- According to the AHDB Early Bird Survey, UK rapeseed plantings for harvest 2021 are expected to decrease for the third year in a row. The intended area is now just 312kha, 18.1% down on harvest 2020. However, the AHDB crop conditions report states the domestic rapeseed crop is in very good condition, with 77% of winter rapeseed rated 'good' or 'excellent' condition at the end of November, compared with just 30% at the same time last year.
- The UK/EU trade deal means that grain imports and exports will continue freely. This will benefit the UK, with its lower cereal crops this season and being more dependent on imports. As the UK is expecting a 28% increase in the wheat area planted for the 2021 harvest, it will likely revert to being a net exporter of wheat and the tariff-free deal means that farm prices will not be affected by having to seek Third country trade.
- Barley prices are likely to continue to be supported over the coming weeks as there is high demand for UK barley into the Netherlands, as well as North Africa, being well priced against barley from Northern Europe. Increased demand will also come from feed manufacturers for ruminant feeds, especially for sheep if the cold winter weather continues, being good value in relation to wheat.

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Improving Milking Efficiency



A recent on-line meeting of the Stranraer Sustainable Dairy Group welcomed vet Tom Greenham from Advance Milking to speak about milking efficiency. Milking efficiency can be measured in many ways such as milk/hour, cows/hour and milk/worker/hour. However, these measures will be influenced by herd yield, the type of parlour and size so comparisons between farms is difficult. However, milk/stall/hour is a good, comparable measure of efficiency, removing the effect of parlour type and size. This is calculated as milk produced per day divided by the number of stalls in parlour/hours taken to milk.

Tom has compared over 90 herds across the UK, with herd sizes ranging from 60 to 1400 cows, a wide range in yields and different parlour types (with points ranging from 6-72). When comparing types of parlours in large herds (+500 cows), he said that rotaries are more efficient than linear parlours by a long way, with an average of +584kg of milk/hour compared to the same cows milking through a linear parlour with the same number of units. For herds less than 500 cows, linear parlours are more efficient overall when taking margins into account, with lower running costs and less capital expenditure. There was no significant difference in milk/hour in swing-over versus double-up linear parlours.

Rapid exit parlours are slightly more efficient but not as much as perhaps thought, as cow flow out of the parlour is not one of the most limiting factors influencing efficiency. On the back of his results, Tom proposes the following targets, based on what the top 25% of herds are achieving:

Efficiency Measure	Linear Parlour	Rotary Parlour
Milk/hour (kg)	1600	3500
Cows/hour	130	270
Milk/stall/hour (kg)	55	67

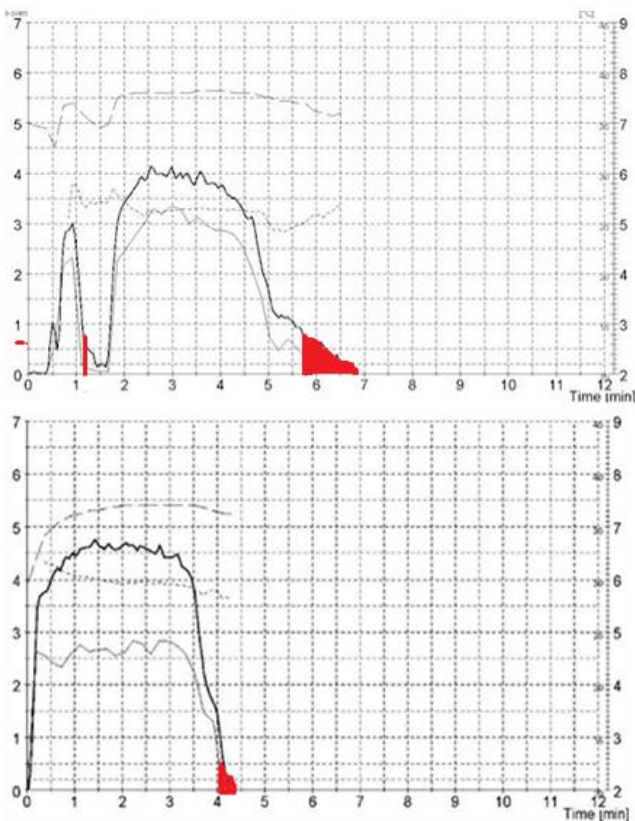
Source: Greenham, Advance Milking

Two of the most important factors affecting milking efficiency are teat preparation and ACR settings. There is often the argument against increasing the amount of teat preparation time before unit attachment in herds that do minimal preparation, in fear of increasing overall milking time. However, milk/hr is the same for herds that have a pre-milking teat preparation routine compared to those

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that do not, which may include brushing, dipping or wiping. The longer preparation time enables cows to be milked out quicker, resulting in lower attachment time by as much as two minutes. It also reduces the risk of bimodal milking which can affect teat end condition and cause swollen teats.

Graphs of milk flow rate against time showing bimodal milking with no teat preparation (1st) versus with teat preparation and 60-99 second time lag before attachment (2nd). Note the shorter overall milking time in the 2nd graph



Source: Greenham, Advance Milking

The time lag should ideally be in the region of 60-90 seconds from first touch to unit attachment. More stimulation tends to result in more efficient milk let down, with cows remaining at maximum milk flow rate for longer. Studies suggest that stale cows or those naturally low yielding with less milk in the udder at each milking, tend to benefit from longer teat preparation with better milking efficiency, as do those being milked 3x.

Standard factory ACR settings are around 200-250ml/minute, which can over time cause trauma to teats, especially where quarters have been milked out while others are still being milked.

However, ACR setting can be increased without affecting yield per cow, milk in the tank or higher SCC/mastitis risk. It is a myth that not milking out quarters properly will lead to mastitis. Tom recommends ACR settings for 2x milking between 500-600ml/minute and 800ml-1000ml/minute for 3x milking. This can lead to shorter milking times, less unit on-time and calmer cows in the parlour. Although slightly more milk is left in the udder, it will be harvested more efficiently at the next milking.

A detachment of greater than 300ml/min is associated with greater milking efficiency and an extra 9.4kg of milk/stall/hr versus standard factory settings. When cows have had their milking time shortened, the milk flow curve changes. Milk flow rate increases early at the next milking, as well as at peak milk flow due to more milk present in the cistern. Ultimately, the average milk flow rate is increased so that the same amount of milk harvested in a shorter time.

Increasing ACR factory settings also lowers the risk of some quarters being overmilked, which can lead to swollen teats and over time, hyperkeratosis. Swollen teats take much longer for the teat canal to close after milking, making them more at risk of infection.

The amount of time the unit is attached to the cow should be about 50% of the total time spent in the parlour. If more, there is scope to reduce the unit on time. If less, it indicates that milk flow is not so good, with cows potentially stressed in parlour and/or finding milking uncomfortable.

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Staff Appraisal

For well over a decade, the UK dairy industry has been one of many sectors benefiting from EU nationals working in the UK. However, as of 1st January this year, any EU national wanting to work in the UK must qualify for a "Skilled Worker" visa. The Home Office defines a skilled job as one that requires an A level or Higher exam level of skill.

Despite requiring high levels of skill, many jobs in agriculture do not fall into the Skilled Worker category. Those that do will require the business to obtain a Sponsor Licence to support the visa

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application and, in most cases, will need to pay a salary of at least £25,600 per year.

EU nationals who have been living in the UK by the 31st December 2020 should apply to the EU Settlement Scheme. The deadline for application is 30th June 2021 and more details can be found at <https://www.gov.uk/settled-status-eu-citizens-families>

With this in mind, it is a good time to consider how you deal with members of your team and how to get the best from them. Employee appraisal is standard practice in most large businesses but should be seen as an important procedure for businesses of any size.

A formalised appraisal system allows you to monitor and improve individual and team performance. It also gives the opportunity to understand individuals and what they need to develop.

How does it work?

- Set objectives for staff to achieve, which should be based on the SMART principles:
 - **S**pecific – what will be achieved?
 - **M**easurable – how will you and the employee know the objective has been achieved?
 - **A**chievable – the objective should be challenging but also something that the employee is capable of.
 - **R**elevant – the objective should relate to the work the employee is responsible for.
 - **T**imebound – when does it need to be done by?
- Agree what is expected of the employee and set basic standards. These should be written down to avoid confusion and should also be included in their contract of employment.
- Plan personal development. What training is needed?

The appraisal meeting

- start of the year
 - set objectives.
 - agree training needs.
- during the year
 - give informal feedback.
 - have at least one appraisal review. Use this as a chance to look at areas needing

improvement but also to praise work well done.

- appraisal outcomes can be simply documented using a traffic light system, for example:

RED	Few objectives achieved. Few basic standards met. Look at complete retraining or consider employee's future with the business.
AMBER	Some objectives achieved. Most basic standards met. Look at recapping training.
GREEN	All objectives achieved. All basic standards met. Consider further training/responsibilities.

The traffic light system can also be used to rate individual skills. Here is an example for foot trimming:

RED	Employee struggles to identify lameness quickly and is unsure of what action to take. Training course recommended on mobility scoring and hoof trimming.
AMBER	Employee can identify lameness but needs some assistance/advice on what action to take.
GREEN	Employee can identify lameness quickly and can take action to remedy problem.

- end of the year
 - end of year review of employee's performance.
 - allows employee to comment. This could be which areas of work they would like to be more involved in or why they are having difficulties.
 - give employee a copy for their records.
- Make sure you have a copy of what was recorded at the last appraisal meeting.
- You may prefer to have a "silent note taker" in an appraisal meeting, especially if it is going to be a difficult meeting. If this is the case, allow the employee to bring an observer with them. This will avoid any potential feeling of

intimidation and enable any confrontation to be better managed.

Examples and templates of appraisal forms are available at https://www.fas.scot/rural-business/managing_people/

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Have You Got Enough Forage?

There are concerns from some farmers in the South West of Scotland about potential forage shortages and so it is perhaps a good time to assess whether current forage stocks on the farm are sufficient, especially if a forage budget was not undertaken at the start of the winter.

A forage budget requires all forages to be analysed so that the dry matter (DM) is known, allowing the tonnage of DM available to be calculated. The amount of forage in a pit can be calculated simply by multiplying the length, width and height of the clamped forage and then multiplying this by the density of the forage. The density will vary depending on the DM and height of the forage in the clamp as detailed below.

Silage density guide (kg/m³)

Silage DM (%)	Clamp Height (m)			
	2.0	2.5	3.0	4.0
20	780	840	890	950
25	690	730	775	830
30	620	660	690	740
35	570	600	625	670
40	520	550	570	610

Source: AHDB

The density of grass silage, wholecrop cereals and maize silage is fairly similar and the above figures can also be used for these forages.

Example calculation:

A pit is 40m long by 20m wide by 2.5m high, with silage at 25% DM.

Therefore, the density = 730kg/m³.

Silage (tonnes of fresh weight) = 40 x 20 x 2.5 x 730 = 1,460,000kg or 1460T of silage.

Tonnes of DM = 1460T x (25/100) = 365T.

Tonnage from bales is also easily calculated, and to take into account variation between bales, weigh five to obtain an average weight. This can be done with weigh cell bars from a crush or in a mixer wagon. Take the average weight of the bales and multiply this by the number of bales. Then adjust for the DM.

Calculate the amount of DM required for each group of cows/youngstock on the farm and then work out the forage requirements based on any changes to stock numbers and length of the feeding period. Remember to add a safety margin in case of a longer winter and account for wastage (e.g. 20%), as well as carryover stock if desired.

If stocks are short, either look at how rations can be manipulated with your nutritionist with forage replacers (moist distillery by-products), straw or extra concentrates. Alternatively, look at reducing the number of mouths to feed over the next few months:

- Cull underperforming cows that are costing more to keep than what they are producing.
- Dry off late lactation, over-conditioned cows early onto a maintenance, more straw-based ration to conserve quality forage for the milking herd.
- Stricter culling on repeat breeders and cows with repeat cases of mastitis (more than three cases in the same quarter or cows with more than five cases of mastitis in all quarters in the same lactation).
- Are there surplus heifers to sell? Alternatively, could heifers be reared off farm by a contract rearer?
- Sell beef cattle earlier, i.e. sell store, rather than finishing. If housing space is an issue, sell beef calves at a few days old to help relieve pressure in the calf house and reduce health risks in heifers. They will likely perform better.
- Look into alternative bedding options to save on straw. More straw can then be used in milking cow rations to conserve grass/maize silage or wholecrop. To maintain milk yield, more concentrates will need to be fed and this will increase feed costs. Including 3kg of straw in milking rations could save almost 9kg of silage/cow/day at 30% DM or just over 12T of silage DM for 150 cows per month.

Bulk or moist feeds such as draff, brewers grains and other distillery by-products are good energy and protein sources and can be used to replace some forage. Be sure to check that a regular supply is available and ensure that milking rations are achieving a minimum forage:concentrate ratio of 40:60 percent. NDF from forage (effective fibre) should be a minimum 20% of the total ration on a DM basis for rumen health and function and to support butterfat levels.

Buying in silage bales is perhaps a last resort. Use a trusted source and have the forage analysed so you know how much to feed and how best to balance it with protein and energy sources. If straw is plentiful and of reasonable price, consider using more straw in youngstock and dry cow rations, which can include up to 6kg/head as long as it is sufficiently well chopped (<5cm) to reduce sorting.

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The Significance of Johne's Disease in Dairy Herds

What is Johne's disease?

Johne's disease, also known as Paratuberculosis, is a chronic wasting condition which affects cattle and other ruminants. It is caused by a bacteria called *Mycobacterium avium* subspecies paratuberculosis (MAP).

MAP is slow growing and can take several months to grow to detectable levels, even under laboratory conditions. Therefore, it is difficult to accurately test for, with positive cattle often testing negative until relatively advanced stages of infection. MAP can only grow inside the host animal, although it can persist in the natural environment for periods of up to one year, being able to infect any cattle which ingest it (Caldow *et al.*, 2003).

Johne's is spread between cattle and other potential hosts. MAP bacteria are found in the faeces of infected cattle, as well as in milk and colostrum. Any intake of MAP contaminated milk, colostrum or faeces can cause infection. The intake of any feedstuff or water that has been contaminated can also cause infection. Depending on how advanced the disease is, MAP can be transferred to the developing foetus in the womb and 80% of infections occur in the first month of life (The National Action Group on

Johne's, 2020). Poor biosecurity protocols increase the risk of the disease entering and spreading throughout a herd.

Clinical symptoms

As MAP is slow growing, there is a long incubation period, with it taking years for infected cattle to start showing symptoms. Clinical signs are typically seen when cattle are between 3 to 5 years old, although symptoms have been shown earlier in some cases.

Early signs include diarrhoea, lower milk yield and weight loss. As the disease progresses, more persistent and profuse diarrhoea and significant weight loss are seen. At the advanced stage of the disease, the condition of cattle becomes a serious welfare issue, requiring the affected animal to be culled.

Why it matters to you!

In 2006 a study by Defra found that 34.7% of herds were affected by Johne's (NMR, 2014). As well as the severe symptoms of advanced Johne's disease, subclinical infection has also been found to significantly reduce performance. Research by (Ozsvari *et al.*, 2020) found that infected cattle showing no clinical symptoms, had a somatic cell count 35.8% higher than uninfected cattle. Subclinical infection also has a negative effect on fertility; infected cattle conceived on average 23.2 days later than uninfected cattle and their calving interval was 33.8 days longer. As expected, it also affects longevity, with infected cattle on average being culled 160.5 days earlier.

Research by (Richardson and More, 2009) found that infected cattle yielded 1259.3kg less milk per lactation. Cull value was also €516 less than animals culled without signs of clinical disease.

In addition to the economic consequences of lower milk yield, reduced fertility and lower cull value, a Johne's outbreak will also lower the value of the breeding herd. Farmers purchasing breeding stock from other herds, whether it be dairy farmers or suckler producers purchasing replacements, may not want to purchase from a herd that is experiencing a Johne's outbreak for fear of importing the disease into their own herd. Therefore, a herd that is accredited free from the disease will attract a premium compared to a herd that is not free of Johne's.

Conclusion

It is clear that Johne's disease presents a direct threat to dairy producers, with subclinical infection resulting in lower performance and financial losses before the more severe clinical signs of infection are visible. Dairy producers should take a proactive approach to prevent the disease entering their herd and limit its spread within the herd once an outbreak does occur. This can be achieved through a vaccination programme, testing and culling and strict biosecurity procedures.

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Iodine Supplementation in the Milking Herd

Mineral supplementation is widely accepted as being a necessary part of the ration for dairy cows and over supplementation is far more common than under supplementation. As well as being concerned about potential toxic effects (of which copper is a classic example) we also need to be mindful of legal limits as well. EU legislation is in place to ensure that maximum permitted levels of trace elements are not exceeded for reasons of health, both to livestock and humans.

In 2005 the maximum permitted level of iodine for milking cows was reduced from 10mg/kg to

5mg/kg at 88% dry matter (or 5.68mg/kg DM) in the total diet (EU Regulation 1459/2005). The reason was to reduce the amount of iodine in milk, as excessive levels can increase the risk of goitre, hyperthyroidism and thyroiditis in humans.

Iodine is an essential trace element, with many roles in the body including regulation of energy metabolism and roles in fertility, normal foetal development and calf health. However, requirement levels are low and over supplementation is very easy to achieve. The NRC Nutrient Requirements for Dairy Cattle (2001) states dairy cattle require only 0.3-0.5mg/kg DM for a cow producing 35kg of milk. Assuming a herd average dry matter intake of 22kg, this is a recommended total intake of up to 11mg/cow/day.

Several sources need to be taken into account to calculate the total intake. Background levels in forage and other feeds will contribute to total intake, along with mineralised feeds such as blends or parlour cake, mineral supplementation and boluses.

The following table shows iodine intake based on supply from typical levels in grass silage, parlour cake and mineral supplementation. It does not take into account background levels from other feeds. The average background level of iodine in grass silages analysed in 2020 was 0.3mg/kg DM (source: Thomson and Joseph Ltd).

Iodine intake from silage, mineral and parlour cake

Source	Iodine level (mg/kg DM)	Quantity fed/cow/day (kg of DM)	Total iodine intake (mg /day)
Grass silage	0.3	12	3.6
Mineral	300	0.1	30
Parlour cake	2.27 (2mg/kg on fresh weight basis)	5.28 (6kg fresh weight)	12
Total iodine intake (mg/day)			45.6
Iodine intake (mg/kg DM)			2.07 (assuming intake of 22kg DM)

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While this is well below the maximum permitted level of 5.68mg/kg DM, it is at least four times over the requirement for milking cows. Parlour cake would provide the recommended level alone. Note that some dairy minerals can contain as much as 500mg/kg of iodine and fed at 150g, providing 75mg.

Iodine is very easily absorbed in the digestive tract and it is the only trace element that is not “locked up” by antagonists or heavy metals, which can reduce absorption of other trace elements.

Where care needs to be taken is when trace element boluses are administered, especially if feeding a high iodine mineral at 150g and feeding high levels of parlour cake. This could potentially exceed the maximum EU limit.

The NRC states that iodine toxicity has been reported in adult dairy cows with dietary intakes of just 50mg/day. Teagasc suggests that their previous recommended level of 60mg/day for dairy cows greatly exceeds requirements and a more appropriate level of 12mg/day has been recommended from January 2017 unless a deficiency is diagnosed on farm.

When considering mineral supplementation, do query your supplier on whether levels of iodine (and other trace elements) are necessary. Are you using boluses and if so, is a high iodine bolus really necessary? Forage analysis is the starting point to determine how much supplementation is required. Blood sampling to test for plasma inorganic iodine (PII) can also help identify a potential deficiency.

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Dates for your Diary - Webinars and On-line Events

- 18th January - **Mental Health Awareness.** Time 19.00. To register please visit <https://ahdb.org.uk/events/mental-health-awareness>
- 18th January – **Mobility Scoring: The First Step to Reducing Lameness in Your Herd.** Time 19.30. To register with this SAC

Consulting event please visit: <https://attendee.gotowebinar.com/register/9013520758656630539>

- 19th January - **Tackling Dairy Herd Mobility.** Time 12.00. For more information regarding the event please call Jamie McCoy, AHDB on 07823 790440.
- 20th January - **Feed Focus: Successful Profit Drivers in All-Year-Round Herds.** Time 11.00. To book please visit <https://ahdb.org.uk/events/feed-focus-successful-profit-drivers-in-all-year-round-herds>
- 21st January - **Dairy Share Farming Opportunities.** To book please visit <https://ahdb.org.uk/events/dairy-share-farming-opportunities>
- 26th January - **British Cattle Breeders Conference.** Time 09.00-17.00. For more information please visit <https://www.cattlebreeders.org.uk/>
- 27th January - **Improving Fertility in Spring Block Calving Herds.** Time 11.30. To book visit <https://ahdb.org.uk/events/improving-fertility-in-spring-block-calving-herds>
- 28th January - **Controlling Digital Dermatitis.** Time 12.00. To book please visit <https://ahdb.org.uk/events/controlling-digital-dermatitis>
- 1st February - **Cattle Handling - Keep Calm and Keep Moo-ving with Temple Grandin.** Time 19.00. To book please visit <https://ahdb.org.uk/events/cattle-handling-keep-calm-keep-moo-ving-with-temple-grandin>
- 3rd February - **Dairy Tech 2021.** Two-week on-line event. For more information visit <https://dairy-tech.uk/>
- 16th February - **Cattle Handling - Keep Calm and Keep Moo-ving with Neil Chesterton.** Time 19.00. To book please visit <https://ahdb.org.uk/events/cattle-handling-keep-calm-keep-moo-ving-with-neil-chesterton>

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



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