Issue 19 | November 2017

Milk Manager NEWS

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Market Update

UK Wholesale Dairy Commodity Market

- Fonterra's recent online GDT auction (7th November 2017) resulted in a decline of 3.5% in the weighted average price across all products, reaching US $3,105/t. Butter, cheddar and whole milk powder all showed negative movements (-3.6% to $5,516/t, -2.8% to $4,001/t and -5.5% to $2,852/t respectively). Buttermilk powder was the biggest mover at +7.2%.

- In the UK, butter prices have varied considerably throughout October, with it trading from just over £6000/t in early October to the mid £4000's throughout the month. Despite butter stocks being tight, it is thought that little surplus has been manufactured.

Commodity	Oct 2017 £/T	Sep 2017 £/T	% Difference Monthly	Oct 2016 £/T	% Diff 2016-2017
Bulk Cream	2,180	2,830	-23	1,930	13
Butter	5,050	6,150	-18	3,750	35
SMP	1,350	1,525	-11	1,860	-27
Mild Cheddar	3,365	3,450	-2	3,070	10

Source: AHDB Dairy - based on trade agreed from 1st to 27th October 2017. Note these are average prices indicating prices traded across the whole of the past month.

- Cream price has taken a tumble from a high of £2.95/litre, and is now trading around £2/litre. This is due to more cream being available since butter production has been curbed and less demand domestically.

- The fall in butter and cream prices has surprisingly come before the peak demand at Christmas. However, given the rise in farm-gate milk prices over the last 6 months and the increase in EU milk production, it is perhaps not so surprising. Furthermore, UK butter price was 28% higher than the GDT price for September and October, which was unsustainable, given the long-term average difference of 16%.

- SMP prices have also plummeted down to £1300/t as intervention has ended, with there no longer being a "floor" in the market.

- AMPE has dropped drastically from September to October, falling 7.2ppl (18%) on the back of butter prices falling to an average of £5,050/t for October and SMP decreasing 11% to £1,350/t.

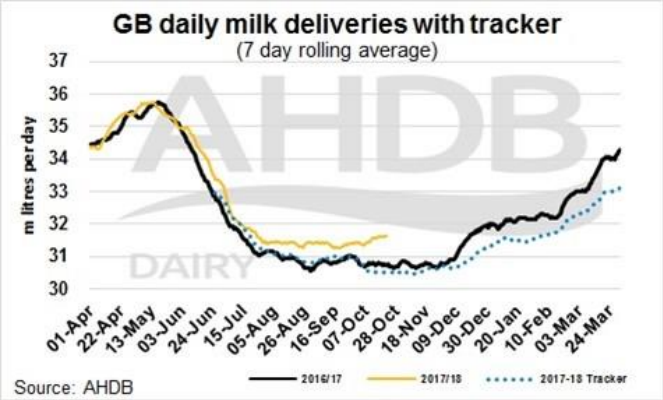
- MCVE only dropped by 5%, despite whey powder and whey butter price falling by 11% and 19% respectively. Overall, mild cheddar fell by £86/t since September.

	Oct 2017	Sept 2017	12 months previously	Net Amount less 2ppl Haulage – OCT 17
AMPE	32.7ppl	39.9ppl	31.3ppl	*30.7ppl*
MCVE	36.6ppl	38.5ppl	33.9ppl	*34.6ppl*

Source: AHDB Dairy

UK Milk Deliveries and Global Production

- Production in the UK continues to grow and this is the biggest threat to the farm-gate price. October production was up 6% (compared to October 2016), September 5.2% and August 4.8%, with further growth predicted until the end of the year. The likely impact is a weakening of farm-gate prices in the New Year. As a result of higher production and the decline in commodity prices, spot milk fell back to 33ppl at the end of October.



- Compared to the same week last year (w/e 21st October, UK milk deliveries are up 2.9%, which equates to roughly 0.9m litres/day. The week-on-week increase is up by 0.2%.

- Milk production across the EU is up by 102 million litres compared to 12 months ago, which is a rise of 3.3%. The two biggest producers, Germany and France, are up 4% and 2.8% respectively from 12 months ago. The UK, the EU's 3rd largest producer, has increased milk production by 2% in the first 6 months since April this year.

Milk Manager NEWS

Monthly Price Movements for November 2017

Commodity Produced	Company Contract	Price Change	Standard Litre Price Nov 2017
Liquid & Cheese	**Arla Farmers UK**	*No change*	31.04ppl Liquid, 32.30ppl Manufacture
Liquid & Cheese	**Arla Direct**	*No change*	29ppl Liquid, 30.16ppl Manufacture
Liquid & Brokered Milk	**First Milk Mainland Scotland**	*+0.5ppl*	29.09ppl
Cheese	**Fresh Milk Company (Lactalis)**	*+0.5ppl liquid +0.52ppl manufacture*	29.0ppl liquid 30.03ppl manufacture
Liquid & Manufacture	**Grahams**	*No change*	29.75ppl
Liquid & Manufacture	**Müller Direct**	*+0.5ppl*	30.50 ppl
Liquid & Manufacture	**Müller (Co-op)**	*+0.98ppl*	29.39ppl
Liquid & Manufacture	**Müller (Tesco)**	*-0.13ppl*	29.45ppl
Liquid, Powder & Brokered	**Yew Tree Dairies**	*No change*	30.0ppl Standard A litre price

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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 + £7/t haulage to central belt	Nov 17	Dec 17	Jan 18 - Apr 18	May18 - Sep 18
Proteins				
Hipro Soya	300	300	306	308
Rapeseed Meal	185	186	186	190
Wheat Distillers	184	184	185	187
Starch				
Wheat	147	148	149	M-J 156 A-S 147
Barley	129	131	135	M-J 139 A-S 127
Maize	171	asa170	172	176
Fibre				
Sugar Beet Pulp	175	175	175	-
Soya Hulls	179	179	173	asa149

Source: Straights Direct and Cefetra on 13th 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

- Russia has had a bumper wheat harvest, with the Russian Agriculture Ministry reporting 87.9mt of wheat harvested compared to 75.8mt in 2016, an increase of 16%. This has resulted in Russian wheat exports being 21% up on the previous year (having shipped 12.3mT more by 25th October), meaning that Russia has become the world's leading exporter of wheat.

- EU wheat exports show the opposite trend, with only 6.6mt to date having been exported compared to 8.8mt, this time last year.

- Wheat plantings in the US are just about complete, with USDA reporting 91% is now planted, which is similar to the 5-year average at this time of year. Crop emergence is at 75% and 55% has been rated as good-to-excellent. Kansas, the top wheat growing state, is at 59% good-excellent and 30% rated fair.

- Large stocks of old crop soyabeans are held by farmers in Brazil and as confidence in the new crop grows, additional selling is likely, adding downward pressure to the market.

- Over 90% of the North American soyabean harvest has been completed, in line with the 5-year average. A record of 88.7million acres of soyabeans will be harvested this year and South America has had a record season as well. However, there is strong demand from South-East Asia, not only China but Indonesia and Malaysia as well, which is one of the main factors that can keep soya prices firm.

UK and Scottish News

- The recent 0.25% interest rate rise from the Bank of England and the announcement of further interest rate rises likely occurring over a much longer period, resulted in sterling dropping 2% in value against the euro. UK wheat prices responded by rising £2/t with trade being comfortably above export prices and with reasonable cover by consumers within the UK, a selling opportunity has opened up.

- Feed barley prices have firmed recently, with some stores up to £130/t ex. Quality is an issue this year (for wheat as well) and stocks are perhaps tighter than normal.

- Malting barley prices on the spot market have weakened on the back of a greater domestic supply and little buying interest for tonnage before Christmas. Export sales have been dampened and more product has been available within the UK, so consumers appear to be covered well into 2018. The UK area for malting barley is expected to be slightly below the 2017 area. However, the firmer currency and a greater predicted EU spring planted area is putting pressure on new crop prices for harvest 2018.

- There has been little movement in the rapeseed market. There is little farm selling domestically and so imports continue to be used by crushers. So far this season, 70,000t of European rapeseed has been imported to the UK, meaning that end of year stocks will jump significantly, if our competitiveness in the export market does not improve. Rapemeal prices are looking likely to remain competitive for November-January. Soya oil is in short supply which has forced up the price of rapeseed oil and a cheaper meal price.

- Fertiliser prices appear to be on the up, with EU markets for ammonium nitrate firming. Availability remains low and it is difficult to import product at competitive levels. P & K prices are also firming, with many blenders having withdrawn prices, on the back of awaiting confirmation of nitrogen prices. Phosphate and potash prices are also likely to be scaled up as markets for both have also firmed on the back of rising production costs and exchange rates putting up replacement UK levels.

- Relative feed values for various straights are detailed in the following table. This is a simple way of seeing whether a particular feed is value for money, based on the price of reference feeds (barley and rapemeal). The relative feed values are calculated based on the protein and energy content of the feeds to be assessed. If the actual purchased cost of the feed is less than the calculated relative value, it is a good buy.

Relative feed values based on barley delivered at £134/T and rapemeal at £196/T

Feed	DM %	Energy MJ/kg DM	Crude Protein g/kgDM	Relative Value (fresh) £/t	Del £/t*
Wheat	86	13.6	130	139.5	154
Maize	86	14.0	100	136.0	177
Oats	86	12.2	118	125.4	125
Sugar beet pulp	89	12.5	110	130.5	175
Soya hulls	90	12.0	120	130.1	184
Wheatfeed	88	11.3	175	134.0	155
Biscuit meal	90	15.0	130	157.9	180
Trafford Gold	50	13.3	220	89.3	-
Draff	23	11.1	20	36.1	40
Pot ale syrup	45	14.0	370	102.9	77
Potatoes	21	13.3	90	31.3	-
Wheat distillers	90	13.5	340	194.6	191
Barley distillers	90	12.2	265	165.4	180
Hipro soya	89	13.8	540	241.5	309

**Approximate on-farm price delivered in artic loads depending on location*

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Later Cut Silage Problems

Having to feed very wet, acidic silages will be common practice this winter, with silage having been made under challenging weather conditions in many areas. One of the biggest problems with wet, poorly fermented silage is the drop in intakes. The silage intake potential (SIP) on silage reports is dependent on the dry matter (DM), the D value and fermentation characteristics. An average quality silage with a SIP of 90 compared to a poor silage SIP of 75 means a drop in silage intake by about 15 to 20%, lowering energy intake and consequently affecting body condition and subsequent fertility.

Wetter silages also tend to be more acidic and if the potential acid load (PAL) of a silage is greater than 900meq/kgDM, it can increase the risk of digestive upsets, as more acid is produced when these types of silages are fermented in the rumen. These silages need careful balancing to avoid

symptoms of acidosis. Considerations for feeding wet, acidic silages are:

- Avoid feeding with significant amounts of cereals, which are rapidly fermented in the rumen.
- Replace some barley or wheat with maize, which contains more "bypass" starch and is not as readily fermented in the rumen. Alternatively, replace some cereal with digestible fibre sources such as sugar beet pulp or soya hulls to reduce starch supply.
- Avoid over-processing of barley and wheat. The grain should be lightly cracked.
- Include some long fibre such as 0.5-1kg straw or 1-2kg of hay or haylage. This will aid cudding and saliva production (with more natural buffer being produced to counteract the acid loading in the rumen). This structurally effective fibre will open up the ration and improve physical presentation, as well as slowing rumen flow rate, allowing more time for digestion and therefore better feed conversion.
- Avoid overmixing which can lead to wet silages "balling up", making it easier for cows to sort their ration. This can result in variable dung consistency and poorer milk yield and quality.
- Wet silages will tend to have low sugars and are less palatable. Inclusion of molasses will add sugars to feed the rumen bugs for better feed conversion, improve ration palatability and stimulate intakes (see table below).
- If problems still occur, it may be worthwhile feeding a rumen buffer (especially if cud balls are evident).

Benefits of Feeding Molasses

	No liquid feed	Molasses based liquid feed	Effect
Dry matter intake (kg)	27.7	29.1	+1.4kg (+5%)
Milk yield (litres)	41.2	43.1	+1.9 litres (+4.6%)
Milk fat (%)	3.81	3.92	+0.11% (+3%)
Milk protein (%)	3.36	3.35	No effect
Milk fat yield (g/day)	1550	1680	+130g (+8.4%)
Milk protein yield (g/day)	1360	1450	+90g (+6.6%)
Sorting (%)		25% less	25% reduction

Source: DeVries & Gill, 2012

Later cut silage may also encounter problems with soil contamination due to the wet ground conditions. Soil contamination increases the risk of a bad fermentation and Clostridia bacteria can become a problem. Clostridia occur in the form of spores and grow under anaerobic conditions. They thrive in wet conditions so the wetter the silage the more likely the problem will occur. Clostridia ferment lactic acid and sugar to butyric acid, resulting in a rise in pH. This process is known as secondary fermentation and leads to wastage and gives silage a characteristic dark brown/black colour. Although uncommon, clostridia can also be a health hazard to animals eating contaminated silage.

To prevent and minimise problems, dilute affected material with forage which has a better fermentation. Discard any visibly mouldy silage, rotting silage at the edges/top of the clamp and remove any rejected silage in the bunker to avoid a build-up of spoiled material. An additional option is the use of a mycotoxin binder.

One indicator of soil contamination is a high ash figure on your silage analysis. The ash content shows the total mineral content in the silage and levels above 100g/kg DM may indicate a potential contamination problem.

Reference: DeVries & Gill, 2012. Adding liquid feed to a total mixed ration reduces feed sorting behaviour and improves productivity of lactating dairy cows. Journal of Dairy Science 95: 2648-2655.

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It's Milk Drop Season

Milk drop syndrome in dairy cows is a common problem, has multiple potential causes and can occur at any time of year. However, a season peak in problems is often seen in the autumn. The syndrome can be hard to define, however a working definition would be as follows:

Milk drop (>25% loss of yield over one or more days) in individual cows AND pyrexia (fever), with or without diarrhoea, in 5% of the herd or more in a one week period.

This definition does distinguish the problem from one of generalised poor milk production at a herd level and focuses attention to outbreaks where infectious disease might be involved. That said, at

this time of year as rations are changed, cows are housed, different clamps of forages become available and the fronts of silage pits get eaten, digestive upsets and acidosis can be a significant cause of the problem.

On the infectious disease front some observations this year from the SAC Consulting Veterinary Lab in Dumfries are noted below:

- We always see a seasonal peak in *Salmonella Dublin* diagnoses in the autumn and winter in both permanently housed and summer grazing herds. This year is no exception with disease seen in both milking cows and young stock.

- As reported last month, husk is a significant cause of milk drop and respiratory disease in herds that have grazed.

- In previous years we have seen a seasonal autumn peak in the number of *Mycoplasma wenyonii* cases causing milk drop, swollen legs and swollen teats (see picture below). Lethargy and poor feed intakes are also evident. We have not had the same peak in the number of reports or cases this year, possibly as a result of a reduced fly challenge. The exact mode of transmission is not completely understood but is thought to be spread by flies and affects the red blood cells. Clinical signs gradually disappear, and a full recovery can take up to 10 days or longer.

Oedema associated with *Mycoplasma wenyonii* infection (picture A) and an unaffected hindlimb (picture B).

Source: Strugnell & McAuliffe, 2017

- IBR can be a genuine cause of milk drop syndrome, is often diagnosed based on clinical signs, but is much less commonly diagnosed based on confirmatory laboratory testing.

- Following on from 2016, the possibility of acute Schmallenberg infection needs to be considered this year as well, particularly in the 'fringe' areas for the disease in Northern England and Southern Scotland.

- Diagnosing the root cause of milk drop syndrome can be challenging. If you suspect acute disease with a cluster of cases of significant milk drop we suggest that you contact your vet to discuss the best means of further investigation.

Reference: Strugnell, B & McAuliffe, l. 2012. Mycoplasma Wenyonii Infection in Cattle. In Practice, 34: 146-154.

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Soil Structure – Maximise Your Grass Growing Potential

Following the recent wet growing season across Scotland, concerns have been raised about damage caused to the soil structure. Maintaining good soil structure is essential in order that the crops and grass grown on it can achieve their maximum potential as it allows:

- drainage of excess water
- reduces risk of erosion
- allows better root growth, which in turn allows:
  - better transport of water, air and nutrients to the plants
  - reduces diffuse pollution through better uptake of nutrients
  - reduces drought susceptibility due to more pore space

Soil compaction is caused by overloading the soil when its shear strength is at its weakest e.g. cultivating wet soil. The compaction manifests itself as dense layers (called "pans"), which inhibit the movement of roots, water, nutrients and air.

The main tool for assessing soil structure is the humble spade. To assess the soil structure, dig a hole through the topsoil and into the immediate

sub soil. A good structure will have a lot of cracks, both horizontal and vertical near the surface, with more vertical cracks further down the profile. A poor soil structure will be dense and be formed in large blocks with mainly horizontal cracks (see below).

VESS – Visual Evaluation of Soil Structure

Left hand photo shows soil quality score 1 or Friable, which is highly porous and roots can penetrate throughout the soil. Right hand photo shows soil quality score 5 or Very Compact, where porosity is very poor and few roots throughout the soil (restricted to cracks).

SRUC have developed a soil structure assessment chart. A copy of this can be downloaded from the following link: http://www.sruc.ac.uk/downloads/file/1121/visual_evaluation_of_soil_structure_score_chart

While it can take only one season to create compacted soil it may take a number of seasons of careful work to restore the soil's structure.

- Light soil capping or surface compaction can be prevented by not over-cultivating susceptible soil types, maintaining the organic matter of the topsoil and with the use of grass harrows to break up the surface seal.
- Poaching by livestock can be removed by the use of soil slitters or spiking machines once the soil is dry enough to prevent soil smearing.
- A cultivation pan can be taken out quite easily in an arable situation by either ploughing or by using a cultivator at a slightly deeper level than the pan. However, in a grassland situation this will prove more difficult without causing disturbance to the soil surface. Therefore it is essential when creating a seedbed for a grass crop that the seedbed is created under optimum conditions.
- Sowing badly affected areas with a green cover crop such as red clover or chicory along with grass seed for 1 or 2 seasons can help restore soil structure due to the vigorous tap roots of these plants.
- Plough pans and deeper surface compaction can be alleviated by ploughing slightly deeper, or by using a sward lifter machine in grassland up to approximately 350mm in depth.
- Where compaction is deeper than 350mm, it will be better to use a subsoiler to break up the compaction. However, due to the uneven surface required to obtain the best soil improvement and the risk of stones being brought to the surface, it will usually be better to combine this operation with pasture reseeding.
- Subsoiling and sward lifting should be carried out when the ground conditions are moderately dry. If the soil is too wet or dry the soil will not shatter effectively and fuel will be wasted.
- Removing a compacted layer with a subsoiler is effective if the soil below is permeable. However, if the soil below the compact layer is impermeable, an effective drainage system is required to collect the surface water, or the subsoiling will channel surface water into low lying areas causing additional problems.

Prior to carrying out any remedial work, test holes should be dug to identify the problem. Following initial work ensure that the effect required has been successful. If not, adjust the equipment to ensure an effective outcome.

If you require further information on soil structural issues please contact your local SAC FRBS Office.

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Progress at Parkend

It's been a year since the Weatherup family at Parkend Farm, Crossgates, Fife were featured in the November 2016 issue of Milk Manager News and what a change there has been in this short space of time.

The herd is managed by Brian Weatherup and his son, Brian. Twelve months ago the 185 Holstein cow pedigree herd was yielding 10,400 litres (milk sold), with a daily average of 31 litres on twice a day milking through a Fullwood 30:30 herringbone parlour. Fast forward 12 months and 4 Fullwood M^{2}erlin Robots are now milking the herd on average 3.4 times a day. Production increased by 1500 litres within the first month and the projected yield is now at 12,191kg. Milk composition is

currently 4.2% butterfat and 3.2% protein, with butterfat 0.2% higher compared to in the previous system! The production statistics are impressive, even more so considering that 45% of the herd are heifers.

Unique inside view of a Fullwood M^{2}erlin Robot installed at Parkend

Photo courtesy of McCaskie Agriculture

The robots were installed in the existing cubicle shed in March 2017 and were part funded by Agri-Epi (Agricultural Engineering Precision Innovation Centre), which aims to support innovation, drive growth, profitability and sustainability in farm businesses. The Centre invests in new technologies which can be trialled and demonstrated in real farm situations. Therefore, the Weatherups have built a "classroom" and viewing area overlooking the robots and cubicles where demonstration, research and training events can be held, helping to transfer knowledge out to the dairy farming community.

The feeding management has changed with the robotic system, as previously no concentrate was fed in the parlour. The base ration is set at M+27, 10 litres under the herd average of 37 litres and consists of 30kg grass silage, 6kg wholecrop wheat and 7kg of a well balanced 24% crude protein blend from NWF, which contains a variety of rumen protected protein sources. Protected fats, mineral supplements and a rumen buffer are also included in the base ration.

Two different blends are fed in the robots. Early lactation cows are fed an 18% protein, high energy blend with a higher level of starch from maize and wheat to aid condition and fertility. The other blend is 22% protein and contains a higher level of soya for cows over 150 days in milk (and pd+) to help drive yield and prevent cows gaining too much condition in later lactation.

As well as robotic milking, other impressive technology within the unit includes automatic footbaths on exit from the robots, which the cows walk through after each milking. The footbaths are fully automated, emptying and refilling after every 150 cow passes to ensure a clean solution of a commercial foot bathing product, along with formalin included at 1% three times a week.

The cows are exceptionally clean, due to both the Joztec automatic scraper which automatically washes and scrapes the slats and Fullwood vertically swinging cow brushes. It is hoped that the automatic scraper will help reduce lameness over time.

The farm is also trialling the Silent Herdsman head collars, which not only monitor cow activity for predicting oestrus, but also records lying time, rumination and time spent eating. This technology aids in the early detection of health problems before any obvious visual signs are apparent, as rumination normally drops when health is compromised.

Keenan's In-touch support system for total mixed rations is also being tested and uses live data from the farm to make decisions on ration formulation, milk yields and feed costs. Variation in diets can also be identified and corrected, allowing more accurate feeding and ration presentation, which will in turn improve performance. The feed wagon has helped increase milk production from forage and reduced ration sorting.

Young Brian says "the range of technology now available to farmers is impressive and provides very useful data to base sound management decisions on. However, there is almost too much data to go through to make best use of it. It is hoped that in time we can get information from the robots, Silent Herdsman and Keenan Intouch feeding into one system together, rather than separately, making interpretation and management decisions quicker and easier".

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Slurry Spreading Guidelines for NVZ

The welcome decision by Scottish Government to assess individual farmer's needs to allow the spreading of slurry within the closed period, will come as a welcome relief to many farmers within Scotland's NVZ areas.

You can find the full press release **here**: https://www.ruralpayments.org/publicsite/futures/news-events/response-to-nitrate-vulnerable-zones/

In South West Scotland in particular, it is estimated that around 1000 acres of silage is still to be harvested in the Stranraer Lowlands NVZ alone, and for those who did get crops off in late August and early September, the continual wet weather has meant that slurry, which would normally be spread on aftermaths is still sitting in stores. This is not a blanket derogation and farmers MUST apply to their local SGRPID office who "will look sympathetically, with as much flexibility as the regulations allow, at the scope for any mitigation of the risk of penalties being applied." Should approval be given, farmers should bear the following in mind when spreading slurry and take any possible steps to increase storage:

- Wherever possible, non-NVZ land should be used.
- Do not try and empty your whole tank. The purpose of the slurry application should be to empty the stores to allow you to meet the requirements of the remainder of the closed period relevant to your farm.
- Applications should only be made to land that is regarded as low risk. Choose the driest fields for spreading, (even if these aren't the ones closest to the steading); select fields that are flat or less than 5% slope and not known to be usually waterlogged at this time of the year; choose fields that have no watercourses or ditches as boundaries.
- Reduce application rates to around 1000 gallons/acre per application to reduce the risk of run-off.
- Don't spread the same ground within 3 weeks of a previous application.
- Where possible use an umbilical system for spreading rather than tankers to reduce field damage.
- Any suitable field which has a water course as its boundary should not have slurry applied within 30m of this watercourse. In this instance slurry applications should be restricted to the centre and area of the field furthest away from the watercourse.
- Do not spread within 30m of a watercourse or 50m of a well.
- If spreading on gently sloping land (less than 5%), try and enter the field at the top of the slope to reduce damage from hauling uphill – opening a fence to create a temporary entrance in a fence could make a huge difference.
- Keep public roads clear of mud if you use them to access fields.
- Take steps to divert as much clean water from entering slurry stores as possible – repair broken gutters, use temporary bunds to divert water from clean concrete.
- Do everything you can to minimise pollution, bearing in mind that penalties could still apply if a pollution incident occurs.
- All applications should be recorded in NVZ records.

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Dates for your Diary

- 15th November – **AgriScot**. Royal Highland Centre, Ingliston, Edinburgh, EH28 8NB.

- 17th - 19th November – **SAYFC Agri and Rural Affairs Conference**. Golden Lion Hotel, Stirling. Event Organiser SAYFC t: 0131 333 2445 penny@sayfc.org

- 21st November – **Soil, Muck and Money: Targeting Resources for Maximum Return**. Balloch. Event Organiser Jane Dingwall - Soil Association Scotland. t: 0131 666 2474, email: JDingwall@soilassociation.org

- 22nd November – **Cut Costs by Making More of Muck and Slurry**. Middleton of Rora, Longside, Peterhead, AB42 4US. By kind permission of Bruce Mackie. Time 10.45-14.30. To book a place please call 01904 771216 or email ke.events@ahdb.org.uk

- 25th November – **LiveScot**. Lanark Agricultural Centre, Muirglen, Hyndford Road, Lanark, ML11 9AX.

- 27th - 28th November – **Aberdeen Christmas Classic**. Thainstone Agricultural Centre, Inverurie, AB51 5WU.

- 30th November – **Grass Matters Conference**. Dumfries. For more details contact Lyn White - Soil Association t: 07899 791748 lwhite@soilassociation.org

- 30th November – **Optimising Animal Health**. Auchmore Farm, Muir of Ord, Ross-shire, IV6 7XB. Time 10.30-15.00. Event Organiser SAC Consulting t: 01463 233 266 FBSInverness@sac.co.uk

- 2nd December – **The Black and White Sale**, Borderway Mart, Rosehill, Carlisle, CA1 2RS.

- 5th December – **Valuing your Soils – Grassland and Forage**. SRUC Crichton Royal Farm, Dumfries, DG1 4AS. Time: 11.00-15.00. Event Organiser SAC Consulting t: 0131 535 4155, email: joanna.cloy@sruc.ac.uk

- 11th December – **Christmas Show and Sale of Dairy Cattle & Young Calves & Stirks**. Dumfries Mart, Huntingdon Road, Dumfries, DG1 1NF.

- 11th December - **How to Minimise Losses During Storage and Feed-out of Silage – Webinar.** Time 18.00-19.00. To register visit: https://register.gotowebinar.com/register/4574109495147993347

- 11th - 13th December – **DIY AI Training**. Aberdeen. Event Organiser: Embryonics t: 01606 854411, email: embryonics@embryonicsltd.co.uk

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

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