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August 2017

News in brief

Farm-gate prices hold up

As far as most current farm-gate prices fare, there isn't too much to complain about. Beef finished prices are at a significant three year high and are expected to remain at these levels until the autumn. Finished lamb prices are also well above what they were last year; albeit they are now on the decline, demand and a weak pound will help to keep them favourable. Although farm-gate milk prices took a slight dip in the spring, sharp price increases are on the horizon for many from August. In the short-term, the prospects for improved margins appear to be promising.

Uncertainty of Brexit still looms

Talks of a hard or soft Brexit now seem to have moved on to a post-Brexit 'off the shelf' transitional deal, which the UK Government hopes will allow businesses to carry on trading with the EU, and keep full single market access. If the EU agreed to this, there would still be free movement of people, the UK would need to pay into the EU budget and businesses would need to comply with some, if not all of EU regulations. Such a deal could last for up to three years meaning that the UK may not achieve full Brexit until after 2022, so potentially a situation of status quo for some time yet. It is expected that talks about a transitional deal will begin in the autumn.

As for farm subsidies, the UK Government has confirmed that agricultural support funding will be maintained at the same level until 2022. Although the exact format the post-Brexit payments will take is currently unknown, there is likely to be a move away from the current area-based support system towards greater delivery of environmental benefits, which depending on the details could have significant impacts on many businesses.

Next month….

- Sector focus – Artisanal alcohol production
- Feed price update

Contents

This month's editor:
Gillian Inman

The European Agricultural Fund for Rural Development
Europe investing in rural areas

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Greening rule changes confirmed

The Scottish Government has recently confirmed that changes to greening rules will be made for the 2018 scheme year and include:

- Maintenance to drains on EFA fallow will be allowed up until the 15th March with 'further flexibility for exceptional circumstances, such as exceptional rainfall and flooding in the remaining period'. This is however subject to a caveat that drainage 'activities do not jeopardise the biodiversity objective of the EFA'.
- EFA fallow will now be allowed on land claimed in the previous year as five year old temporary grass, i.e. TGRS 5.

These are positive changes that will give farms more flexibility on how they manage their EFA fallow. Other changes are expected to be announced soon, watch this space!

For clarity the dates of the fallow period for 2018 remain unchanged at 15th January to 15th July.

Cross compliance inspection statistics

The Scottish Government has recently published details of the Cross Compliance breaches found at 2016 inspections. A summary of the top five areas of non-compliance and main reasons for the breaches are included below, further details can be found at: https://www.ruralpayments.org/publicsite/futures/topics/inspections/all-inspections/cross-compliance/inspection-outcomes/cross-compliance-inspection-statistics/

Cattle identification and registration (SMR 7)

- Lost a tag but still identifiable (double or single).
- Failure to report animal deaths to CTS within legislative deadline.
- Post 01/01/1998 animals that have lost both tags but can still be identified by other means.
- Animals registered with an incorrect sex or breed.
- Failure to report movement to CTS within legislative deadline.
- Animal details not found in farm records.
- Animal found with no passport.

Sheep and goat identification (SMR 8)

- Lost or illegible identification has not been replaced and/or the record of replacement identification has not been maintained.
- Individual identities of home bred animals, present on the holding, have not been included in records.
- Failure to record death details of an animal born or identified after 31/12/2009.
- Animals have not been tagged or have been incorrectly tagged before leaving a holding or reaching the appropriate age.
- Failure to record complete movement details.

Welfare of farmed animals (SMR 13)

- Medicine records are not complete and available for previous 3 years.
- Sick animals are not suitably cared for including, where necessary, getting veterinary advice.
- The number of deaths are not recorded, and have not been kept for the previous 3 years.
- Animals (kept outside) are not protected, where necessary and possibly, from adverse weather conditions, predators and other risks to health.

Buffer strips along water courses (GAEC 1)

- Land within two meters of the top of the bank of surface water (where the exemptions do not apply) had been cultivated.
- Field heaps located within 10 metres of surface water or 50 metres of any well, borehole, etc.
- Organic manure applied to land situated within 10 metres of any surface water or 50 metres of any well, borehole, etc.

Retention of landscape features (GAEC 7)

- Land within 2m of the centre line of a hedge (where the exemptions do not apply) had been cultivated.
- Removed or destroyed a landscape feature without written consent of the Scottish ministers and/or other statutory body.

Whilst not all the listed breaches resulted in financial penalties being applied, penalties of 3-5% were not uncommon, and in some cases a breach of SMR 13 resulted in 100% penalties being applied.

In order to protect CAP payments, knowing the rules is essential. Further information on the rules and copies of the verifiable standards used by inspectors can be found at: https://www.ruralpayments.org/publicsite/futures/topics/inspections/all-inspections/cross-compliance/

Beef Efficiency Scheme update

The deadline for applicants to enter their calving data for calves born between 1st January and 1st June 2017 has been extended until the 20th August 2017.

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Cereals and Oilseeds

World crop estimates edge higher, prices fall

Overall cereal crop prospects have improved in the last month driven by better conditions for the US maize crop and Russian wheat crop. In their latest estimate the USDA raised 2017/18 global cereal crop forecasts 4.4mt to 2050mt and demand rose 2.5mt to 2,086.5mt. Ending stocks rose 6.3mt to 488.5mt still well down on the 520.8mt in 2016/17.

According to the USDA, 2017 US maize crop estimates increased 4.8mt to 362mt and Russian wheat crop estimates rose 3mt to 72mt. Prospects weakened for other cereal crops, especially US spring wheat and Australian cereals. The 2017 Australian wheat crop estimate was lowered 1.5mt to 23.5mt (35.1mt in 2017/18).

The time for any major surprises in northern hemisphere cereal crops is fast diminishing, unless combines reveal lower than expected yields or a late July heatwave hits maize crops. July is the critical yield building month for US maize and August for soyabeans so these crops remain at risk.

In the EU yields of wheat and barley appear around average though heavy rain may affect yield and quality in parts of France, Germany and the UK.

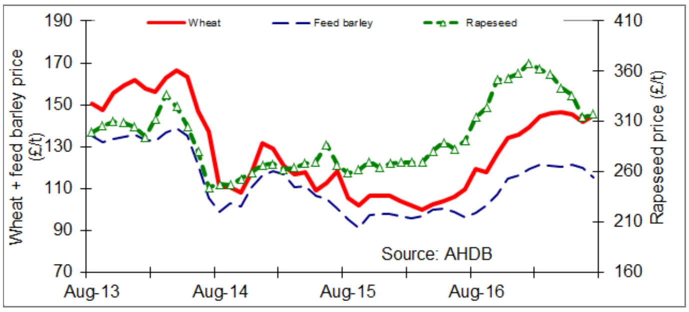
In the UK, early harvest reports (up to 18th July) from ADAS and AHDB suggest average to good winter barley and oilseed rape yields in England. These are very early results and are not necessarily an indicator of the final results. Combines have just started in Scotland on winter barley. Yield and quality of later cut crops will have an important bearing on UK markets and local prices for oilseed, export, milling and malting crops.

Hot weather in the US mid-west is expected to curb yield and output of soyabeans, while EU and UK rapeseed output is likely to rise, how this interplay will affect rapeseed prices is not yet clear.

UK LIFFE wheat futures for November 2017 were at £148.50/t on 21st July, an increase of £1.50/t on a month before but £5.50/t down on the recent high set on 11th July 2017. Harvest downward price pressure is clearly a factor at present as the European harvest gets under way, but weaker UK values also mirror currently rising estimates for 2017 global cereal crop. The first post-Brexit harvest can now be priced with LIFFE wheat futures for November 2019 at £153.25/t.

- World expected to see a decline in cereal stocks this year but crop forecasts currently improving.

UK spot ex-farm grain and oilseed prices



Scottish spring barley area static

AHDB's spring planting survey shows Scottish spring barley area unchanged on last year's 239k ha; a 10 year low. In England spring barley sowings rose 58kha to 474kha. Overall GB wheat area fell 3% to 1.761m ha, winter barley fell 1% to 428kt. Wheat area fell 5% to 104k ha in Scotland. Rapeseed area fell 4% to 520k ha in England and rose 6% to 33k ha in Scotland. Oats sowings increased in England up 14% to 116k ha and in Scotland rose 12% to 35k ha. Total cereal area was up 1% in England and unchanged in Scotland. The results largely confirm existing estimates and implications; a relatively small GB wheat area, more spring barley in England and a small spring barley area in Scotland. Compared to the official June Census figures due in September, the AHDB spring planting survey has a relatively good track record of estimating final crop areas.

- Survey confirms smaller GB wheat crop, higher GB spring barley area but static in Scotland.
- Harvest yield and quality now the main unknown as to the size and relative value of the UK crop.
- Smallish Scottish spring barley crop and rising distilling demand expected to keep Scottish malting barley at a premium over English values.

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Indicative grain prices week ending 21 July 2017 (Source: SAC/HGCA/trade)
'* Before oil bonus, # Ex-farm England spring max 1.85%N, ~ nominal

£ per tonne	Basis	Hvst 2017	Nov 2017	May 2018	Nov 2018	Nov 2019
Wheat	Ex-farm Scotland	142.00	145.00	153.00	145.00~	148.00~
Feed barley	Ex-farm Scotland	118.00	122.00	131.00	120.00~	123.00~
Malting barley#	Ex-farm England	145.00	150.00	-	150.00	
Oilseed rape*	Delivered Scotland	307.00	318.00~	-	300.00~	

400p average near

The market has strengthened consistently through the summer and as the chart shows, a decent continental sired Scottish steer is getting close to 400p/kg DWT. Best grading steers, Angus and organic prime cattle are already in the rarefied atmosphere above 400p. Indeed, organic producers are at 505p. The cull trade is also tidy. Happy days! Well, at least at the production end of the beef chain.

What's driving it? In short, a lack of cattle here and abroad. AHDB report that UK June beef production was 8% down on May and 5% lower than last June. Retailer insistence for smaller carcases and British origin are also important, though AHDB note that carcase size is little different to this time last year.

Will it continue? At the turn of the year, the outlook suggested that cattle price prospects depended largely on the strength of the pound given the forecast of the highest Irish beef production in a decade. Well, at 89p/€ the exchange rate is very helpful for British producers. Meanwhile, a shortage of cattle across the EU means that Irish cattle are selling very nicely too.

Yet, before getting too excited, Ireland's main killing season is the autumn and domestic beef consumption could be choked off by higher retail prices. On the plus side, the increased cost of feed grains will increase the cost/price of chicken meat on shelves. However, finishers are unlikely to agree on the benefits of higher grain costs.

Waking up to Brexit

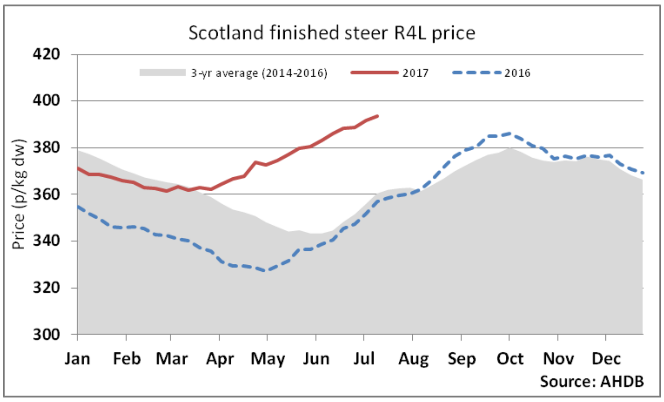
At first glance, the beef sector is better insulated from Brexit than the sheep one. Put simply, as a net importer of beef, beef farmers are less exposed to losing access to the EU single market. Indeed, some in the industry here would argue that tariffs on Irish beef imports are a potential benefit of leaving the EU. Fortress Britain?

To get a grasp on the potential consequences of Brexit on beef farming, first consider the market place then the support system.

With just under 66m people, the UK is a big market for beef. In 2016, us Brits ate 1.2mt of beef but only produced 912,000t, resulting in 423,000t of imports with the Irish our big trade partner. They also take a significant tonnage of the 144,000t of beef exported last year.

Assuming for a moment that a "fortress Britain" mentality was adopted by the UK government with tariff's on beef imports, beef would still be competing with other proteins in the marketplace. Chicken and fish are highly competitive and would keep demand for beef in check. Indeed, there could be a mountain of fish to eat if the EU-27 market is shut to the 500,000t of fish the UK annually exports.

Of course, a UK government of any colour is unlikely to erect higher tariff barriers. However, it is also likely that the UK would seek to continue operating standards (e.g. hormone free beef) that would limit beef imports from some non-EU countries. So, there is a fair chance that should Brexit ever occur, Ireland will remain a key trade partner, especially given the deep integration of Irish processors into Britain.



As for support systems, beef production, especially in Scotland where a coupled calf payment remains, could come under severe pressure for change. By 2030 farm support may be well have switched to rural support with most funding attached to farmers and land owners delivering environmental goods and services. As suggested in the sheep section, such a switch is easier said than done.

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Prime cattle prices (p/kg dwt) (Source: drawn from AHDB data)

	E&W			Scotland			E&W		Scotland
	South R4L Steers	North R4L Steers	North -U3L Y. Bull	R4L Steers	R4L Heifer	-U3L Y. Bull	South -U4L Steers	North -U4L Steers	All -U4L Steers
1 July	359.0	361.7	346.2	383.2	384.8	368.6	375.0	375.2	385.6
8 July	358.6	366.6	347.0	385.7	387.5	373.1	374.6	377.1	388.1
15 July	358.7	363.0	343.4	386.1	389.6	372.0	384.4	374.0	390.2

Market price update

The AHDB's Weekly Average Price calculations for the 2016 maincrop season ceased at the week ending 7th July. GB weekly average price reporting will commence with publication of 2017 crop values once there are sufficient supplies in the sample to calculate representative average prices.

From a limited free-buy market, 2016 grade 1 Maris Piper for packing is trading between £130-£140/t, grade 1 whites are around £65-£70/t and value packed whites are down at £35-£80/t. Although at present Scottish packers have sufficient stocks to fulfil requirements, they will shortly be switching over to new crop supplies as availability increases.

2017 crop supplies for frying have started to enter the market with Maris Peer trading at around £400/t in small lots for local sales and Casablanca trading between £160-£325/t; the latter price also being for local sales.

2017 crop yields likely to be variable

Crops continue to progress rapidly and appear healthy but low tuber counts have been reported in some areas, which will impact on yield. Although late blight is at low levels, blight spraying is still a priority due to the presence of favourable weather conditions. Common and powdery scab has been found in some crops and blackleg has started to develop in some seed crops.

Lifting continues in Ayrshire of Casablanca and Maris Peer, both of which are also being harvested in East Lothian and Fife. Lifting of loose skinned Maris Piper has also commenced in East Lothian. Remaining in store stocks of 2016 crops are still generally keeping well.

Scottish seed area down slightly

Figures released from Science and Advice for Scottish Agriculture (SASA) have indicated that the area entered for inspection in 2017 was 10,804 hectares, 1% (127ha) less than the previous year but 0.6% (71ha) more than 2015.

Seed certification in Scotland 2013 – 2017 (Hectares)

	2017	2016	2015	2014	2013
Entered	10,804	10,928	10,733	11,482	10,980
Certified	-	10,575	10,508	11,074	10,862

Source: SASA

Varieties where more than 100 hectares have been entered that have shown a significant increase or decrease in area include: Atlantic (+25%), Cara (+17%), Charlotte (+43%), Gemson (+18%), Lady Rosetta (+18%), Maris Peer (+10%), Royal (+16%), Estima (-19%), Hermes (-20%), Russet Burbank (-15%), Valor (-16%). The full list can be found at: https://www.sasa.gov.uk/sites/default/files/Entered%20Statistics%202017.pdf

SPot Farm Scotland trial results

As part of a three year programme various commercial trials are being carried out on AHDB's Strategic Potato (SPot) Farms across the UK. These farms are being used to drive research into practice through the demonstration of techniques appropriate to the region and market sector.

Previous AHDB research on cultivation found that deeper soil cultivation, greater than 27-28cm, or 23-25cm in clay soils, resulted in reduced yield and increased fuel, labour and depreciation costs. Last year, SPot Farm Scotland (Bruce Farms, Perthshire) planted eight trial plots each using a different combination of bed-forming, bed-tilling and destoning depths to see if the results could be replicated on a commercial farm.

Findings from the cultivations trials on the farm showed that zero bed-tilling and reduced destoning, where possible, resulted in the lowest planting costs and the highest packed yield, see table below.

Summary results from cultivation trials

	Standard Practice	Reduced Bedtilling	No Bedtilling
Planting costs	£93.31/ha	£81.97/ha	£64.93/ha
Saleable yield	30t/ha	36t/ha	£41t/ha*
Pack out	74%	77%	83%*

*Results were un-replicated at SPot Farm Scotland site

Standard farm practice, reduced bed-tilling and no bed-tilling cultivation trials are to continue this year along with other trials covering crop nutrition (impact of reduced nitrogen inputs on quality and yields); seed (impact of lower seed rate on yields and tuber size) and cover crops.

Further information about the trials and future events can be found on AHDB's website at: https://potatoes.ahdb.org.uk/agronomy/research-practice/spot-scotland-bruce-farms-perthshire

Dates for your diary - reminder

Thursday 10 August 2017: Potatoes in Practice, Balruddery Farm, James Hutton Institute, Dundee.

Wednesday 22 November 2017: BP 2017, Yorkshire Event Centre, Great Yorkshire Showground, Harrogate.

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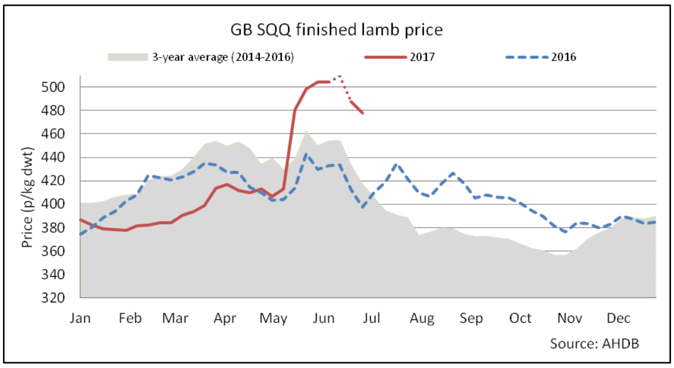
Heady times for producers

As the price chart shows, early summer lamb prices have been excellent for producers, with decent lambs grossing in the mid £80's. The exceptional early summer prices drew out a lot of underfinished lambs, so recent prices have been partly caused by tight supply. Supermarket price promotions have also helped. These would have been agreed with processors months ago, and would not have anticipated the temporary tightening of supply. The cull ewe trade has also been excellent, with early weaning flocks enjoying strong prices.

Will it continue?

Lamb prices will decline pretty sharply in the coming weeks simply because of the lofty levels reached in June. Lamb supply, also hindered up north at least by wet weather, will catch up. At the UK level (though not the Scottish), more ewes went to the tup last autumn, which allied to good weather at lambing points to a slightly bigger lamb crop in 2017. Results from the June census are awaited to confirm the precise size of the crop.

A very weak pound (89p/€) will be helping exports, but a recent AHDB analysis of the important French market highlights a worrying long term decline in lamb consumption. As for the home market, given the high farmgate lamb price, farmers shouldn't depend on price promotions in coming few months to boost demand. On the plus side, four Muslim festivals starting with the Hajj at the end of August and ending with Ashura on 1 October, should help demand for lambs and cull ewes. And then there is the store trade?



Post Brexit support

The post Brexit support system for UK farmers is becoming clearer. Whether a soft or hard Brexit, we will be free of the CAP. Only a total climb down and request to stay in the EU would prevent this. Not impossible, but very unlikely. Post Brexit agricultural policy will probably be set at UK level but with sufficient flexibility to allow the home countries to tweak to local priorities. Clearly a fraught negotiation process in itself and one that assumes Scotland doesn't vote for independence in the next five years.

It's pretty clear that for agricultural policy, read rural policy. While the current area based support system will last till at least 2022, there is a growing expectation that it will, maybe over a period as long as 10 years, be replaced by a broader policy framework based on farmers delivering "public goods" (cleaner water, healthier soils, biodiversity, access ways, enhanced animal welfare levels, etc).

Trouble is that the experience of the past 20 years does not provide a practical template for how many of these public goods can be delivered. Land management contracts are back on the agenda, yet Scotland tried these 10 or so years ago with limited success. They typically cost a lot of money to set up and administer (so called transaction costs) plus often involve capital spending that result in the farmer passing money onto the contract fencer, etc.

Even if area payments could simply be rebadged as environmental payments so that farmers got roughly the same level of support as now, the chances of other countries using World Trade Organisation rules to scotch such a slight of hand, would be high. New Zealand farmers are currently embroiled in a legal battle to limit rules that insist they fence off streams at their own cost. No grants there.

British sheep producers are fortunately not in the position faced by their Kiwi peers. The effort to come up with agri-environmental schemes that deliver for the environment whilst also being attractive to farmers and simple for a very stretched civil service to administer, is the burning priority.

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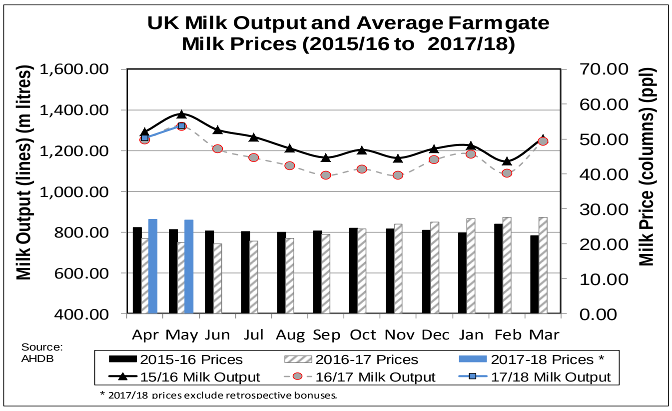
Week ending	GB deadweight (p/kg) 16.5 – 21.5kg			Scottish auction (p/kg)			Scottish Ewes (£/hd)	E&W Ewes (£/hd)
	R2	R3L	R3H	Stan	Med	Heavy	All	All
1 July	477.9	477.8	472.0	215.6	221.5	221.7	68.8	62.1
8 July	461.7	460.3	453.3	207.3	211.6	205.9	72.2	66.4
15 July	467.2	466.0	458.7	206.5	216.6	217.4	69.5	69.7

Deadweight prices may be provisional. Auction price reporting week is slightly different to the deadweight week. Source: AHDB.

Output following similar trend to 2016

Since the July edition of Agribusiness News, AHDB Dairy has revised the UK milk production statistics with the result that April 2017 production for the UK is amended to 1,262.38m litres. Milk output for May 2017 is estimated at 1,322.27m litres (before butterfat adjustment) which is 1.51m litres higher than May 2016. These production figures mean that cumulative UK milk output up until the end of May 2017 stands at 2,584.65m litres (up 12.56m litres on same time last year).

The UK average price level decreased slightly between April and May 2017. The average price for May 2017 is estimated at 26.78ppl (down 0.15ppl from the April 2017 average of 26.93ppl).



- UK milk output is following a similar trend to 2016 but prices are faring better due to tighter supplies on the continent; UK average price for May 2017 is 6.40ppl higher than May 2016.

First Milk announce new pricing

Following consultation via member meetings earlier this year, First Milk has unveiled details of its new pricing schedules which will take effect from 1st September 2017. The main outcomes include:

- Discontinuing A&B pricing following feedback that uncertainty around A&B prices creates a production disincentive.
- Introduction of a production bonus of 0.50ppl on all litres, provided that production is equal to or exceeds the volume produced in the same month the previous year.
- No changes are proposed to the profile adjustment scheme (PAS).
- A charge of £10 per additional collection will be made from 1st April 2018 where tank capacity does not allow every other day collection (EODC). The charge will apply unless the average daily production exceeds 3,500 litres for the month.

UK prices rise sharply from Aug 2017

Price announcements for August 2017 include:

- Arla Foods – will increase on-account member milk price from 1st Aug 2017. Milk price will increase by 0.81ppl to 28.82ppl (liquid standard litre) or to 29.98ppl (manufacturing standard litre – 4.2% b/f, 3.3% protein).
- Müller M&I – will increase prices by 1.50ppl from 1st Aug 2017. This takes the price for non-aligned suppliers up to 27.69ppl. The retailer supplement for June 2017 is confirmed at 0.328ppl for non-aligned suppliers.
- Graham's Dairies – will increase producer prices by 1.50ppl to 27.75ppl from 1st Aug 2017.
- First Milk – No change at the time of writing this article but a price increase is expected soon.
- Tesco – Tesco Sustainable Dairy Group (TSDG) members will see prices increase by 0.21ppl from 1st Aug 2017. This takes the price level up to 29.58ppl following the latest quarterly review of cost of production data.
- Coop – the Cooperative Dairy Group (CDG) is to increase member prices by 0.50ppl from 1st Aug 2017, taking the standard litre price up to 28.41ppl between 1st Aug and 31st Oct 2017.

Annual Average milk price estimates for August 2017 (ppl)	
Milk Buyers – Scotland	**Standard Ltr***
Lactalis (No profile or seasonality) (3 month contract) [1]	27.50
First Milk Balancing- A price (90% of production). [1,2]	25.49
First Milk Manufacturing (Lake District)- 4.0% Butterfat & 3.3% Protein-A price (90% of production). [1, 2]	26.48
Müller Wiseman- M&I - Müller Milk Group [1, 3]	27.69

[1] *Standard litre – annual av. milk price based on supplying 1m litres at 4.0% butterfat, 3.3% protein, bactoscan = 30, SCC = 200 unless stated otherwise.*
[2] *July 2017 prices stated. August 2017 prices awaiting release.*
[3] *No monthly supplementary payment included in the price estimate.*

UK wholesale prices at an all-time high

UK wholesale prices for butter and cream have increased to unprecedented price levels as supply shortfalls continue to support prices. UK prices for AMPE and MCVE are now both above 36.00ppl.

UK dairy commodity prices (£/ tonne)	Jun 2017	May 2017	Jan 2017
Butter	5,100	4,300	3,600
SMP	1,700	1,550	1,850
Bulk Cream	2,370	1,960	1,620
UK milk price equivalents (ppl)	**Jun 2017**	**May 2017**	**Jan 2017**
AMPE (2014)	36.41	30.99	30.48
MCVE (2014)	36.92	33.30	33.71

Source: AHDB

If these wholesale prices hold up over the longer term, market related farm-gate prices could outperform prices available via cost of production contracts.

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Heat pump optimisation

We have previously covered heat pumps a couple of years ago, how they work, standard operational uses and the basic financial case under the RHI. This article considers system optimisation.

Heat pumps use electricity to run a compressor. The ratio of electricity used to heat out is known as the Coefficient of Performance (COP). Optimal system efficiency (COP) is achieved by using the warmest heat source and outputting the coolest water possible.

Changes in the RHI regulations will soon allow for ground source heat pumps in district heating situations to "share" a common ground loop. This means that a single ground loop can be connected to many individual heat pumps in each house, this allows for the heat pump configuration to be optimised and controlled for each property.

Another change in the RHI regulations allows for heat sources other than "heat sourced from naturally occurring energy stored in the form of heat in the ground" (quoted from the original RHI definition) to include heat from cooling or process heat, also it is now possible to pump heat from warmer months in the summer into the ground and use it in the winter. This really does allow for different design approaches and optimisation.

Therefore in order to achieve high efficiencies (COP), heat source temperatures and heat output temperatures require careful consideration. This efficiency optimisation is leading to some novel approaches emerging:

Hybrid systems – These systems use both ground source and air sources in the same system, generally for those sites which have a relatively high summer heat use. They use ground source in the winter then in the summer, when the air is warmer than the ground, air source will be more efficient. However as the RHI is far lower for air source than ground or water source, it needs to be considered if the extra investment of the air source aspect is financially worth the reduced electricity usage.

Heat recovery - Using heat pumps to recover heat from cooling or other warm processes, conventionally this is done with a heat pump to "upgrade" low temperature waste heat i.e. increase the temperatures enough to be useful in other systems. However, if a ground source heat pump is needed anyway a very cheap option is to include the heat recovery within the ground loop, i.e. the ground loop return includes a coil in the warm airflow to boost the return temperature, which in turn allows far higher output temperatures to be used efficiently.

Shared ground loop (single ground loop, multiple heat pumps) - In district heating situations with properties requiring different temperatures e.g. one house with underfloor heating and another with conventional radiators. If a single heat pump were to heat the network it would have to be set at the higher temperature required by the conventional radiators, thus reducing efficiency for the whole site. With a single ground loop and each dwelling having their own heat pump set to the lowest possible temperature for that building, at least some of the system is able to run efficiently. This can equally apply to a single building requiring different temperatures for different purposes or zones.

Seasonal Thermal Storage – Any excess heat from summer cooling loads is pumped into the ground via the ground loop heating the ground by several degrees, this increased ground temperature can increase the efficiency of the winter running of a ground source heat pump dramatically. A good farm example of this would be heat from the refrigeration equipment in cold stores such as potato stores. It is relatively simple to convert most air cooled refrigeration equipment into water cooled, it is the warmed water which can then be used to feed the ground loop. But the additional pumping costs associated with pumping warmed water into the ground loop need to be considered against the savings from increased efficiency of the heat pump.

Voltage optimisation – Larger scale heat pump systems over 200kW thermal, can have very high peak electrical loads of up to several hundred kilowatts and average constant loads of well over a hundred kilowatts, with most of this load being motors running the compressor. Motors are very inefficient when run at voltages they are not designed for, most motors are designed to run on 220V-230V but the UK average is 242V. This 22V-12V difference can lead to motors running up to 25% less efficiently. However, voltage optimisation equipment can be installed to correct the sites voltage to allow motors to run more efficiently. Normally most farm businesses would not have a big enough load to justify the cost, however with large scale heat pumps it certainly should be considered. Another aspect of the electrical supply which can lead to inefficiencies in motors is a poor power factor, too complex a subject to go into detail in this article, but suffice to say investment in power factor correction equipment may be justified.

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Management Matters: Brexit priorities

The necessity of a transitional deal

Brexit negotiations are now underway between the UK and the EU. The first stage is focused on the 'divorce settlement' covering citizen's rights, the Brexit bill and arrangements for the Irish border. Not until the EU judges that satisfactory progress has been made can discussions move onto future trade agreements. Even if negotiations go smoothly, it will be difficult to start trade discussions much before November. This means that businesses in agriculture, food and the wider economy may at best not start to see any progress on the all important issues of trade, customs, tariffs and labour mobility until well into 2018, less than one year from the UK's expected EU exit date.

This is simply not enough time for any trade deal to be reached given the massive complexity of the task. It is also not nearly enough time for the UK to replicate the wide array of technically complex functions currently provided by the EU in areas such as trade and customs, food health and environmental regulation. DEFRA has been run-down in recent years and simply does not have the staff, nor the expertise to fill the gap left by the EU.

It is also apparent that the UK government and its civil service, is woefully unprepared for the Brexit negotiations, with a huge drive to recruit staff currently underway. The UK Government is also potentially hamstrung by political in-fighting within the Conservative party given the weak mandate they received at the recent UK general election.

The conclusion is that a transitional deal is essential to avoid an extremely disruptive exit in March 2019. Recently it appears that the UK Cabinet now agrees, even the hard-line Brexiteers, Fox and Gove, with a two to four year transition beyond 2019 being considered. However, any transitional agreement will require the consent of EU member states, is not a given and it could be some time before any details become known.

Farm subsidies until 2022?

In contrast the UK Government could provide greater clarity on agricultural subsidies as these will potentially be completely under its control. The UK Treasury has assured that agricultural subsides will be honoured up to 2020. The new UK Environment Minister Michael Gove has more recently stated he will honour the Conservative's election manifesto pledge to maintain all subsidies until 2022. However, no details have yet been provided as to which subsidies will be maintained and at what level.

Future rural policy options

Post Brexit and any transitional period, the UK's range of potential policy options and instruments is theoretically wide, but in practice much narrower due to international and domestic constraints.

The New Zealand no-subsidy approach is not considered politically feasible given the limited capacity for large parts of Scottish agriculture to adapt, thanks in part to geography. Returning to the pre-decoupling CAP support model or earlier UK deficiency payment-based support would not be WTO-compliant and is thus also not feasible.

There is a high likelihood of maintaining the status quo (i.e. continuing with existing CAP or equivalent) during a transition phase. It would be relatively easy for the sector to adapt to this if there is continued open access to EU markets. If EU tariff and custom barriers are in place this would be very damaging to consumers, farmers and supply chains.

Brexit poses significant challenges to Scottish agriculture, land-based industries and the wider rural economy. Yet it also presents, in the longer term, an opportunity to redesign policies to better reflect Scottish needs and conditions. It is not yet decided how much of this will be determined at a UK level and how much by devolved administrations. Either way this will probably include moving away from area payments whilst emphasising public goods (the environment), market orientation and risk management. This will need to be WTO compliant and provide benefits for the environment and consumers.

Further details of a recent SRUC Rural Policy Centre and industry workshop exploring these issues can be found at: https://www.sruc.ac.uk/info/120671/our_work/1753/the_implications_of_brexit_for_rural_scotland

- A transitional EU deal is essential beyond 2019 as there is not enough time to conclude negotiations or set up equivalent UK institutions.
- Businesses need to know more details of any transitional deal as soon as possible.
- Future policy options for rural Scotland need to be determined now to give time for implementation post 2019.

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Input Costs – Labour

Agricultural Wage rates

Agricultural wages in Scotland and Wales are covered by separate agricultural legislation while in England Agricultural Wages boards were abolished. In Scotland Agricultural wages are currently legislated by the Scottish Agricultural Wages Board (SAWB). In 2017, rates and conditions were raised and conditions overhauled. The main change was to give equal rights to all agricultural workers irrespective of the length of their employment or their age. The minimum wage has now been set (from 1 April 2017) at £7.50/hr for all workers whether; full or part-time, temporary or permanent, students or workers on piece rates. For qualified workers (NVQ Level 3 and above or a certificate of experience from Lantra) who have been with their employer for more than 26 weeks, the Additional Sum Rate applies of £8.64/hr. Overtime for all workers is payable at a minimum of £11.25/hr (£10.86/hr in 2016) and applies to all work beyond 8hrs per day. It also applies to all work over; 48 hrs in any week for those with less than 26 weeks with their employer or 39 hrs for those with more than 26 weeks with their employer. Whatever the standard rate agreed with the employer (minimum wage or above) then overtime must be paid at at least 1.5 times the standard rate. There is also an Apprenticeship Rate of £4.40/hr (£4.02/hr in 2016) for the first 12 months for employees who undertake a Level 2 Modern Apprenticeship in Agriculture/Horticulture. Thereafter the minimum hourly rate will be the single minimum hourly rate of £7.50/hr.

Full details can be found at: http://www.gov.scot/Topics/farmingrural/Rural/business/18107

The National Living Wage

Where the National Minimum Wage (NMW) and the National Living Wage (NLW) become higher than the hourly or other minimum rate of pay prescribed by the Scottish Agricultural Wages Board, then the Wages Board will make an Order to make the minimum rates equal to the NMW and the NLW.

Currently the Scottish Agricultural minimum wage and the National Living Wage are both set at the same rate of £7.50/hr. The current planned increases to the National Living Wage are set to see rates rise from a starting point of £7.20/hr in April 2016 to reach £9/hr by 2020. It will also push up minimum wages under the Agricultural Wages Board in Scotland as these will be kept at or above this level. In England this applies to over 25 year olds only. In Scotland this rate applies to staff of all ages.

Brexit and inflation

Access to seasonal and permanent overseas workers is essential for agriculture, particularly fruit and vegetables and the food industry. In the food processing sector 38% of workers are estimated to be EU migrant workers (ONS Labour Force Survey). Businesses employing EU workers have already had to increase hourly rates to compensate for the weaker pound against the euro. More than one year on from the referendum and the UK and EU have only just started negotiating conditions for existing EU workers in the UK. Discussion on arrangements for future EU workers arriving in the UK will not start until the UK's exit terms are agreed, expected at best by December 2017.

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Key economic data

General Indicators		Price indices for May 2017 (Defra 2010 = 100)			
		Output Prices		Input Prices	
Base interest rate	0.25% (0.50% Mar '09)	Wheat	120.3	Seeds (all)	99.7
ECB interest rate	0.00% (0.05% Mar '16)	Barley	121.6	Energy	98.9
		Oats	139.6	Fertiliser	92.8
UK (CPI) inflation rate	2.6% (target 2%)	Potatoes (Main Crop)	158.6	Agro-chemicals (all)	103.3
		Cattle and Calves	133.6	Feedstuffs	111.8
UK GDP growth rate	0.3% (Q2 '17)	Pigs	112.4	Machinery R&M	114.4
		Sheep and Lambs	121.5	Building R&M	113.5
FTSE 100	7,390 (28 July '17)	Milk	108.6	Veterinary services	108.2

Funded by the Scottish Government and EU as part of the SRDP Farm Advisory Service

SAC Consulting, Rural Business Unit publication
Annual subscription: free on-line at www.fas.scot or £50 for printed copies
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