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Outlook 2019

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the FARM business CONSULTANTS

Contents

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Outlook 2019 has been compiled with contributions from Consultants within the Andersons businesses. It is published by Andersons the Farm Business Consultants Ltd, which co-ordinates the presentation of the Andersons businesses throughout the UK.

Editors: John Pelham, Partner, Andersons Midlands and
Richard King, Head of Business Research, The Andersons Centre

INTRODUCTION TO Outlook 2019

Welcome to Andersons Outlook 2019.

The coming year promises to be a watershed for UK agriculture. We will, at last, find out the terms of the UK's exit from the EU, with all its implications for trade in farm products. Even the closest of future partnerships with Europe will be different from the current situation. A 'No Deal' outcome would see a massive upheaval in the agri-food sector.

2019 should also see the Agriculture Bill become law. Although the changes will not happen for a few years, this will signal a fundamental shift in the way farm support is paid. Instead of 'income support' land managers will be paid for delivering benefits to wider society – so called 'public goods'. The devolved administrations will be making their own choices on farm policy, highlighting that, outside of the structures of the CAP, there will be far more divergence between the different parts of the UK.

The lack of ambition in the Agriculture Bill is disappointing. It is a rather technical piece of legislation and compares unfavourably with the 1947 Agriculture Act, which had a clear vision for the whole farming sector and a comprehensive suite of policies to achieve it. Current Government policy seems set on leaving agriculture to its own devices in terms of food production. However, as the Food Harvest 2020 Strategy in Ireland demonstrates, growth in the agri-food sector can be achieved without large sums of public money, but simply through the Government coordinating and engaging with farming. Perhaps the food and farming sector itself needs to fill the vacuum and set out some agreed goals for the next 10 or 20 years. Unfortunately, the record of the UK agri-food sector in working together is not stellar.

Although it is a cliché, with change also comes opportunity. The next few years promise plenty of change and therefore a chance for the best businesses to grow and prosper. Andersons has been working with farmers and the allied industries for over 40 years to help them make the right decisions, whatever the business environment.

We hope that you find Outlook 2019 both informative and stimulating and, as ever, wish you all the best for a successful 2019.

John Pelham Nick Blake James Severn David Siddle Richard King
Directors, Andersons the Farm Business Consultants Limited

FARM BUSINESS OUTLOOK

Farm Profitability Prospects

Richard King

The 2018 farming year has been dominated by the weather – the cold, wet spring was followed by a rapid swing to the hot dry summer, yet the consequences for profitability are not clear cut. At first sight, lower yields of crops and forage, and reduced livestock output due to either cold or heat would suggest a reduction. However, in some cases, lower yields have been offset by better prices. Input costs may also have been reduced, at least in the arable sector. Historical evidence suggests that a dry summer is usually better for farm returns than a wet one (remember 1984, 1995, 2003 and 2011).

Overall, when final farm accounts for the year are prepared, the results may well show that returns are better than things perhaps felt at the time. What is clear, is that there will be a large disparity between different farms depending on factors such as location, enterprise mix, local rainfall and timing of produce sales. Given that it is dangerous to make generalisations about returns in 2018, we are going to do just that by looking at overall industry profitability for the year.

The 'headline' measure for the economic performance of farming is Defra's Total Income from Farming (TIFF) figure. It shows the total profit from all UK agricultural and horticultural businesses on a calendar year basis. It measures the return to all entrepreneurs for their management, labour and capital invested. In very simplistic terms it is the profit of 'UK Farming Plc'.

> ***Forecasting profitability for 2019 is rendered almost impossible by the uncertainty over Brexit.***

The latest published data is for the 2017 calendar year. This shows total profits for the industry were £5.74 bn. This was the highest return (in real terms) for 20 years. Indeed, when the figures were published in the spring we were surprised at how good they were - profit for the year was 40% higher than in 2016. Whilst the data is only provisional, and there is a history of revisions to the data, the figures are still likely to point to a very profitable year, even if there are some adjustments.

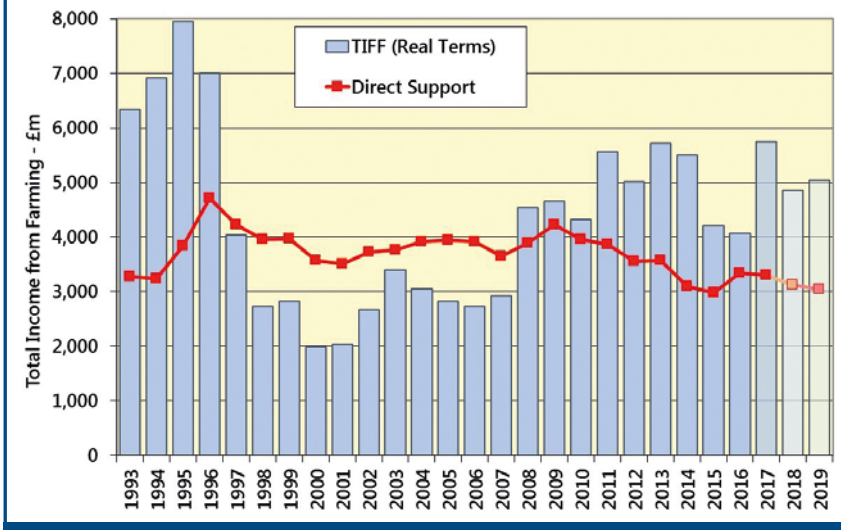
The first official Defra estimate

for the current 2018 year will not be published until February 2019. However, Andersons run a model that mirrors the Defra TIFF calculation. This suggests that there will be a decline in profitability compared to 2017 of around 15%. Partly this is a result of the weather factors outlined above, but general cost increases and market downturns in some sectors also play a part. The result is a TIFF of £4.85bn for the year.

Forecasting profitability for 2019 is rendered almost impossible by the uncertainty (at the time of writing) over Brexit. For the purposes of modelling, it has been assumed that a deal is done that prevents a 'cliff-edge' Brexit in March 2019. On this basis, the prospects for 2019 look reasonably good. Much, as ever, will depend on movements in currency. Ironically, if a Brexit deal is achieved this may be bad for UK farming in the short-term, as it would likely see a strengthening of the Pound. In our forecasts for 2019 it has been assumed that Sterling will be in the range €1 = 85-90p. With no repeat of the weather-related issues of 2018, a small recovery in TIFF is forecast – up by around 5%. This is despite some weakening of output prices on global markets and a general upwards movement in costs. At this level TIFF would be very close to its real-term average for the last decade.

Of course, aggregates and averages hide a great deal, and tell us nothing about the performance of different sectors or regions, let alone individual farms. The articles that follow in Outlook provide a more detailed discussion of many of these points.

Figure 1 **Total Income From Farming 1993 to 2019 (Real terms, 2017 prices)**



Source: DEFRA / Andersons

FARM BUSINESS OUTLOOK

General Economic Prospects

Graham Redman

Britain is enjoying high rates of employment. Not since the early 1970's has such a large proportion of the labour-force been in work. A very free labour market in UK makes it easy to hire staff then politely fire them if things do not work out. This offers confidence to employers to take on workers. Everybody then is busy.

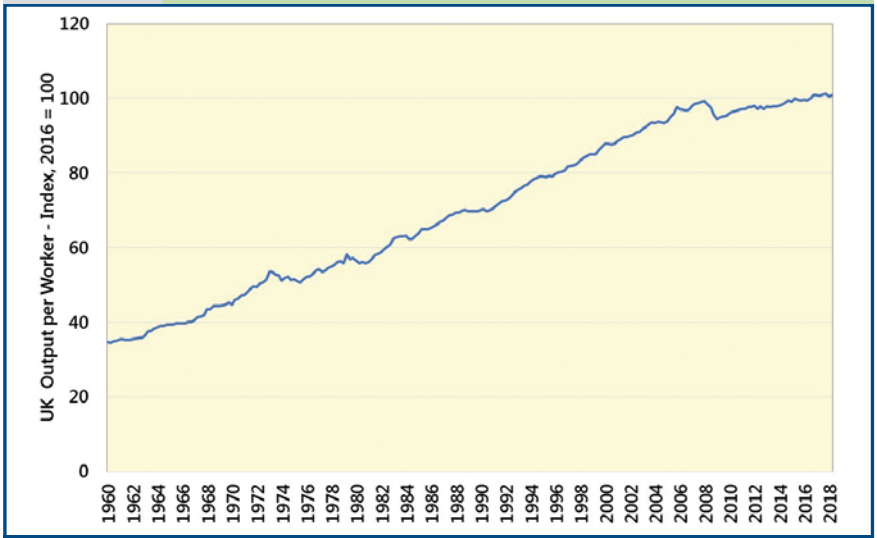
But not necessarily happy. Workers gripe that, despite working hard, they are not earning more, and employers don't understand why the workers are barely more productive than a decade ago. Interestingly, this 'productivity puzzle' is also true of agriculture.

Wage rises in the developed world have been tardy, but particularly in the UK. Why? Growing use of IT continues to drive a major transition in the way people work, replacing middle-income jobs in retail, sales and manufacturing. For example, many retail firms struggled in 2018, including House of Fraser, Mothercare, Homebase and Carpetright. High-income jobs, such as management and development have been largely retained (despite substantial changes), and the lowest-income jobs, such as the 'patty flipper' have, so far, also remained. Yet, even here, changes are happening, with many fast-food outlets offering food ordering from screens on the wall.

There has been a rise in other low-value jobs (for example, the Economist points out the number of hairdressers has increased by 50% since 2010) dragging down overall average wage growth and productivity. And, with a fall of social security payments and a freeze in public sector pay, there might be more people prepared to do such jobs than before.

The last decade or so has seen a big rise in inward employment

Figure 2 **UK Labour Productivity - 1960 to 2018**



Source: ONS / Andersons

- those coming to the UK to work. Although this rise has slowed since the Referendum on EU membership, for many years it has helped create an eager pool of workers for each vacancy. This has constrained wages in some sectors and has also meant there was less incentive for labour-saving investment, or training to make individual workers more productive.

At the other end of the job scale, higher-salary jobs are now ever more global, making it easy to move to lower tax locations. For executives that visit three countries a week, does it matter where they live? Thus, we see more people in low value jobs and fewer in middle and high value ones.

> ***Not since the early 1970's has such a large proportion of the labour-force been in work.***

But that doesn't wholly explain the productivity issue; several further reasons are suggested. Firstly, it is easier and lower risk, and therefore more common, for banks to lend for mortgages to encourage house ownership than business loans. The latter are more speculative, but provide the engines of economic growth. Also, the decade of austerity has slowed the economy; after all, government contributes to a considerable proportion of economic demand.

The rise of the gig-economy, the employment of people to undertake single tasks such as a pizza delivery, has changed the labour market. Over 5 million UK workers are now self-employed. In the past, these might have been mainly skilled specialists such as plumbers (or farmers!), but now the ranks are swelled by those picking up work as it becomes available. Flexible working, including a mix of salaried and self-employed work, means more people can work around other obligations, such as family, whilst employers only pay for work undertaken. But this may well be coming at the cost of making workers less productive than they could be.

For 2019 we find ourselves in a situation of no business clarity, with no clues for what a post-Brexit UK might look like at the time of writing. This might curtail investment and delay any improvement in productivity for another year.

So how does this link to farming? Slow rises in productivity are shared with the high street and business centres. Finding the best workers at the right price is increasingly difficult (on farm and in consultancy offices!). The shift to robotics and artificial intelligence is still in its infancy. Will this be effective in replacing workers, and, if so, should or could this labour be redeployed to more productive uses within farming and the wider food chain?

The lack of clarity post Brexit might be postponing large investments. Should you increase the dairy or buy more sheep? Is it time to buy land or sell it? Do I stock up on agrochemicals or go organic? None of these questions are easy to answer, but whilst Brexit negotiators argue among themselves, it is still a good time to spot improvements in the farm business, work on them and put the farm in a stronger place that it was before.

FARM BUSINESS OUTLOOK

Agricultural Policy Developments

Caroline Ingamells

Brexit dominates farm policy. This article focuses on future farm support polices as the UK prepares for life after the Common Agricultural Policy (CAP). Future trading relationships between the UK and the EU (and the rest of the world) are looked at in our Brexit article.

The UK and EU agreed back in March 2018 a Brexit transition deal or 'implementation period' as the UK Government likes to refer to it. This will last until the end of 2020 (if we exit with a deal). During this period the UK will have no say in setting the rules for the EU, but will have to continue to abide by them. However, in terms of farm support there is a specific opt out clause which means a Domestic Agricultural Policy can start as early as the 2020 year.

Each of the devolved regions launched separate consultations in 2018 on future farm support. Scotland and Wales are looked at in more detail in the regional articles contained later in this edition of Outlook. Here we look at the implications on future support in England of the Agriculture Bill and accompanying statements produced by Defra, which were introduced into Parliament in September 2018.

Most will, by now, be aware that the BPS will remain in place for 2019 with only minor amendments (if any). It has also been confirmed that it will remain in place for the 2020 year, although by then will be a 're-nationalised' scheme, not under CAP rules, which would allow the promised simplification - the ending of the Crop Diversification rule seems an obvious target. The proposal is then to have a seven year 'agricultural transition' period from 2021 to 2027.

This would see, from 2021, a reduction to direct payments for all farmers in England. However, those who receive the highest payments will see bigger reductions initially. The table below sets out the reductions for 2021. The bands work like Income Tax, i.e. a £40,000 BPS payment would see the first £30,000 reduced by 5% and the remaining £10,000 would be cut by 10%.

From 2022 to 2027, direct payments will continue to be phased out with the money saved put towards piloting new schemes including the Environmental Land Management Scheme (ELMS) (see below). The level of deductions in this period are unknown. The Government has not provided percentages, and probably will not do so in the foreseeable future, partly because the budget for the Domestic Agricultural Policy (DAP) is not set and also as the call on funds from direct payments could be lesser, or greater, depending on the success of the ELMS.

One significant development is that payments made during the agricultural transition can be 'delinked' from the 'requirement to farm land'. Although the details are not yet available, it offers the prospect of a lump-sum or guaranteed future

Figure 3 **Proposed reduction in English Direct Payments - 2021**

Payment Bands	Up to £30,000	£30,000 to £50,000	£50,000 to £150,000	£150,000 or above
% Reduction	5%	10%	20%	25%

Source: DEFRA

stream of income. Amounts would be calculated according to the money received in a base year. Such delinked payments could be used by some as a way of leaving the industry, a retirement fund, or to fund investment in farming businesses. As such, it is aimed at helping new entrants into the sector and giving farmers the flexibility to plan for the future. If there is no requirement to farm land, it seems logical that Greening and Cross-compliance would also disappear.

The mechanics of delinking throw up a number of questions. Will it happen in 2021 or be delayed further into the agricultural transition? If a lump sum option is made available, when might this be? And what extra conditions might be imposed? There would need to be a reference year on which de-linked payments are to be based. Would this be historic, or some date in the future?

> **The BPS will remain in place for 2019 with only minor amendments.**

There is also the question of landlord and tenant relationships. Consider the situation of a tenancy that expires in 2023, with clauses that require entitlement to support to be returned to the landlord. How will this be dealt with? What happens if the tenant has taken a delinked lump-sum payment? Those drawing up tenancies going forward will need to address this situation.

Replacing the current system of support will be the new Environmental Land Management Scheme (ELMS), based on the principle that land managers will be paid for 'public goods'. The key points of the new scheme are as follows;

- *land managers will have a 'whole-farm plan' produced. This will be drawn up and assessed by third parties*
- *the plan is likely to set out what is already in place in terms of public goods (or natural capital) and what the farmer will do to improve these*
- *the plan will run on an annual basis, although it is not clear whether there will be a multi-annual commitment required. It is sometimes stated that the five-year term of current agri-environment agreements are not long enough for meaningful improvement*
- *land managers will effectively quote a 'price' for the work they plan to carry-out – based on a Defra 'price list' or 'ready-reckoner'. Other payment methods such as reverse auctions and payment-by-results may well also form part of the mix*
- *applications will be possible year-round, rather than by a yearly deadline*
- *there will be annual management payments as well as grants for capital works. It is likely that there will be incentives for land managers to work together to deliver landscape-scale agreements.*

From 2019 the Government will work with farmers to 'design, develop and trial' the new approach. Pilots are expected to start in 2021, continuing through to 2024, with the intention that the scheme be fully operational for 2025, until which time, the current Countryside Stewardship Scheme (CSS) will remain open, although CSS is expected to be simplified and the number of agreements offered each year will be dependent on the development of the new ELMS. It may also be possible to extend HLS agreements which are due to end between 2019 and 2024.

During the early years of the agricultural transition, it looks like there will be a focus on funding productivity measures. The aim of this will be to help the industry to reach a situation where it can be profitable without direct payments.

Although we appear to have made some significant strides towards a new policy much still remains vague and the devil, as ever, will be in the detail. It should also be noted that the Agricultural Bill still has to make its way through the Parliamentary process and could be amended during its passage. In addition, the accompanying Statements have no legal force. Therefore, if a new administration comes in, or even a new Farm Minister, with alternative ideas, then policy could be different from that outlined.

Figure 4 **Evolution of English Support - 2019 to 2028**

2019	*BPS - same rules as currently; CSS continues*
2020	*BPS - some 'simplification'; CSS continues; ELMS tests*
2021	*Domestic Agricultural Policy (DAP), BPS-like payments to face deductions. De-linking of payments (or later?); Simplified CSS (to 2024)*
2022	*Phasing + ELMS pilots. Productivity funding?*
2023	*Phasing + ELMS pilots. Productivity funding?*
2024	*As above. Last year of CSS*
2025	*Phasing continues. ELMS launched nationally*
2026	*As above*
2027	*Last year of direct payments (low levels by this point)*
2028	*No more direct support. ELMS fully available*

Source: DEFRA/Andersons

FARM BUSINESS OUTLOOK

Land Prices and Rentals

George Cook

Whilst preparing this article I took the opportunity to re-read my contribution to last year's Outlook on the same subject. This raised the initial question in my mind "What is different? What has actually changed from last year?"

Brexit still creates a high level of chaos, misinformation, politicking and general scare- mongering from both sides of the argument, but the truth is that we will never know whether "In or Out" was the right decision, as only one will ever be quantified.

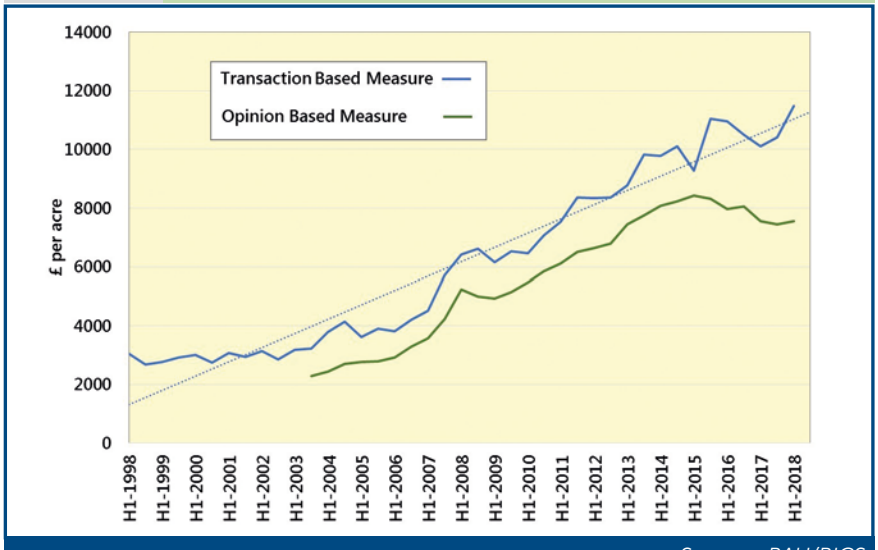
In terms of land values, what does not help any market for commodities (which land is) is uncertainty. Today there is plenty of uncertainty. This in part reflects general global agricultural market factors, but is further complicated by the politics of the UK.

In terms of future policy towards support payments (discussed in more detail elsewhere in this publication) we do however have a clearer indication of its direction. The contents signify a clear change in direction for future UK (or English at least) support policy. Some close to Government clearly believe that one of the benefits of no longer paying support based on land area will be a general fall in land values (thus helping new entrants). This line of reasoning looks dubious, but rental levels will almost certainly react to the new payment system based on this mysterious concept of public good. A concept that wraps in soil health, bio-diversity and wildlife contribution, water quality etc. etc. as the vehicle for generating future payment to land managers.

So, to that extent, my comments last year about the need to better deal with soil management practices have come to pass. We will need to change management practices that have led to significant reductions in soil organic matter, bio-diversity above and below ground and to increased weed seed burdens in the post-War years. A closer working relationship may be needed between landowners and those undertaking the farming activity to make these changes.

There may be increased divergence in land values. Without

Figure 5 **England & Wales Land Prices – 1998 to 2018**



Source: RAU/RICS

direct payments providing a guaranteed annual income, capital values may become more closely aligned to the productive value of the land (again, perhaps linked back to the health of the soils etc.). Some land may become more valuable due to its ability to capture 'public goods' money – an example might be an unproductive flood meadow up-stream from a large town that can be used for flood mitigation.

Uncertainty in the market has kept land prices relatively flat over the past year, as Figure 5 shows. There is a growing gap between the opinion-based measure (a hypothetical estimate by surveyors of bareland prices excluding the residential component) and the transaction-based measure (land sales with a residential element, as long this is estimated to be less than 50% of the total sale). Partly, this may be due to rising residential values, but it may well also be down to very little land being sold. In a 'thin' market, land can usually find a buyer at a reasonable price. But this value may be higher than surveyors are prepared to publicly back for the market as a whole.

In terms of rents, for Farm Business Tenancies (FBTs) we have seen a recent weather-related influence start to appear. In addition to the usual drivers for rent, which include the securing of land, bio-fuels, compliance with NVZ regulations or just a desire to farm more land, there has been a further factor in the markets. Short-term shortages of fodder are fuelling the quest for the strategy of securing more land, under-pinned by a longer-term shift in weather patterns. Some large livestock businesses, in particular, wish to ensure they have sufficient land to build and maintain buffer stocks of feed, forage and bedding.

There has been a rise in world commodity prices due to weather vagaries in many key global regions for agricultural production. The prospect of being able to 'lock in' to some of these price rises for the next two or three years has seen previous declines in FBT rents largely halted and, in some areas, reversed.

> ***In terms of land values, what does not help any market for commodities (which land is) is uncertainty. Today there is plenty of uncertainty.***

However, as usual, a cautionary note. The cost of inputs for farming this land is also increasing and the need to incorporate spring cropping and more break crops into rotations is leading to a reduction in potential gross output per unit area. Both should be signalling caution for those bidding for blocks of land.

Rents for traditional Agricultural Holdings Act (AHA) tenancies have remained largely static, with neither party being currently prepared to serve notices to review the rent payable. This may well change shortly, if only to reflect changes linked to the ending of the current Basic Payment Scheme.

Looking to the future - uncertainty breeds opportunity. There are likely to be opportunities for both landowners and those farming the land to establish more flexible working relationships to ensure a reasonable return for all.

FARM BUSINESS OUTLOOK

Finance and Banking

Greg Ricketts

Third time lucky. Our predictions last year prove the point that 'whatever goes up will come down' and vice-versa. Having forecast Interest Rates to rise in the last three Outlooks, we were finally proved right in August 2018, with an increase in the Bank of England base rate of 0.25%. Agricultural borrowing has also risen again in the last year (as forecast), although, as Figure 6 shows, the rate of growth is slower than it was in the period from 2012 to 2016.

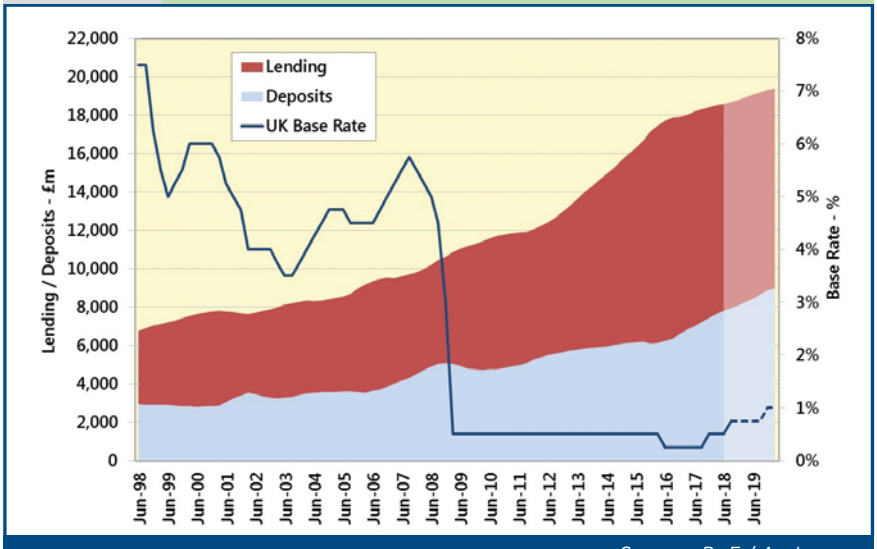
A contributary factor to the rise in borrowing has been ongoing investment by some farmers and growers in new enterprises and the expansion of existing operations. Much of this investment is being carried out by those looking to develop and diversify their businesses, with changes in support and output prices expected over the next few years.

So, what are lenders looking for when farmers come to them for requests for additional borrowing? The answer is that there are a number of components to a successful business plan;

- *a clear explanation of the proposals*
- *an assessment of the financial implications*
- *an indication of timescales for implementation and the achievement of results*
- *a marketing plan*
- *analysis of sensitivity implications for key risk factors*
- *the finance requirements, both loans and overdraft*
- *calculations in relation to specific bank criteria e.g. EBITDA (earnings before interest, tax, depreciation and amortization) and or, a funds flow statement.*

Ultimately, most lending requests are now assessed by a team within any bank/financial institution, which

Figure 6 **UK Agricultural Borrowing – 1998 to 2020**



Source: BoE / Andersons

will include the bank manager who has the customer interface, a member of the credit team (to give complete impartiality and cold, hard analysis of the proposals for additional borrowing) and possibly a regional head within the bank, as well. The days of having a nice chat down at the golf club with the bank manager on a sunny afternoon, where lending requests are agreed verbally, are long gone and there is now a very rigorous appraisal process, utilized by all lenders.

An understanding of the historic financial performance of the business is the key starting point in the development of any business plan. Situations where past performance (profit) has been poor inevitably make a successful application process more challenging. The submission of a business plan that indicates performance is suddenly going to be transformed will inevitably be met with scepticism unless it can be clearly shown how this is to be achieved.

Within any financial projections, a clear assessment of the proposals is required, in particular, with regard to future expected viability. This is the margin achieved after all costs on an annual basis and the return expected to cover risk factors.

Too often, farmers consider profitability to be the key measure of financial performance. Whilst this is important, we should not forget that there are other costs which need to be funded out of profit, in particular, private drawings (in trading structures where a partnership or sole trader is used), tax, loan and HP repayments and any other capital expenses.

> ***The days of having a nice chat down at the golf club with the bank manager on a sunny afternoon, where lending requests are agreed verbally, are long gone.***

A sound business plan will include details on key assumptions and the logic and rationale behind the proposals being put forward and any prudent lender will be looking for realism about assumptions and a safety margin/buffer to protect against risk. Some analysis of the key factors affecting financial performance (sensitivity analysis) is required. Lenders will be looking to assess the implications of changes in key variables such as output volumes, sales price and key input costs when determining whether margins achieved are sufficient to cover for the risk factors involved.

Security is important, but perhaps now takes a lesser priority than it would have done historically. Viabilty is much more critical and just having assets to cover debt is not a good enough reason to expect borrowing to be provided. Security cover really is just the backstop for a bank, should things go wrong for any reason.

Finally, many banks and lending institutions have sophisticated systems and complex formulae to assess lending propositions, as well as to appraise historic financial performance. A clear understanding of how these mechanisms work will help in the development of a successful business plan.

As we look forward into a new era where farming businesses need to ensure viability, without dependency on support payments, and become more customer/market orientated, investment in new opportunities is likely to be a key part of ensuring long term viability.

FARM BUSINESS OUTLOOK

Labour

Michael Haverty and John Pelham

The issue of labour on-farm, and in the wider food chain, has been the subject of increased focus in recent years. In the short-term, this has been the impact Brexit will have (and is already having) on access to migrant labour, and the associated issue of rising labour costs. Longer term, questions arise on how far technology might be able to replace labour in the food chain. As farms get ever-larger, the issues of managing labour have become relevant to a growing number of businesses.

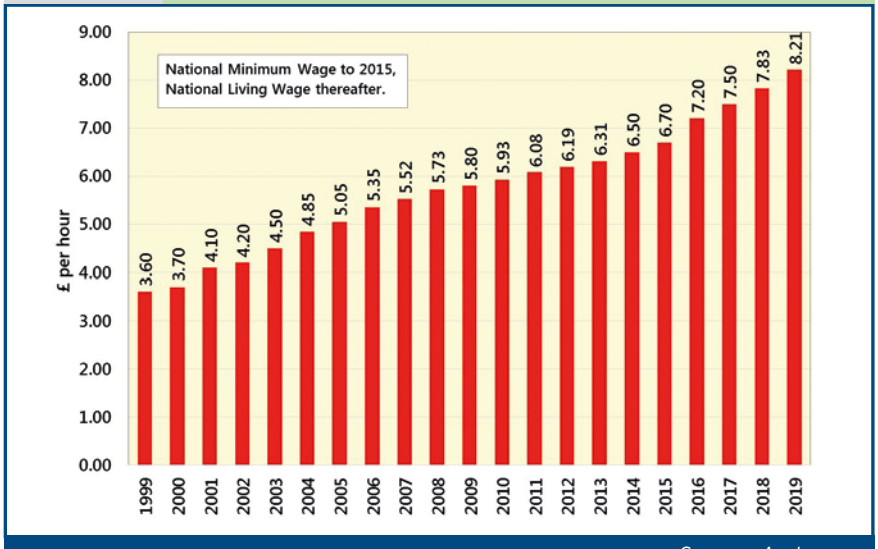
There has been significant rises in the cost of labour over the past two decades, and especially in recent years. In the fifteen years following the introduction of the National Minimum Wage in 1999, the average annual rate of wage inflation was 4%. In the last three years, with the introduction of the National Living Wage, this rate has more than doubled, with wage inflation for many growers being 8-10% annually, or approaching 30% for the period. In many parts of the food chain, even in what might have traditionally been seen as low-wage sectors such as horticulture, many employers are paying above the National Living Wage, simply to retain good staff.

Brexit has compounded this effect by shrinking the pool of available labour - even before any formal exit. The result of the Referendum led to a weakening of Sterling which made the UK a less attractive destination for EU workers. Coupled with uncertainty over our future relationship with the EU, this has made the recruitment and retention of adequate labour increasingly difficult for UK businesses.

According to the Office for National Statistics, in the year ending March 2018, net migration from the EU is estimated at 87,000, down from 189,000 in June 2016. Although non-EU migration is up by nearly 40,000 (to 235,000) over that same period, it means that net immigration from abroad is down by 63,000.

The Gross Value Added (GVA) of the food and drink manufacturing sector has grown by approximately

Figure 7 **Labour Cost Increases – 1999 to 2019**



Source: Andersons

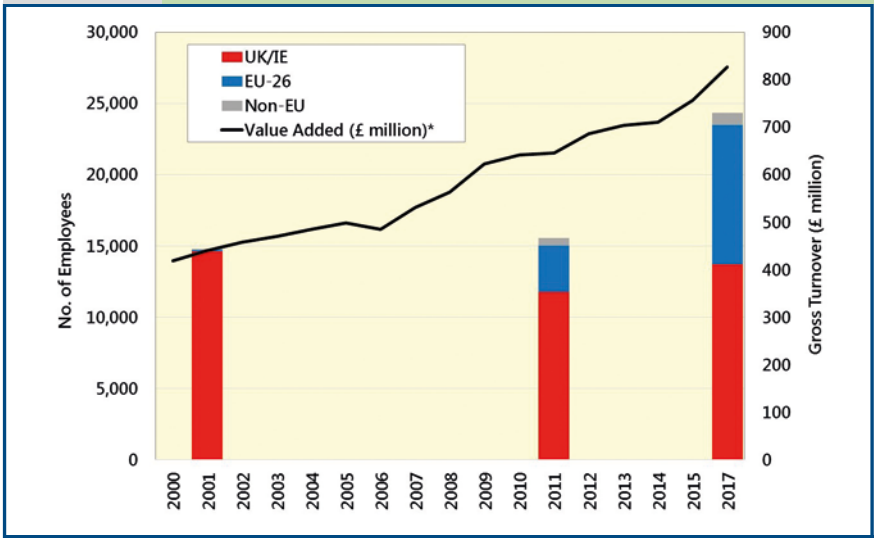
one-third in the last decade, from £21.8bn in 2008 to £28.8bn in 2016. Whilst a number of factors have underpinned this growth, migrant labour availability has been a key driver.

At a UK level, it is quite difficult to obtain detailed statistics on migrant labour across the agri-food processing industry. The Food and Drink Federation estimates that the UK food and drink manufacturing sector employs 117,000 EU migrants, almost one-third of its overall workforce. In May 2018, the Northern Irish Agricultural Department, DAERA, released a survey of labour in the Northern Ireland (NI) agri-food industry which provides useful insights for the UK as a whole. Of the 24,328 people employed in the NI agri-food processing sector in 2017, approximately 40% came from EU Member States, outside of the UK and Ireland. In pig meat (51%), beef & sheep meat (51%) and fruit & vegetables (48%), the exposure is even more pronounced.

Figure 8 depicts NI agri-food employment in 2001, 2011 and 2017 based on whether employees are from UK/Ireland (IE), EU-26 or Non-EU, using Census data in conjunction with the DAERA survey. This is compared against output (value added) over that period. It is evident that the availability of migrant labour from the EU was a significant contributing factor to the growth in value added. Figure 8 also indicates that the numbers of UK and Irish employees remained relatively stable, suggesting that although migrant labour has grown, it has not been to the detriment of indigenous employment.

The DAERA data also shows that, whilst migrant workers are still mainly employed in operative or elementary roles, they are also prevalent at higher 'management' grades. It must also be remembered that operative positions support a large number of higher-skilled workers within the agri-food industry (mainly UK and Irish nationals), which in turn, supports jobs across the wider economy via the multiplier effect.

Figure 8 Comparison of NI Agri-Food Value Added vs Employment Origin - 2000 to 2018



** Value added is expressed in current terms from 2000-2016 only. IE denotes Ireland (or the Republic of Ireland).* *Source: DAERA*

> ***As farms get ever-larger, the issues of managing labour have become relevant to a growing number of businesses.***

The recently published Migration Advisory Committee (MAC) report calls for the UK to focus primarily on attracting higher skilled workers. Whilst it backs the introduction of a new Seasonal Agricultural Workers Scheme (SAWS), this would be insufficient for the needs of the wider agri-food industry as workers are required on a year-round basis. Such an approach could endanger the more highly skilled positions within the UK agri-food sector.

Many in the industry believe that there is a need for a migration system which attracts workers with key skillsets which are in deficit within the UK, no matter where these workers are sourced (EU or non-EU). This should not be contingent on a pre-defined skill level. Trades such as butchery are highly specialist in their own right and support jobs elsewhere, even though they may not be viewed as highly or even medium skilled, based on Government definitions.

The need for a well-managed, fair and transparent migration system is clear. This needs to provide equality of opportunity to all, and for indigenous workers, this means access to adequate training (apprenticeships and lifelong learning) so that they can upskill and reskill to become more employable as industry adapts to trends like automation.

The adoption of automation as part of a wider agri-tech agenda is a hot topic in Government circles. There appears to be a view that all problems of labour availability and cost can be solved by a liberal dash of technology. Indeed, a tighter labour market is implicitly welcomed,

as it will force the agri-food sector to invest more in technology and so the issue of productivity covered elsewhere in Outlook will be magically solved.

Emerging technologies should of course be explored and adequately funded so that the UK can become a world-leader in agri-tech. This has the potential to create new more highly-skilled occupations in the agri-food sector, which could be sourced indigenously. That said, automation should not be seen as a panacea to address agri-food labour shortages and whilst it has a supporting role, it is very much a long-term play.

In farming, and especially livestock farming where animals provide a constant 'random element', it is hard to replicate the human ability to react and improvise. Even in areas such as fruit picking, technology is still not a match for thousands of years of human evolution. All along the agri-food chain, many of the products processed are not uniform and do not lend easily to automation.

In some cases whole systems would have to be redesigned to fit the technology as it currently exists, sometimes negating any savings.

> ***A new Seasonal Agricultural Workers Scheme (SAWS) ... would be insufficient for the needs of the wider agri-food industry as workers are needed on a year-round basis.***

A case in point is perhaps robotic milkers. These offer the prospect of significant labour saving in the process of milking. However, they push the dairy enterprise towards a high-input, high-output system, which is not suitable for everyone, and brings associated labour requirements in terms of feeding, bedding, mucking-out etc. Whilst labour-saving technology will have a growing place in the agri-food sector, it will be important to deploy it for the right reasons, most importantly, profitability. The investment required is considerable in some cases. Although there is a case to be made for government assistance this needs to be careful not to 'push' certain favoured technologies with dedicated grants.

One final point on labour is the importance of getting the most from this valuable resource. Investment in training and skills has perhaps been lacking at farm level (and arguably further across the supply chain). With labour becoming more scarce, it perhaps needs to be looked after rather better – which is often not just about pay levels. The quality of man-management in agriculture needs to be considered. As farms get larger, the remaining businesses will be more likely to have an employed labour force. The transition from managing livestock and crops to managing people is not always an easy one.

FARM BUSINESS OUTLOOK

Topical Issue - Brexit

Michael Haverty

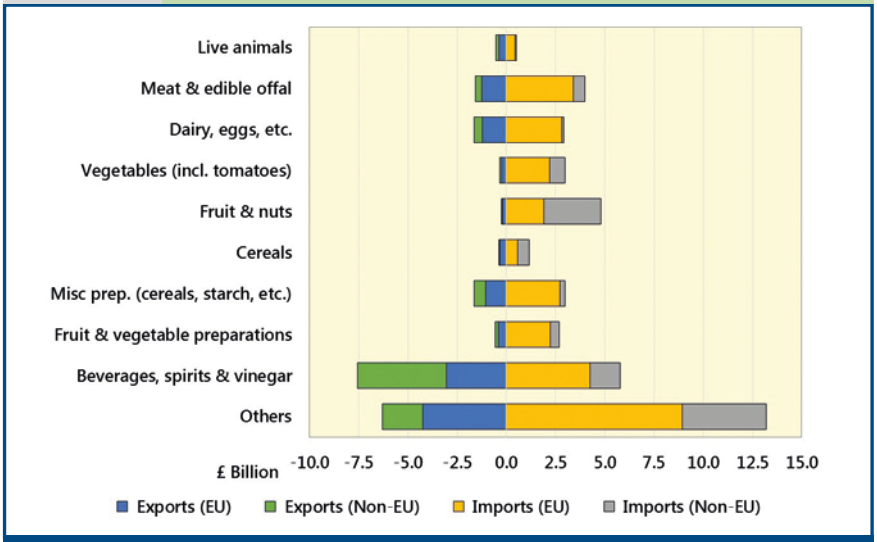
At the time of writing (early October), Brexit negotiations are reaching a climax, yet there is much uncertainty over the eventual future UK-EU relationship. As tensions have increased, so too have the prospects of a No Deal and a No Brexit outcome. That said, there has been progress in the past twelve months and the Withdrawal Agreement (divorce settlement) is around 90% complete. The Irish border issue (backstop) remains the crucial sticking point, but it still appears most likely that a deal will be ultimately reached via a Withdrawal Agreement and a Political Declaration on the future relationship which would enable talks to proceed into a Transition (Implementation) period.

The eventual 'landing zone' of a future UK-EU relationship is still unknown. The previous article has touched on some of the issues relating to labour arising from Brexit. The remainder of this article will focus on trade policy. This will have a direct bearing on the competitiveness of UK food and farming, irrespective of the eventual Brexit outcome.

In recent decades, when the term 'policy' has been used in a UK farming context, it has primarily been associated with agriculture, the environment and rural development; trade has received relatively scant attention. Brexit changes this and trade policy must become a core focus for all industry participants in the years ahead. Using HMRC data, Figure 9 segments UK exports and imports on the basis of trade with EU and non-EU countries for selected agri-food products in 2017. Overall, the EU accounts for two-thirds of the UK's total agri-food trade (exports and imports combined). Exports to the EU-27 accounting for almost 60% of the UK's agri-food exports, whilst for imports, the UK sources 72% of its agri-food from the EU.

The data reveals a strong interdependence between the UK and the EU for agri-food trade. A No Deal Brexit would have a major impact on this trade due to the

Figure 9 **UK Agri-Food Trade Situation - 2017**



Source: HMRC / Andersons

default tariffs that would apply. To some, this presents opportunities as well as threats, as there may be scope to displace EU imports with domestic produce. However, the UK's capacity for such import substitution is curtailed by the relatively long production cycles in several livestock sectors and the limited scope to extend growing seasons in horticulture.

Future UK agri-food trade policy needs to ensure that existing markets are safeguarded as much as possible, whilst enabling UK producers and businesses to exploit new opportunities globally. Much of this work can take place today and we do not necessarily need to know the eventual end-state of the UK-EU trading relationship to make significant progress before 2020. Key points to consider include as follows;

- *Regulatory standards: there has been a lot of debate on the extent to which UK regulatory standards for agri-food would change post-Brexit. Whilst several Ministers have committed to upholding the UK's high standards post-Brexit, there have also been conflicting viewpoints. Some believe that as long as the 'outcomes' are the same, the processes underpinning these outcomes could change. This potentially makes it easier for practices such as hormone-treated beef (as is done in the US) to be deemed acceptable in the UK. This would have major ramifications for the UK in safeguarding existing markets in the EU for high-end produce. It is also likely to erode consumer confidence domestically. Therefore, both the outcomes and the processes underpinning them are vital. The UK could still 'diverge-up' and increase standards in key areas where there is a demonstrable demand from consumers for a higher standard.*
- *Safeguarding existing markets: upholding existing high standards, as outlined above, would be crucial in safeguarding markets domestically, in the EU and in third-countries which value them (e.g. Japan and Korea). It would also mean that, in the event of the UK accepting agri-food imports from other third countries as part of future free-trade agreements, such imports should be subject to the same high regulatory standards as presently. This would permit UK food & farming to compete on a level playing-field.*
- *Minimise non-tariff barriers (NTBs): keeping regulatory standards consistent with the EU would be crucial in minimising the impact of NTBs post-Brexit. By their very nature, NTBs are notoriously difficult to quantify, as they are essentially non-price and non-quantity trade restrictions. Their impact also varies as commodity prices change and the available evidence strongly indicates that their impact increases as divergence grows. A 2017 study undertaken by The Andersons Centre on beef and sheep meat estimated that if the UK is trading with the EU on third country terms and kept standards the same as present, NTBs would have an ad-valorem equivalent of 3%. If the UK was subject to default third country terms (akin to some divergence), then NTBs would rise to nearly 6%. Other studies suggest that US imports into the EU face NTBs of 15% or higher, due to the level*

> ***Future UK agri-food trade policy needs to ensure that existing markets are safeguarded as much as possible, whilst enabling UK producers and businesses to exploit new opportunities globally.***

of divergence involved. Given the tight profit margins in UK agri-food, NTBs of this magnitude would be unsustainable. Export markets in the EU would dissipate quickly, particularly as a result of the bottle-necks which would ensue in the South-East.

- *Opening new markets: some argue that whilst the UK is aligned with the EU, be that in some form of Transition or Customs Union-type arrangement, then there is little scope to open-up new markets elsewhere. Yet, in the past year alone, the UK has made significant progress in gaining access to China for beef and pork. However, in terms of beef, actual sales are still estimated to be two years or so away, as individual processing plants will need to be approved for export. Ireland is further ahead in this process and, in April, three plants got approval to export to China. In early October, Ireland was also successful in gaining further access to Kuwait for several of its meat products. This has been achieved without the EU having formal free trade agreements with these countries. It is, therefore, clear that there is plenty of work that Government Departments (i.e. DIT and Defra) can be doing in getting access to new markets before Brexit either formally (March 2019) or practically (currently projected end-2020) takes place.*

> ***The Irish border issue (backstop) remains the crucial sticking point.***

Undoubtedly, Brexit is signifying major change within the UK food and farming industry and is understandably causing concern to many. UK agri-food has many strong competitive advantages, but these can only be exploited if the industry is given a fair chance to compete. Drastic changes such as severely curtailing labour or permitting tariff-free imports of a range of agricultural produce, often subject to lower regulatory standards, will severely jeopardise the industry. This would be particularly so if UK policy inhibits domestic agriculture from being internationally competitive by insisting on higher production standards than that for imports.

Agricultural, trade and labour policies need to work in unison so that the UK can have a thriving and sustainably competitive agri-food industry in the long-term.

LIVESTOCK

Dairy

Mike Houghton and Oliver Hall

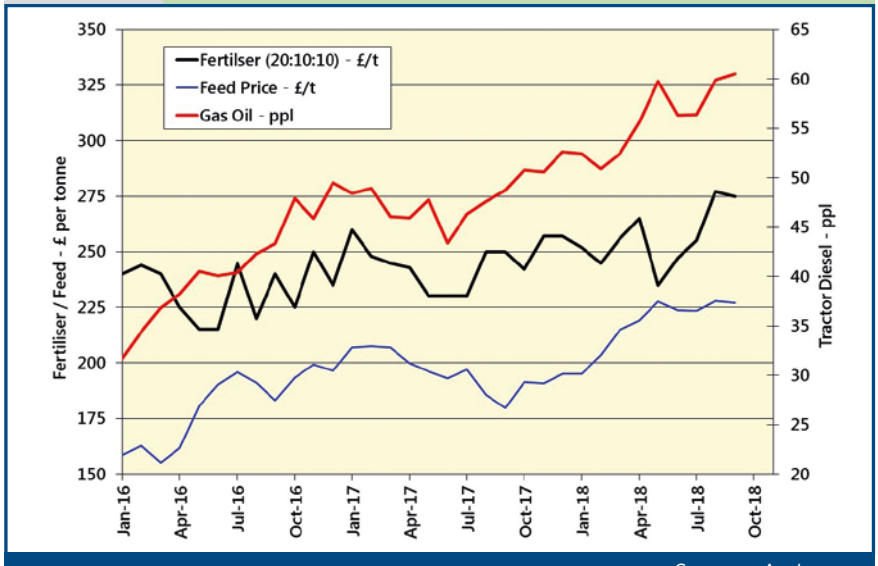
The UK dairy industry continues to experience significant volatility. This year milk price is not the main talking point, with the average UK price reported by Defra at 29.73 pence per litre (August 2018). This may not increase significantly through the winter, but the average milk price is likely to be close to 30.0 pence per litre by March 2019. Indeed, Arla have at the time of writing announced an increase to 32.47 pence per litre with effect from the 1st October 2018, however we will wait to see if other processors follow. It is interesting to note that this will be some 4.0 pence per litre ahead of the five-year rolling average for the UK.

It is input price volatility that will have the big impact through this winter. It has been a really challenging season, with the late wet spring, followed very quickly by an extremely dry summer, continuing into the autumn. This will result in much higher feed, forage and bedding costs for this winter. There is also significant inflationary pressure in energy and fertiliser costs, as shown in Figure 10 below:

As a result, costs of production for many herds will increase by between 2.0 and 4.0 pence per litre, thus mitigating much of the increased milk price, or indeed producing a lower margin.

The positive prospect is that production in the UK is now very similar to last year and may well fall through the current winter, compared to a year earlier. Global supply and demand appear to remain finely balanced, but has reduced through summer 2018. IMPE & AMPE continue to trend at around 32.0 to 34.0 pence per litre, perhaps indicating that processors can maintain prices, even though the talk is of cuts in the spring of 2019?

Figure 10 **Input Costs - 2016 to 2018**



Source: Andersons

In terms of global markets, the larger concerns are now in respect of demand, with a possible downturn in economic growth worldwide, which could become a factor later in 2019. The big unknown remains China, which stopped reporting data in March 2018, making future growth prediction difficult.

It is also clear that prices are influenced by political events in the United States, which has seen USA prices fall dramatically, due to the trade issues created by the Trump administration. However, American farmers will receive compensation for the lower price at some point in the future, via their Margin Protection Scheme.

The UK dairy industry could be moving in the same direction, with a number of different volatility measures likely to be introduced to the marketplace in the next 12 months. These will assist farmers with managing both the milk price and input cost volatility. An example is 'Stable' which is effectively volatility insurance. The sector will need to learn how best to use such mechanisms, but they do provide an opportunity to smooth prices and provide assistance in the 'crisis' times.

All the above reinforces the primary objective of being as efficient as possible at the farm level. Productivity, the amount of turnover a business can convert into profit, will be key to a businesses' future success.

All systems can be profitable, but it is likely that we will see 'family sized businesses' trending towards block calving systems, which are less expensive and more efficient to run, and the larger level-supply businesses offering scale, and ever-improving levels of technical efficiency and output.

Key influences are likely to be the use of genomics, to produce a significant uplift in output, be it volume or solids, which will be achievable over a 2-3 year period. Much greater use of sexed semen will reduce the number of black and white bull calves in the system and improve overall returns from calves or heifers.

> ***In terms of global [dairy] markets, the larger concerns are now in respect of demand, with a possible downturn in economic growth worldwide.***

Feed efficiency needs to be the prime focus of the industry, because this can be improved whatever system is operated.

Increasing regulation and reducing direct support can now be much more accurately factored in. Draft legislation in respect of ammonia emissions is already in place, and this will be a potential high cost to the dairy industry. The Agricultural Bill has confirmed there will be no more direct payment after 2027 in England. It is perhaps worth viewing the remaining direct payments as a 'capital gift'. The aim should be to construct a business plan that can deliver the returns required without subsidy but using the capital gift to invest if required to make this achievable. If this can't be made to add-up, then you have to ask the question 'will I be dairying in 2028?'

At the marketing end of the industry, the priority is being really proactive in respect of all things positive for dairy; to make dairy an integral part of a good well-balanced diet; the focus being on health and wellbeing.

The retail models also appear to be changing, with three-year deals beginning to appear (Lidl and cheese), and with the continued rise of the discounters. The ever-increasing demand for home delivery, must mean that the current retail model will be significantly challenged over the next 3-5 years. Perhaps this will act as a catalyst to reinvigorate the delivery of fresh milk to the door on a daily basis? Retail pools could also come under pressure, with the rest of industry lifting their standards; much may depend on supply and demand.

In summary the price looks to be reasonably stable at least for the 12 months, subject to the outcome of Brexit and the impact this may have on the UK dairy industry. Costs are increasing though, and further consolidation is inevitable, but for those with good efficient businesses, the outlook for the next 12 months remains positive.

LIVESTOCK

Beef

Ben Burton and Pam Jacobs

Since joining the EU in 1973, the beef sector has received significant support, initially through intervention, subsequently headage payments, and latterly direct payments. Whilst gross margins have declined since headage payments were replaced, beef businesses have continued to receive area-based direct support. These have, in many cases, been used to subsidise a loss-making beef enterprise.

Since the early 1970's the consumption of beef per head has fallen in the UK. However, population increases have contributed to an overall increase in the volume of beef consumed. The UK remains reliant on imports, especially from Ireland, to meet a significant portion of consumer demand.

Since the previous Outlook, the long cold winter and subsequent drought has created both straw and forage challenges, prompting additional heifer and cow slaughtering, as well as triggering a store cattle price fall. Finishers may ordinarily default to concentrates or alternative feeds; however competition from AD plants for alternative feeds, unfavourable concentrate prices and bedding costs may not only discourage throughput, but also encourage lower finishing weights. Consequent delayed fat deposition could enhance feed conversion efficiencies, whilst sacrificing fat class and confirmation potential. With intensive finishing margins eroding, it is difficult to perceive store prices holding.

Finished prices remain historically strong, but further significant price improvements pre-Brexit are improbable. If political uncertainties reduce, Sterling could strengthen, making Irish beef more competitive, applying downward pressure to UK prices. Conversely, if a 'No Deal' arises the opposite may ensue.

At the time of writing, the Brexit direction remains uncertain. A Free Trade Agreement with the EU may add cost to imported beef, through non-tariff barriers, such as customs checks. However, during the proposed transition period, the UK would remain part of the Single Market, so the effect of this would be delayed until after 2020.

A hard Brexit could result in tariffs that add further costs to EU imports. Brexit may therefore make imports less competitive, especially if there is 'No Deal'. These political uncertainties may see displacement of traditional supply chains as domestic and foreign purchasers seek to secure product.

Figure 11 **Historic Lowland Spring Calving Suckler Margins – 1972 to 2018**

£ per head	1972	1980	1989	2000	2010	2018
Sales	55	155	226	176	283	358
Subsidy	21	-	33	114	-	-
Total Output	***76***	***155***	***259***	***290***	***283***	***358***
Forage	14	41	62	55	130	108
Concentrates	8	27	32	25	37	36
Miscellaneous	3	11	18	52	59	96
Total Variable Costs	***25***	***79***	***112***	***132***	***226***	***240***
Gross Margin	**51**	**76**	**147**	**158**	**57**	**118**

Source: John Nix Pocketbook

Nevertheless, significant domestic price improvements may be limited by exchange rate movements and/or substitution by other meats.

Nearly 90% of UK exports are EU-bound. Prior to the Single Market, meat trade with the EU was not always trouble-free (BSE scares, French lamb protests etc.). Whatever the future relationship with the EU, any future food scares, regulatory divergence and new exporting costs could hit exports. With the UK outside the 'club', the EU will be far less interested in resolving any trade issues.

Any output price gains resulting from Brexit may be offset by corresponding imported input cost increases and possible disruption to supplies. Planning for key inputs may be prudent. The processing sector is already reporting disruption with staff shortages, particularly meat inspectors, roles typically filled by EU nationals. The registration of veterinary medicines, currently undertaken by the EU, is another area of uncertainty.

Longer term, if the UK pursues a cheap food policy, prices could fall. A particular threat may come from the Mercosur trade block, principally Brazil and Argentina. Australia and a developing hormone-free US beef sector could also pose a danger. Much further ahead, developments in 3D printers and lab grown meat could be a challenge to the beef sector.

As stated above, there is a core reliance on support payments in many beef businesses, which are expected to disappear post Brexit in England. Funding is likely to be targeted towards public goods (e.g. environmental enhancement), perhaps based on results rather than intentions. This will put real economic pressure on large suckler cow systems. This may result in more beef coming from the dairy sector, perhaps using sexed semen. Conversely, in Scotland, there may be an element of income support (e.g. continuing direct payments) and production support (e.g. Scottish Beef Calf Scheme), providing a degree of protection for suckler units.

> ***The UK remains reliant on imports, especially from Ireland, to meet a significant portion of consumer demand [for beef].***

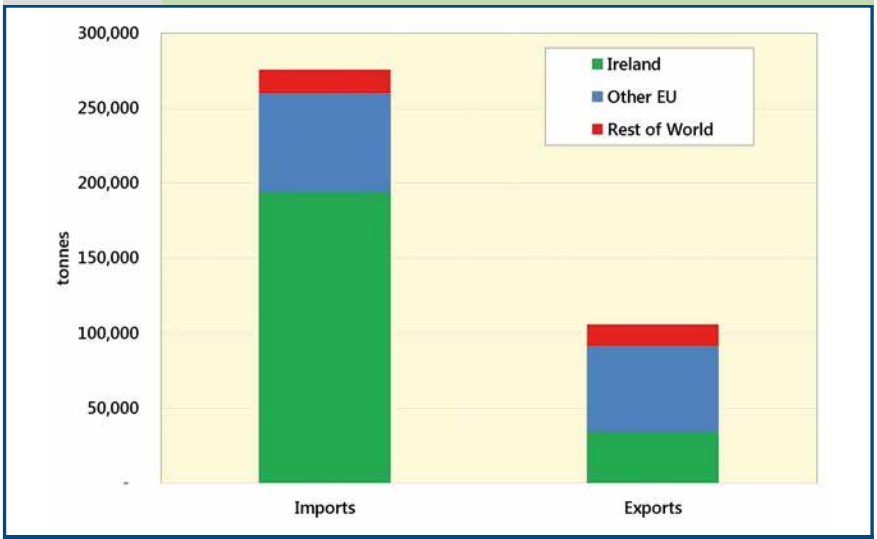
TB continues to be a challenge for those with suckler units, with some reducing cow numbers and becoming rearer-finishers, following movement restrictions due to TB control measures.

The global appetite for meat is raising environmental concerns, particularly greenhouse gas emissions. The Agriculture Bill suggests that future policy will address this, possibly including stricter controls in areas such as manure management. Retailers may go a stage further with environmental audits. Whilst this may incur additional sector costs, it could differentiate British Beef to maintain a price premium.

Technological advances offer considerable prospects; that is, if it can be delivered at farm level. Gene mapping progress continues, although the ECJ judged that GE (genetic editing) should be subject to the same restrictive regulations as GM (GE differs from GM in that it customises genetic makeup rather than utilising foreign genes). GE has endless possibilities for the sector, including rumen microbiology and disease control. Nonetheless, without political support and a robust PR campaign, GE may not be accepted by the consumer.

The sector faces an approaching political storm, bringing opportunities for those that can grasp them. Never has the time been more apt to ensure your business is financially robust enough to survive these difficulties and take advantage of the opportunities on the other side.

Figure 12 **UK Beef and Veal Trade - 2017**



Figures include fresh, chilled & frozen beef but exclude processed beef products and offal.

Source: AHDB / Andersons

LIVESTOCK

Sheep

David Siddle

2018 will be remembered for the record prices seen for hoggets in the spring, which peaked at over £6 per kg deadweight. The severe weather at lambing time and late spring reduced the lamb crop by an estimated 600,000 head. This was followed by drought conditions over the summer which delayed marketing and added costs to finishing the 2018 lamb crop.

In the meantime, the industry awaits its fate in regard to Brexit. A soft Brexit and bespoke free trade deal, giving continued relatively frictionless access to European markets, is likely to result in business-as-usual, at least for the next couple of years, until changes in farm support kick in. However, a hard Brexit adoption of WTO trading conditions and loss of European markets would put downward pressure on prices of perhaps between 20% to 40%, leading to a fall in breeding sheep numbers and downsizing of the industry.

The adjacent Figure 13 shows the product flow of the sheep marketing chain for the UK in 2017 and is a reasonable representation of the current norm for the industry.

The exposure of the UK sheep industry, should there be a hard Brexit, is well trailed; over 30% of production is exported with over 90% of that heading for the EU. The effects on price of additional costs to access or a loss of these markets is of significant concern.

> ***The lowest costs of production, and hence most competitive businesses, are those that make the best use of forage - most typically grazed grass.***

Figure 13 shows the amount of sheep meat imported is virtually equal to the amount exported and some would question why, in the event of a hard Brexit, home production could not simply replace imports?

This comes down to the seasonality of production. The majority of lambs produced each year are marketed in the July to December period, when reliance on exports becomes particularly acute, with imports filling the void in the first half of the year when home supplies are limited until new season lambs reach the market in significant numbers.

It has often been said that new systems of production should be developed in order to produce a more level supply through the year, however this would clearly come at a cost.

Costs of production are increasingly coming under more detailed analysis as the industry attempts to take a more professional approach to the business of sheep farming. Such analysis clearly shows that the lowest costs of production, and hence most competitive businesses, are those that make the best use of forage - most typically grazed grass. It seems unlikely that more expensive systems that produce lambs outside the forage growing season will be able to secure a sufficiently large price to make them economic. In addition, the UK has a long-established relationship with New Zealand of supplying our market when domestic supplies are less plentiful; the wider

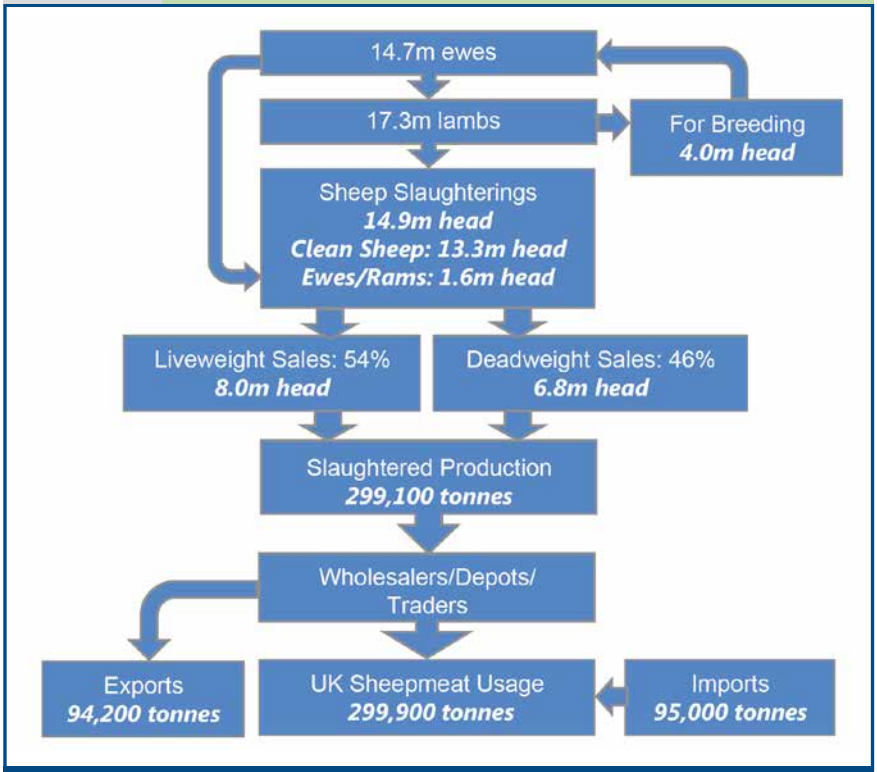
consequences away from agriculture of significantly restricting this trade are far from straightforward.

It remains the case that many sheep systems are currently unable to produce a profit without the inclusion of income support payments, currently largely in the form of the Basic Payment. In his Agriculture Bill Michael Gove has clearly set out the direction of travel he envisages for England, with a phasing out of Basic Payment by 2027 with all support thereafter based on the provision of public goods. The Scottish Government has provided more limited information on their proposed direction of travel post-Brexit, but it seems clear they wish to be much less radical, favouring a system similar to that currently in place aimed at continuing to provide income support and maintain levels of production. On this basis, perhaps sheep farmers on either side of the Border could be faced with a very different set of economics post-2020.

The overall budgets available as part of any domestic agricultural policy is likely to be a significant issue in the future. The current government has issued assurances of maintaining levels of farm support until 2022, the lifetime of the current Parliament, but no guarantee thereafter. It would seem competition for funds from other sectors, be it health, education, welfare or defence, will put significant pressure on any agricultural budget. In addition, payments based on the provision of public goods will have costs attached to them which will need to be borne by farming businesses before arriving at a net profit position.

Taking all of this into account it is difficult to see the UK sheep sector maintaining its current size in the longer term. We continue to believe a smaller, more productive, industry is likely to evolve post-Brexit, with that resulting from a soft Brexit being significantly larger than that which would follow from a hard Brexit. Systems unable to produce positive returns from the market look increasingly likely to fall by the way side.

Figure 13 **UK Sheep Industry Flowchart - 2017**



Source: AHDB

Sheep meat producers of the future will be those who develop systems which optimise productivity from a low cost base. Analysis points to the biggest variation between those who are successful in generating positive margins from their systems and those who are not, are labour and concentrate use. To this end, forage-based systems which maximise the use of grazed grass and systems which look to minimise handling and intervention are typically the most successful.

The adoption of animals with proven superior genetics and which can achieve better levels of performance, whilst exhibiting traits which makes them easier to manage would seem an obvious choice going forward. The rigorous culling of breeding stock for ease of lambing, mothering ability and lamb vigour are making a clear difference on many of the more progressive farms, cutting labour costs and allowing those involved to work smarter rather than harder.

LIVESTOCK

Pigs

Harry Batt

You may be relieved to know that this article will not discuss Brexit and the consequences of a 'hard' or 'soft' Brexit on the pig sector. Producers will have little influence over the outcome of the process, so instead we should focus on what we can influence and making sure we are in the strongest position to make the most of the opportunities that will arise, whatever the final agreement.

Over the last eight years the average All Pig Price (APP) has been 148.4 pence per kilogram (ppkg), with the average cost of production for UK producers at 145.6 ppkg for the period. That is a margin of approximately £16 per finished pig.

The AHDB suggest that the average producer has 69 sows, with each sow yielding an average of 25.6 piglets per annum. On this basis, the average producer would have made approximately £28,000 per annum, over the last eight years, which must cover drawings, debt servicing and reinvestment. This poses the question; is this enough to remain viable and sustainable for the long term?

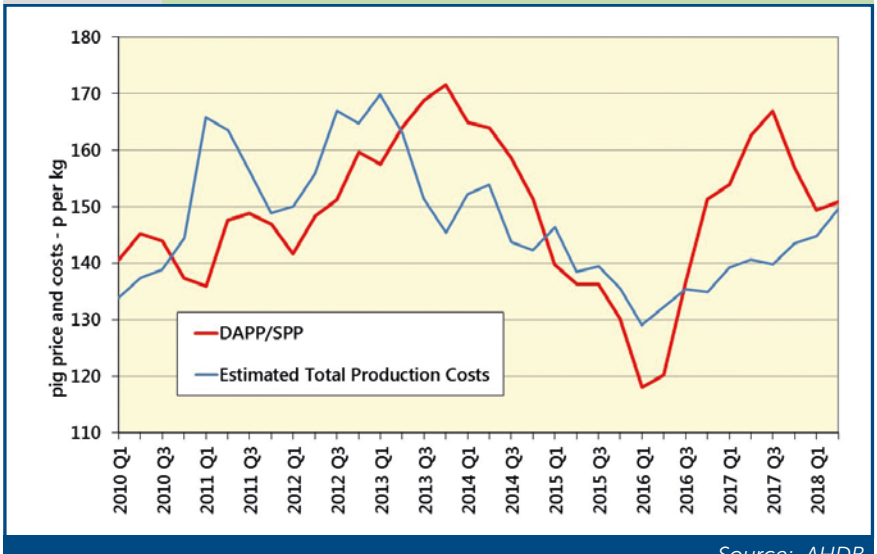
The target for producers should be to convert a minimum of 15% of turnover into profit. At this level, producers should be in a position to manage in periods of price volatility, which has been significant in the pig sector, with changes of up to 30ppkg experienced in the last five years.

The same principles hold for pig businesses as with any other sector of farming. Some key business management practices should be followed;

- *Understand and review your business.*
- *What are the objectives for the business and are they being met?*
- *Understand your true cost of production (including drawings, tax, debt reduction & reinvestment) and make informed decisions.*

It is important to focus on cost

Figure 14 **Pig Price and Cost of Production – 2010 to 2018**



Source: AHDB

control, as inflationary pressures have seen the real rate of costs increase, whereas the APP does not increase alongside inflation. Small changes can have a significant impact. For example; feed costs are over 60% of the total expenses for producers. Reducing feed costs by 5% could save the average producer £3.47 per finished pig, or £6,130 on the average holding per year.

Options for improving cost control should be reviewed;

- *Utilise buying options for feed, with fixed contracts and co-ops offering a more attractive price. However, remember to consider your cost of production and if necessary have a budget to inform these decisions.*
- *Review breeding decisions with feed conversion and feed efficiency important Key Performance Indicators during breeding stock selection.*
- *Review alternative feed sources and diet formulation with your nutritionist.*
- *Ensure the basics are right to allow for good feed conversion (e.g. housing conditions)*
- *Review property and finance costs. AHDB report that these costs account for approximately 20% of producer expenses, but can often be overlooked.*

> ***[High] standards offer the opportunity to add value to British products when exported, especially to emerging countries.***

Business plans should be reviewed and updated periodically, especially before implementing large scale changes. Ensure that the change (usually an investment) will yield a sufficient return on capital (ROC), with a target of greater than 15% ROC. The Farm Business Survey highlights that specialist pig farms have some of the highest average farm debt, at £363,000. Over an average term of 20 years this is an annual cost of in excess of £18,000. This would leave the average producer with £10,000 for drawings and reinvestment.

Cost of production is likely to be affected by the looming introduction of the Government's Clean Air Strategy, which could see a higher number of producers having to obtain environmental permits. Currently, permits are only a requirement for the largest intensive pig producers.

The UK has some of the highest welfare standards in the World. These standards offer the opportunity to add value to British products when exported, especially to emerging countries. This could help to alleviate the cost of welfare accreditation which is passed onto the producer. AHDB are well placed to work with the NFU and other organisations to deliver effective campaigns. However, producers have a responsibility to ensure that levy money is utilised effectively.

LIVESTOCK

Poultry

Lily Hiscock

The UK poultry sector has seen yet another year of change, with an increase in the number of units (both broilers and layers) and more concentration of the sector, with ever fewer key players dominating the processing/packing industries.

The egg sector, particularly free range is experiencing a challenging time as the number of units increases. Producers are preparing for 2025, when most retailers have committed to phasing out colony eggs; but this has led to an oversupply at present, with downward pressure on prices. This has been accentuated by grant funding being offered in parts of Northern Ireland and Wales encouraging further investment into poultry units, when there is limited demand. Grant funding in some situations has had the unintended impact of encouraging producers to sell at a low price (below the cost of production in some cases) to gain a contract, which is a requirement of the grant offer.

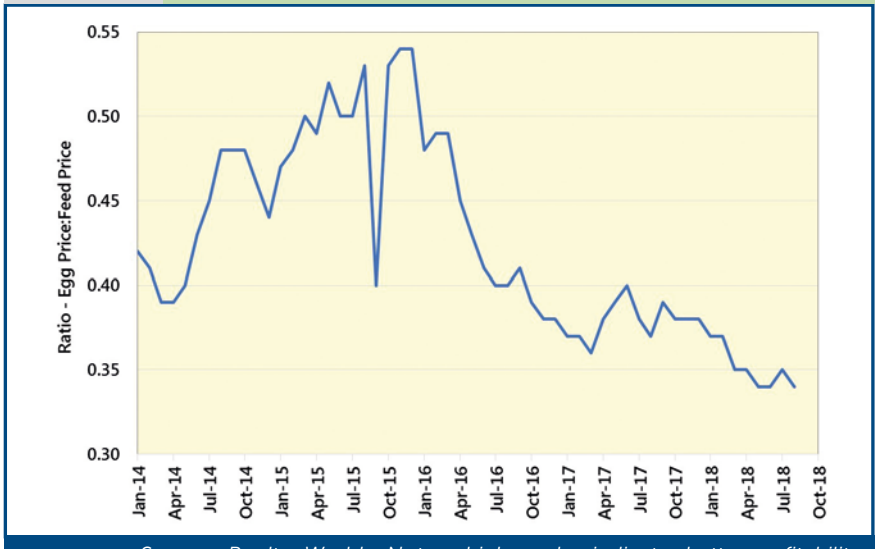
Whilst grant funding may be helpful, a business expansion should not simply occur because grant is available. Producers should ensure they are not being led by the grant, but that a grant is helping them to become leaders!

In the medium term, the free-range egg sector is likely to remain challenging, as supply and demand remains finely balanced. Furthermore, with input costs rising, specifically feed, the margin from production has diminished.

Any planned expansion and / or diversification needs to be carefully considered;

- *Contract to Supply: the majority of the egg and broiler sector is now controlled by few players. Many farmers are operating on a contract rearing / management basis. Prior to any investment, it is essential to understand whether a contract is likely to be available and the likely terms.*
- *Obtain Planning Permission: some areas of the UK have become overpopulated with poultry units (both broilers and layers) and the opportunity for more units is limited. For*

Figure 15 **Egg Producer Price (Free Range):Feed Price Ratio – 2014 to 2018**



Source: Poultry World Note: a higher value indicates better profitability.

example, it was recently announced that Avara Foods would be growing their business in Northamptonshire, not Herefordshire, as the density of poultry units in Hereford had become too great and posed a risk to the business.

- *Environmental Obligations: with the likely introduction of the Government's Clean Air Strategy, the poultry sector could come under some pressure. For units operating in excess of 40,000 bird places, holding an IPPC permit (perhaps for more birds than in situ) could become a valuable tool, with some suggesting it could effectively become a form of 'quota' in future, with permits being traded.*

For those already operating in the poultry sector, the key, as ever, will be to focus on the true cost of production to ensure a profit can be achieved in the most challenging times. Key areas to consider might be;

- *Feed – with the rising cost of poultry feed, producers should look to book forward for long term lengths where possible i.e. 12 months plus.*
- *Cleanout & Turnaround – by shortening the cleanout / turnaround period, this offers the opportunity for more batches in the year / increased annual egg production.*

> ***The free-range egg sector is likely to remain challenging, as supply and demand remains finely balanced.***

- *Labour – with 60% of direct poultry labour in the UK from the EU, producers should be working now to secure labour for the longer term to ensure no disruption in labour post Brexit.*
- *Other Markets – producers should continue to review their market to understand where opportunities lie. For example, if there is limited free range demand from retailers, are there opportunities to add value by selling direct to the market / changing system (e.g. Organic).*

In the long term, although challenging at present, the poultry sector is well placed to meet the requirements of UK consumers post-Brexit. The outlook is positive for those who can operate efficiently, profitably and react to the inevitable changes in the business environment.

CROPPING

Combinable Crops

Joe Scarratt, Sebastian Graff-Baker, and James Severn

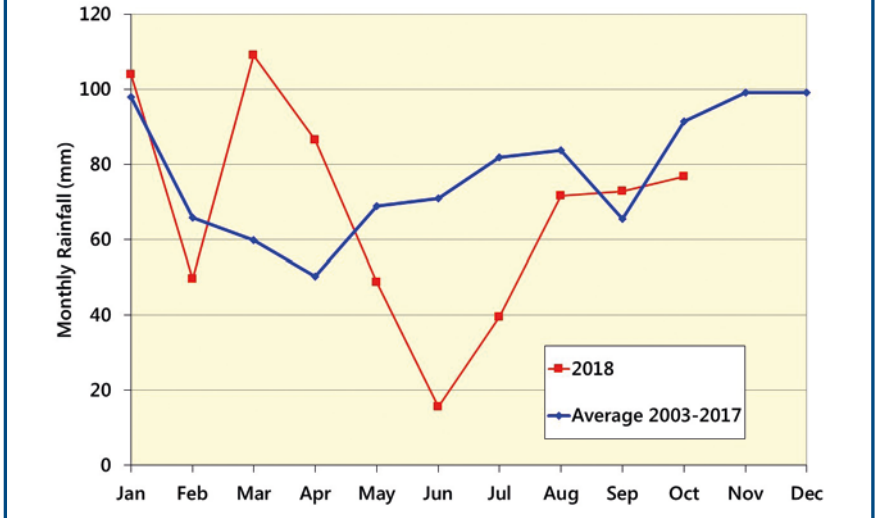
It would be difficult to write this year's Outlook article without a brief comment on the weather of the past 12 months. An incredibly wet, cold winter and spring, followed by drought conditions have challenged all, including the best businesses in 2018. However, perhaps quite surprisingly, the mood and outlook within the industry is far from negative, underpinned predominantly by an improvement in commodity prices. Those on heavier soils and in areas of the country which did receive some rainfall in May and June have achieved at least average yields, which when combined with sale prices in excess of five-year averages (even if a significant proportion was sold forward early), will result in some good financial results. However, this is in stark contrast to those on lighter soils and with a significant proportion of spring crops, which have been variable and frequently did not perform well.

Looking ahead to harvest 2019, growing costs will be considerably greater. Higher fertiliser and fuel prices will be the most evident, but continued increases are also likely for agrochemicals, machinery and even labour. This will lead many to question their approach to crop inputs.

Harvest 2018 is a stark reminder of the risk of high-input, high-output production strategies. In recent years, we have increasingly seen specialist cereal growers place an ever-greater emphasis on variable inputs (mainly fertiliser and sprays) in an attempt to achieve high yields. Of course, yield is king in terms of cost of production per tonne, an essential piece of information for any grower. However, for cereals, Mother Nature can give and take at least 2.5t per Ha.

> ***Looking ahead to harvest 2019, growing costs will be considerably greater.***

Figure 16 **Rainfall: England and Wales – 2018 and 15-Year Average**



Source: MetOffice / Andersons

Farm Business Survey data highlights that average spend on fertiliser and chemicals has increased by £79 per Ha and £90 per Ha respectively in the past 9 years (assuming no major price fluctuations per unit year to year), during which no major yield improvements have been observed. Assuming a wheat price of £150 per tonne, that equates to an additional 1.1 tonne per Ha of yield required to stand-still financially.

With the scale of many operations continuing to increase, 'blanket' approaches appear more and more evident. The risk is that a high-input approach, particularly to agro-chemicals, becomes normal behaviour. This is often the result of scale preventing sufficient management attention to the level of detail needed and/or flexible approach required to allow inputs to be targeted where they are really required. The variations can be significant - neighbouring farmers with the same yields under similar conditions and weed burdens, but with up to £100 per Ha variation in spend on chemicals. Inflation of inputs relative to output prices will, in the fullness of time, have to force a change to this approach.

At the other end of the scale, a low-input system necessitates a radical change to cultivations and rotations, not necessarily achievable on all soil types. In many scenarios, we do also have a minimum level of expenditure required, particularly on herbicides, if we are to retain control of grass weeds successfully.

Clearly, the key to profitability is assessing and balancing output potential with crop input costs. The precise 'fit' for your farm will depend on inherent soil fertility and therefore yield potential. This could be simply choosing whether or not to crop certain areas of the farm, not only between fields, but also within fields where some former field amalgamations have thrown together areas within fields of quite different productive potential.

Figure 17 **Winter Wheat Costs – 2007/08 and 2016/17**

£ per Ha	2007/08	2016/17
Fertiliser	*107*	*186*
Crop Protection	*127*	*217*

Source: Farm Business Survey

The same need to balance spending with potential returns applies to machinery, particularly given its increasing cost. It is essential to match kit and scale. This is increasingly difficult for many large businesses operating under short-term agreements, where land is lost and gained each year. In past editions of Outlook we have analysed the challenges and areas for improvement within labour and machinery costs, as their contribution to increasing production costs have been significant in recent years.

As a result, we increasingly see larger arable businesses questioning their business model. These generally focus on two points – input cost level and scale of operations. In many cases, we have assisted with a downsizing, albeit sometimes only modest, to enable an improvement in business profitability. This is not always easy to achieve and, in many cases, requires a completely open mind to re-look at the business from a 'blank sheet.' However, if the sector is to prosper following the removal of direct support, we must focus on appropriate scale and input use to manage risk and reward.

The Draft Agriculture Bill identifies an opportunity for some businesses to address the 'cropping everything in every year' approach that drives scale of operation. Businesses should consider utilising BPS income to make sensible investments in the next few years that improve efficiency and reduce operating costs. In addition, combinable crop businesses should consider the selectivity of cropping and identify those areas which may be better suited to future environmental schemes.

CROPPING

Potatoes and Sugar Beet

Nick Blake
and Jay Wootton

Potatoes

The growing season has been one of the most challenging in recent memory. The AHDB estimate that around 49% of the UK crop is irrigated (compared to 80% in East of England). Even the irrigated crops will suffer yield and quality issues this season. Ironically it would appear that some crops may have been over-watered, whilst others have been limited due to abstraction restrictions. One would hope this is an extreme year, with water shortages reinforcing the benefit of winter storage (see the separate Topical Issue article). With water tables low, and many irrigation reservoirs empty, it remains to be seen what impact the dry summer will have on winter fill.

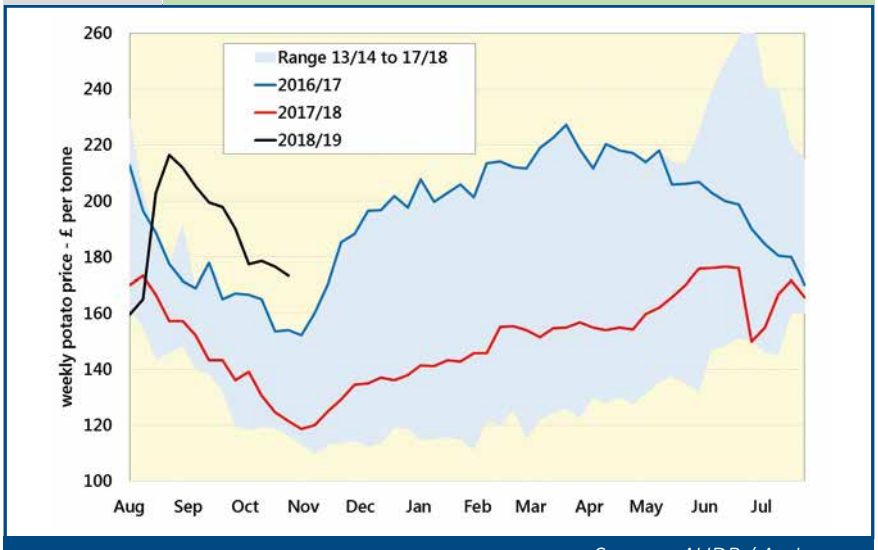
The AHDB estimated the 2018 planted area was reduced by 3% (at 119,000 Ha - the 3rd lowest on record), and due to the challenging growing season resulting in much lower yields, price will be at the forefront for both buyer and seller. At the time of writing (early Oct), ex field crops are being cleared at high prices and the storage season is yet to commence. It is likely that the rain which followed the dry period will lead to some agronomic issues, enough to challenge storing quality. There is concern that there could yet be a sting in the tail of a difficult growing season, with many growers having delayed burn off.

The overall pattern of production is similar across Northern Europe, where approximately 70% of the crop is contracted. The widespread shortage may reduce imports into the UK. Therefore, unlike previous seasons, price rises in the UK will be less constrained by imports being drawn in from Northern Europe.

> ***The growing season has been one of the most challenging in recent memory.***

High prices tend to invite fresh interest in costing models to arrive at a price formula. However, this

Figure 18 **GB Potato Prices – 2013 to 2018**



Source: AHDB / Andersons

takes no account of risk, and the required return will vary significantly between businesses.

Sugar Beet

The announcement of the 2019 sugar price came around eight weeks later than last year. Those who thought the delay might result in a price improvement will be very disappointed. In its Strategic Report from the 2017 Accounts, British Sugar cites the end of the EU Sugar Regime as an opportunity to increase sugar production.

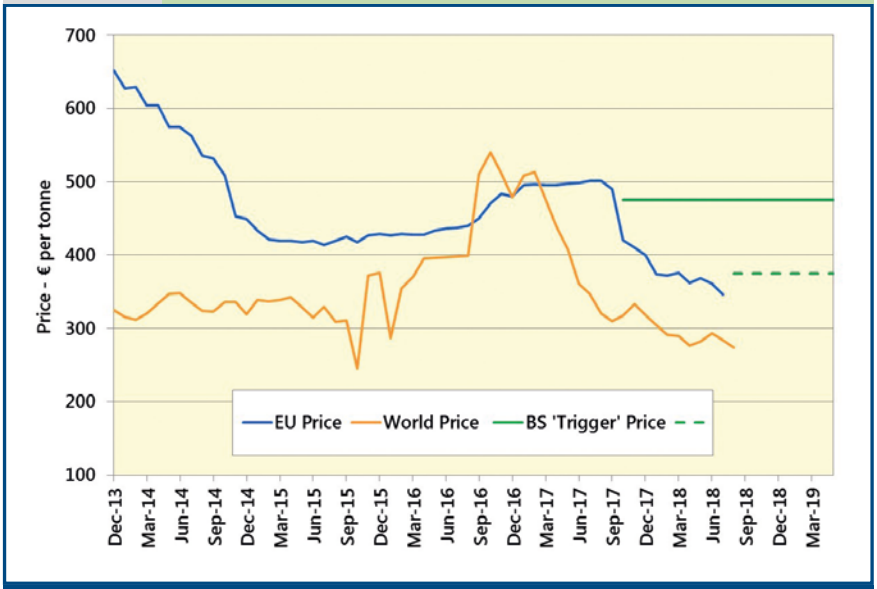
In previous contract pricing discussions, the wheat price, along with exchange rate, would have influenced the final beet price. The increase in wheat price in recent months will have raised growers' expectations, but the challenges facing the UK sugar sector with Brexit-related trade uncertainties, and the low EU sugar price (following abolition of quotas), mean that lower sugar production may be a (temporary) change in strategy for British Sugar. The price announcement would appear to be designed for a reduction in volume for the 2019/20 campaign.

In reaction to the record low in EU sugar price, the International Confederation of European Beet Growers (CIBE) called for, amongst other things, a level playing field; '...a stop to granting market access concessions and to put pressure on countries dumping subsidised sugar on the world market.'

Unsurprisingly, and as projected in Outlook 2018, there is unlikely to be any market related bonus paid for the 2017/18 crop. For the 2019/20 one-year contracts the threshold has been reduced to €375 per tonne from (€475). It remains to be seen whether this adjustment is viable given current market prices.

For one-year contract growers the price will remain (just) over the

Figure 19 **Sugar Prices – 2014 to 2018**



Source: EU Commission / British Sugar / Andersons

> ***The price announcement would appear to be designed for a reduction in volume for the 2019/20 campaign.***

£20 per tonne threshold. In two years' time, once the multi-year contracts have run their course, the price will reduce to £19.07 per tonne (depending on any subsequent price change), but the adjusted tonnage sold will then increase, to take account of the crown tare previously deducted.

British Sugar is working to take cost out of the supply chain with haulage and grower groups, whilst at the same time negotiating the price for a product where most of the alternative break cropping choices are loss-making (at net margin level).

At the time of writing beet harvest is in its early stages. Anecdotal evidence suggests that yields may not have been as low as first feared. When the rain finally did arrive, (unlike with potatoes) some beet crops appear to have recovered some of their original yield potential. Only time will tell how this challenging season will affect overall UK production.

CROPPING

Horticulture

John Pelham

After the 2018 vagaries of a late spring and hot summer, and talk of food shortages, for Outlook 2019 we take an overview of horticulture in the UK.

Horticulture – that is the production of vegetables, fruit, hops and ornamentals – occupies some 140,000 hectares, or less than 1% of the UK farmed area. By contrast the sector generates some 16%, by value, of all UK farm sales (both crop and livestock). With the exception of pigs and poultry, horticultural crops have the potential to produce a higher financial output per hectare than most other UK farm enterprises, although the production risks are considerably higher (e.g. frost and hail) and crop failures more commonplace than in, say, cereal production.

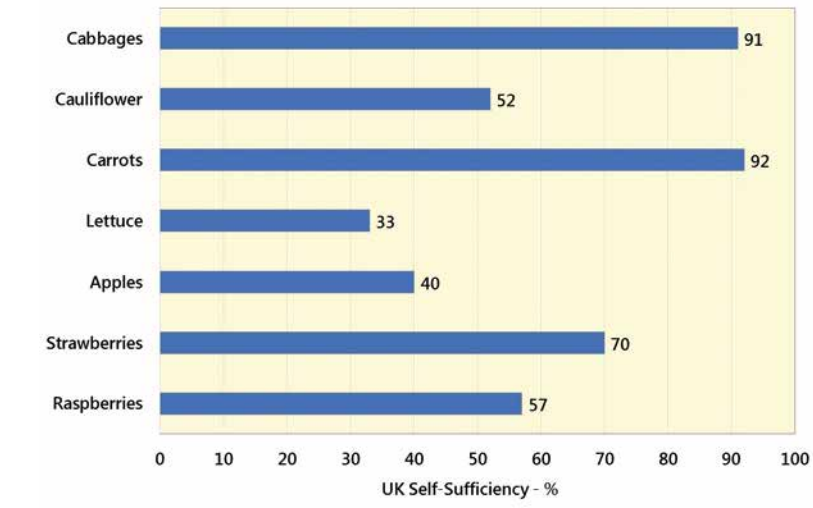
Horticulture is an important supplier to the domestic market and, in some categories such as cabbages and carrots, provides most of the UK consumer's requirement. Figure 20 shows UK self-sufficiency for some key horticultural crops.

Horticultural enterprises are intensive, with high output, often of perishable produce, requiring a significant investment in working capital, the most important of which for many businesses is labour. To put this into context, for the most high cost systems (e.g. glasshouse production) labour expenditure might exceed £100,000 per hectare, whilst for many crops labour expenditure is in the range £10,000-£50,000 per hectare. By comparison, labour costs for an intensive dairy enterprise might be £400-£800 per hectare.

There are two key labour issues currently having a significant impact on the economics of horticultural crops – cost and availability. Wage inflation is a fact of life in a western economy and horticulture has been successful in adopting a range of technical developments – including new crops, varieties and growing systems – to create the productivity gains to counter this cost increase. The Labour article earlier in Outlook highlights the recent sharp increases in hourly rates.

In 2018 the continuing weakness of Sterling and uncertainty over our

Figure 20 **UK Self-Sufficiency in Horticultural Products - 2016**



Source: DEFRA

future relationship with the EU has made the recruitment and retention of adequate labour increasingly difficult for UK growers. It is therefore encouraging to see the UK Government's announcement of a new pilot scheme for non-EU seasonal workers from spring 2019 to the end of 2020. Whilst initially only for 2,500 workers (c.f. current annual requirement of 75,000) it is a start to addressing this central issue for producers.

> ***There are two key labour issues currently having a significant impact on the economics of horticultural crops – cost and availability.***

With wage inflation continuing, growers will become more selective about both the amount and type of cropping that they undertake, making use of technical advances that reduce the requirement for labour; the continuing conversion of production from soil to substrate for a number of crops is one such example. The UK grower has invested significantly in improving productivity over the last twenty years, with matching financial support from the EU Fruit and Vegetables Aid Scheme for Producer Organisations (grower marketing cooperatives). The success of this collaborative approach has created significant benefits for the UK consumer, with an increasing supply of high quality, UK grown fresh produce, with few price increases. The UK Government, to their credit, has decided to continue this collaborative approach with Producer Organisations after our departure from the EU.

CROPPING

Topical Issue - Irrigation

Jamie Mayhew

With one of the driest summers on record behind us, an article on irrigation and water availability seems appropriate! Due to the forthcoming changes with the abstraction regulations, those who currently hold licences are encouraged to plan ahead to ensure they do not lose out in the reform.

Although agriculture accounts for less than 1% of total abstracted water, it holds 64% of the total abstraction licences and in the 10 years up to 2016, on average, only 40% of the total licensed water was actually abstracted.

Abstraction Licences to become 'Permits'

By April 2020, it is intended that abstraction licences will become 'permits' under the Water Abstraction Plan.

To help you plan your future water security, below is a list of the expected changes:

- *Around 600 unused abstraction licences to be revoked by the end of 2018.*
- *Time limited licence holders will have to apply to renew (2,300 of the 20,000 licenses by 2021) - they will have their permits renewed if they pass the following tests:*
  - *the abstraction is sustainable.*
  - *the abstractor has a reasonable need for the water.*
  - *the abstractor will use the water efficiently.*
- *By the end of 2022, previously exempt abstractors will have to hold a permit - i.e. those using drip irrigation.*
- *Permanent licences to be reviewed and moved on to time limited permits.*
- *Reduction in underused licences.*
- *Abstraction will be allowed when there is flow available, rather than between specific months of the year - i.e. encouraging water storage.*
- *Simplified trading systems online, allowing those in individual catchments to trade their water more freely.*
- *The EA will be able to adopt 'low flow conditions' on a catchment basis, allowing growers to continue abstraction, albeit at a reduced rate.*

In April, we saw the first four 'priority' catchments selected to focus on access to water (Idle & Torne in the East Midlands, The South Forty Foot in Lincolnshire and Northamptonshire, East Suffolk, and the Cam & Ely Ouse). Using these four catchments, the Environment Agency (EA) is looking to trial new approaches to address issues such as unsustainable abstraction. The intention is that by 2027, all abstraction licensing strategies will have been updated in all catchments across the UK.

Water Security

For those who rely on water, on farm water security is becoming ever more essential. The best way to ensure this will be to increase on farm water storage through the use of storage reservoirs (either individual or shared), harvesting high flows during the winter and storing for use the following summer. With costs for constructing a reservoir being in the region of £2-3.50 per m^3 (lined) and £0.65-0.85 per m^3 (unlined), this will mean that for some, this simply cannot fit within their annual Capital Expenditure budget. To encourage growers to improve their water security, grant funding has been made available.

In the latest round of RDPE Funding (which closed in June), the Countryside Productivity Scheme offered grants up to 40% (minimum grant size of £35,000, £87,500 total project cost) for the following projects:

- *construction of a water storage reservoir.*
- *abstraction point, pump and pipework to fill the reservoir.*
- *irrigation pump, controls, underground water distribution main.*
- *water metering equipment.*
- *best practice application equipment such as boom or trickle irrigation.*
- *software and sensors to optimise water application.*

It is expected that a new round will open in the New Year.

It is clear that the changes to water abstraction legislation will affect many growers. Unfortunately holding a licence now does not guarantee a new permit of the same quantity in the future. It is important to plan ahead to ensure that you can continue to operate your businesses effectively, whether it be by investing in storage reservoirs or update pumping systems to prepare for potential low flow conditions. Shared reservoirs between neighbouring growers is a potential solution to ensure that each individual permit holder maximises their water usage, by trading water internally within their group.

NATIONAL ADMINISTRATIONS

Scotland

Ben Kellagher and Alex Caraffi

The 2018 season has, yet again, been one with its own particular challenges. It has dealt rewards and punishments in different measures depending on your sector of the industry and location within the country. The past twelve months falls into two distinct periods. Poor autumn sowing conditions were followed by a long winter with heavy snow, leading to difficult conditions on many hills, particularly affecting the sheep sector. Spring sowing correspondingly started late and grass growth even later, but before we could really acknowledge spring, it seemed summer was upon us. Rainfall has been significantly below average throughout much of the country and the impact on fodder, straw and on yields has been well trailed. Livestock prices seemed to rally for old season while new season stock struggled early-on, given forage concerns, although improving of late. The rising grain price and struggles on malting barley quality, which pushed malting prices up, has come as something of a relief for many, with yields below average.

Payments under the 2018 Basic Payment Scheme began in early October, with a 90% loan scheme again being available. The Scottish Government have explained that this early payment is a direct result of the poor conditions experienced by many farmers during 2018. However, with further IT system upgrades taking place during the summer you may be forgiven for wondering whether the system is capable of making payments, despite it now being the fourth year of the current regime. There remain a large number of 2018 payments outstanding for LFASS, AECS, forestry grants, sheep upland support and the beef calf scheme and the capacity to ensure these are paid in reasonable time continues to be in doubt. This has been a continuing theme since the current support regime was introduced and perhaps influences the Scottish Government's doubts over their ability to implement new policy before 2024; more on this later.

The 2019 crops have gone into the ground in what must be some of the best conditions of the past decade, with good soil conditions often being followed by showers of rain at the right time. Good grass growth after the drought indicates that fodder might not be as short as was initially feared. Grain markets for the coming year are currently strong although increased input prices, particularly for fertiliser, may depress gross margins.

> ***Scotland has wonderful natural resources, providing both food and amenity for the Scottish public.***

Discussing 2019 and future years without reference in some way to Brexit would be impossible, but trying to predict with any certainty what things will look like for Scottish agriculture post-March 2019 is a thankless task. In our Outlook article for 2018 we discussed the divergence of priorities between Defra and the Scottish Government. The recent Defra Policy Paper and Scottish Government consultation highlight these differences. The latter proposes minimal changes to current funding and payment schemes through to 2024, rather

than introducing new ways of thinking about these payments and schemes, as Defra has. The Scottish Government consultation states that "It would be an explicit aim of the transition period [ed. to 2024] to avoid major new initiatives and changes to existing schemes". One area where it would seem the Scottish Government are willing to introduce change is through Capping and it has stated its preference for a simple system which is likely to effect a small number of high-earning businesses.

Scotland has wonderful natural resources, providing both food and amenity for the Scottish public. It seems to be a missed opportunity not to be considering how land managers could be encouraged to improve the outputs from this natural resource in food and environmental terms. This would surely be more in line with public aspirations? What is apparent from the Defra Policy Paper, and the resulting 'myth buster' statement from the UK Government, is that the Scottish Government has not engaged on future policy with Defra like the Welsh and Northern Irish Assemblies have. This was no doubt about political manoeuvring, but when considered in conjunction with the Scottish Government's consultation, it is clear that Scottish Government priorities lie elsewhere to agricultural policy reform.

A significant gap in the consultation surrounds the policy on young farmers and new entrants. Grant support aimed at these groups was removed earlier in the year and there appears to be no information on reintroduction of these schemes or the launch of new ones. Given the often-heard rhetoric on the subject from the Scottish Government, this is disappointing.

One Brexit hope from those farmers who voted for it, was for a slashing of the burdens of EU rules and regulations. The Scottish Government consultation sets out a desire to simplify application and payment procedures during the transition period, but ever since Brian Pack's investigation into cutting red tape this has been an aspiration of the Scottish Government that has met with little success. There are few indications in any policy proposals which suggest a reduction in the farmer's administrative burden.

LFASS payments were again protected at historic levels in 2018, with the proposed reductions in this payment again postponed until 2019. This is the second year this has happened, and so whether the proposed reduction comes to pass in 2019 remains to be seen. Recipients would be well advised to keep the 20% reduction in payment in their budgets for 2019.

A key strand of Scottish Government policy is Land Reform. Reform of agricultural tenancies and related areas seems to be very slow in occurring after some initial quick progress following the Land Reform Bill 2016. The current focus appears to be on understanding and affecting the balance of land ownership in Scotland, with a clear inclination to regard large rural estates as undesirable. We suspect that any results from policy initiatives may take a number of years to become apparent.

NATIONAL ADMINISTRATIONS

Wales

David Thomas and Kerry Jerman

Discussions in the Welsh farming sector are dominated by the consultation document on future farm policy issued by the Welsh Government – 'Brexit and our land: Securing the future of Welsh farming'. Outside of the constraints of the Common Agricultural Policy, and following devolution, this will be the first time ever that a policy can be produced specifically for the needs of Welsh agriculture. Given this, it is not surprising that all parties are keen to make the most of this historic opportunity.

The Welsh Government's proposals would see the BPS (and all other current CAP support) replaced by a Land Management Programme that has two main lines of support;

- *An Economic Resilience Scheme comprising grants, loans and guarantees to individual businesses to improve productivity, increase efficiency, aid diversification, and mitigate business risks. There would also be group support in areas such as skills & training, and developing markets.*
- *A Public Goods Scheme, paying land managers an annual income for delivering environmental and other benefits. This would focus on five themes – decarbonisation & climate change, habitats & ecosystems, flood risk reduction, air & water quality, and heritage & conservation.*

> ***This will be the first time ever that a policy can be produced specifically for the needs of Welsh agriculture.***

In terms of paying for public goods, it seems to us to be difficult to measure the value of these and has the potential to be a very complex system. As ever, the devil will be in the detail of any scheme. Not surprisingly, the consultation only provides a broad overview of the plans, with no indication of the split in funds between capital support and income via public goods. There is also no detail on the types of works / options that land managers will be expected to undertake.

The consultation document suggests that Wales has not progressed as well as other parts of the UK when it comes to farm efficiency. A move away from the area-based BPS is seen as a way of driving business improvement. What is less explicitly stated in the consultation is that not all current businesses are likely to be able to 'up their game', simply because direct payments are being removed. Therefore, any improvement in efficiency is almost certainly going to have to involve a significant change in who is doing the farming on many holdings in Wales.

Part of the reason for the low level of efficiency in Wales is that farming is dominated by beef and sheep – sectors that, arguably, have been more traditional and less innovative that other parts of agriculture – not only in Wales but across the UK.

The grazing livestock sector has become very dependent on direct support as Figure 21 illustrates. According to Farm Business Survey data, for an average cattle and sheep unit, BPS and environmental income account for almost all Farm Business Income (profit). This is especially true in the Uplands where

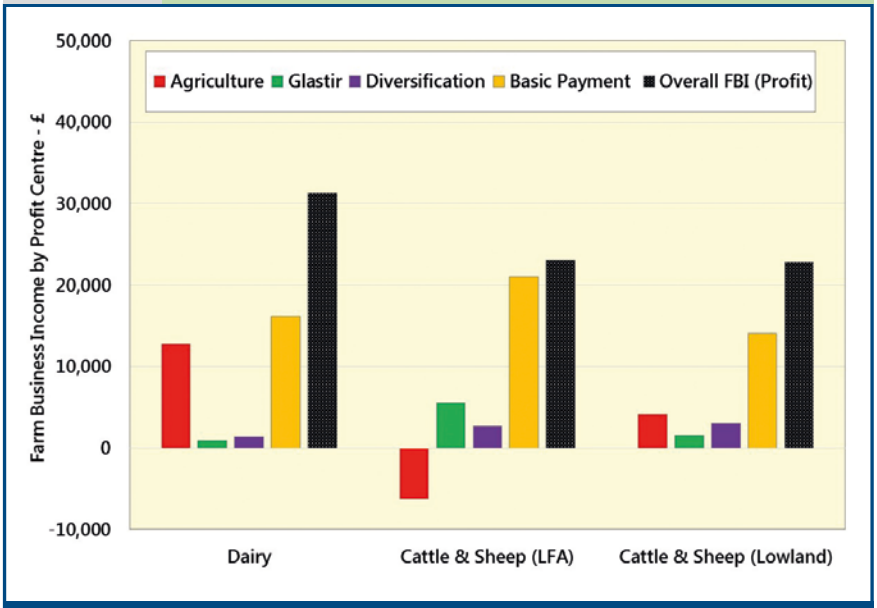
the farming activity is loss-making. There is an interesting argument whether the efficiency of cattle and sheep farms has been held back by the relatively high levels of support they have enjoyed historically or, if such farms need higher support because of the difficulty in making a profit from such systems. The next few years may help provide an answer to this question. In any case, because of its structure, Welsh agriculture appears to face a greater challenge from the loss of direct support than other parts of the UK.

Whilst many can make efficiency gains, these alone can probably only replace a third, or at best, a half, of current direct support. Leaving many businesses well short of a sustainable profit level. Income generation from new enterprises will have to be an increasing priority. In the future, generating payments for providing public goods may just be seen as one more type of 'farm diversification' – although the consultation provides no quantification of the income levels that might be available from this.

Currently BPS is reducing on the most productive farms, but increasing substantially for hill units with large areas of common grazing, as Wales moves to full flat-rate regional payment by 2019. The projected phase-out of direct payments by 2024 and replacement by the Land Management Programme is likely to see another substantial shift in funding flows over the next five years.

This article has concentrated on support issues, but, of course, markets will also play a key role in the future prosperity of the sector. At the time of writing, the outcome of Brexit is still unclear. Most studies find that the sheep sector would be one of the most adversely affected by a 'hard' or 'no deal' Brexit. In Wales especially, many

Figure 21 **Farm Business Income in Wales by Profit Centre – 2016/17**



Source: Farm Business Survey / Welsh Government

Shock waves are eventually hitting Wales as its farm businesses have been sheltered in the past with the historical BPS system and receiving payments on time.

light lambs are currently exported to Mediterranean destinations. Any interruption to this trade would have severe consequences for farmgate prices.

Shock waves are eventually hitting Wales as its farm businesses have been sheltered in the past with the historical BPS system and receiving payments on time. Businesses will need to fundamentally review their options for the future in order to make the right choices in this new era.

CONTRIBUTED ARTICLE

Science and Agriculture

Bill Clark - NIAB

The National Institute of Agricultural Botany (NIAB) was founded in 1919. As it approaches its centenary in 2019, Bill Clark, NIAB's Technical Director, looks at the importance of science in farming.

Science has always been at the core of agricultural progress although now we take much of it for granted. When NIAB was established in 1919 wheat yields in the UK were about 2 tonnes per hectare, and they stubbornly stayed at that level for 30 years. Plant breeding as we know it today did not exist. At the turn of the 20th century farmers were growing landraces of wheat – regionally adapted but quite diverse crops. True 'varieties' had not yet been bred. Mendel's work on inheritance in the 1850s and 1860s was largely ignored until the early 20th century when the idea of 'crossing' two different plants and getting a new plant with the combined characteristics of the two parents was revolutionary. Much of the early work on wheat was carried out by Roland Biffen at the Plant Breeding Institute in Cambridge, at that time a part of the agriculture department of the University of Cambridge. Biffen bred the wheat varieties Little Joss and Yeoman, both major steps forward in plant breeding at the time (see Figure 22).

Figure 22 **100 Years of Wheat Varieties in the UK**

Source: NIAB

Over the last 100 years the wheat yields of new varieties have continued to increase to the point now where the world wheat yield record is 16.8 tonnes per Ha. This is currently held by Eric Watson, a New Zealand farmer but growing a UK wheat variety (Oakley) that is over 10 years old. Wheat breeding in the UK continues to deliver yield increases of about 0.5% per year in Recommended List trials. However, this is no longer translated into yields on UK farms. On-farm yields reached a plateau in the late 1990s (see Figure 23) and many farmers struggle to raise yields, despite new varieties offering higher potential. There are many reasons behind this – including the move to min-till, deep soil compaction, sub-optimal nitrogen nutrition, black-grass control issues, but there is no single overriding factor. What is clear is that without the increase in genetic

yield potential, yields on farm would probably have declined during the last 20 years.

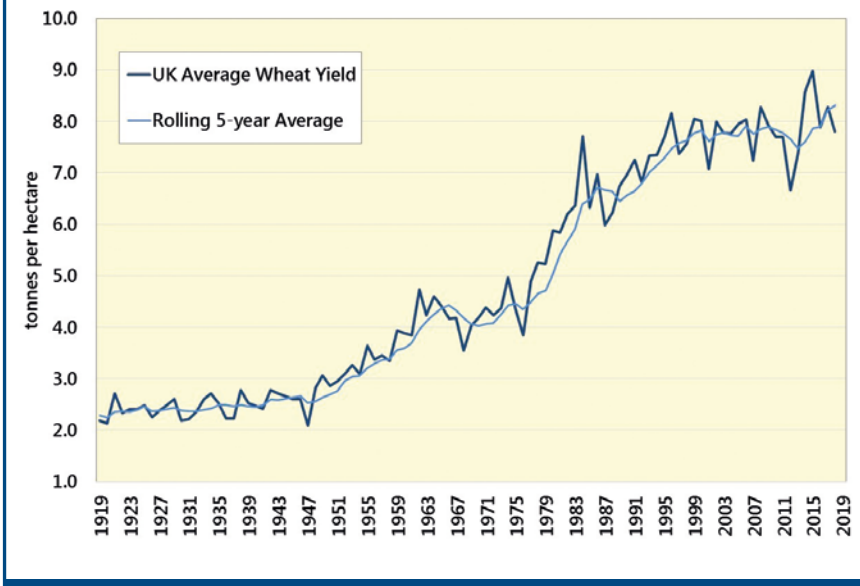
There are some UK farmers who have managed to harness the yield potential of modern wheat varieties and are well above the yield plateau – getting 15 tonnes per Ha with good soils, no water limitation and attention to detail, but these are the exception.

The agronomic inputs in these crops are at least as important as the choice of variety (plant breeders may not agree) so keeping science at the heart of agronomy is vital. Crop protection products were largely absent 100 years ago – the only 'fungicides' around were copper compounds and mercury-based seed treatments which at least prevented the earlier frequent crop failures due to bunt. In the 1880s copper sprays were used to control potato blight (40 years too late to prevent the potato blight famine that devastated the Irish population in the 1840s).

Systemic, foliar fungicides which we now rely on to protect our high-yielding crops were not even a dream 100 years ago. They didn't appear until the 1970s and 80s. Science has given us a portfolio of fungicides, more effective and safer than ever, which help to maintain our world-record yields. But they are increasingly under threat from ever-tightening EU legislation. With many more pesticides being 'lost', this will undoubtedly have a negative impact on yields. The agronomy behind high yields is becoming ever more challenging with herbicide and fungicide resistance also pushing yields down.

The agrochemical industry is finding the increasingly stringent regulations around the registration of crop protection products challenging and costly so inevitably, the pipeline of new products is dwindling. This has led to farmers having to adopt much more integrated approaches to crop production with more non-chemical approaches having to be adopted. This is an integration of science – both chemical and agronomic, not a 'back to the future' scenario as the good old days were far from 'good' - wheat yields of 2 tonnes per Ha along with only copper and mercury-based fungicides would lead to widespread famine today. These issues drive the applied research that NIAB is well known for – thus research on improving soils, managing weed populations with non-chemical methods, and realising the yield potential of varieties under climate change, is crucial for profitable farming in the UK.

Figure 23 **UK Wheat Yields 1919-2019**



Source: DEFRA

> ***With growth in UK agricultural productivity lagging behind other countries ... there has never been a greater imperative to ensure the effective development, delivery and uptake of on-farm innovation.***

NIAB is also closely involved with UK plant breeders. Its research on resynthesizing wheat (crossing Durum wheat with a wild goat–grass, Aegilops Tauschii) and multi-parent crossing has provided UK plant breeders with new genetic diversity that can be fed into new UK varieties. NIAB has recently begun research into gene editing technology – one of the next 'big things' in plant breeding. Gene-editing tools don't insert foreign genes into a plant to create a new trait (as typically happens with conventional GMOs) but, rather, tweak the plant's existing DNA. With no new DNA present in the plant it was thought that this technology would be more acceptable to the public and would be outside the existing regulatory process for GMOs. This optimism was dashed

in July 2018 when the European Court of Justice (ECJ) decided that gene-edited crops should be subject to the same regulations as conventional GMOs. This decision will undoubtedly limit the use of gene-editing in European crops; yet again putting UK and European farmers at a huge disadvantage. With growth in UK agricultural productivity lagging behind other countries, and Britain's farmers facing not only a reduction in production-based support but also the prospect of competing on increasingly open global markets, there has never been a greater imperative to ensure the effective development, delivery and uptake of on-farm innovation.

Science has given us the highest yields in history with the safest food we have ever eaten. We are living longer than we ever have. When NIAB was formed in 1919 the average male life expectancy in the UK was 55.9, today it's 79.4; partly because of scientific medical progress but also because we have a supply of safe, nutritious food. In 1919 the global population was 1.7 billion. Today it's 7.6 billion. Wheat yields now are 5 times what they were in 1919 but we have nearly 6 billion more people to feed. On-farm wheat yields have reached a plateau in most developed countries but global population growth will continue at just over 1.0% per year – that's 83 million people per year. The world's population is set to exceed 9 billion by 2050, and the UN Food and Agriculture Organisation (FAO) predicts that food production will have to increase by 70% over the next 40 years to keep pace. With limited land available to bring into production, the only realistic prospect of delivering sustainable food security is through increased productivity and improved efficiency on land that is already farmed.

Science in agriculture has an ever-more important role. The challenges of the past have mostly been around increasing productivity to keep pace with population growth and provide food security. But challenges for farmers today are greater than ever – they are constantly being told that they need to produce more food efficiently and safely, meet market demands, optimise the use of inputs, minimise environmental impact and provide positive environmental goods and services – all at the same time. The problem is, most of these challenges require technological or science-based solutions. These can only come from a solid science foundation in the industry, not simply from the farmers themselves. Agricultural science plays a key role in enabling farm businesses to respond to these challenges.

So what has science ever done for farming? It's a bit like the famous Monty Python question 'What did the Romans ever do for us.... apart from roads, medicine, education, aqueducts, wine, public order, irrigation, medicine.....'

So what did science ever do for farming? – apart from high yielding crops, disease resistance, fertilisers, crop-protection products, safe and nutritious food, alleviating global famine....

The Consultants of the Andersons Businesses

THE ANDERSONS CENTRE

David Neill
t: 01970 823005
m: 07977 039373
dneill@theandersonscentre.co.uk

Richard King
t: 01664 503208
m: 07977 191427
rking@theandersonscentre.co.uk

Graham Redman
t: 01664 503207
m: 07968 762390
gredman@theandersonscentre.co.uk

George Cook
t: 01664 503217
m: 07836 707360
gcook@theandersonscentre.co.uk

Joe Scarratt
t: 01664 503204
m: 07956 870263
jscarratt@theandersonscentre.co.uk

Caroline Ingamells
t: 01664 503209
m: 07501 342772
cingamells@theandersonscentre.co.uk

Tony Evans
t: 01664 503211
m: 07970 731643
tevans@theandersonscentre.co.uk

Jonathan Hughes
t: 01664 503222
m: 07733 503966
jhughes@theandersonscentre.co.uk

Karolina Klaskova
t: 01664 503200
m: 07907 725500
kklaskova@theandersonscentre.co.uk

David Thomas
t: 01874 625856
m: 07850 224524
dthomas@theandersonscentre.co.uk

Kerry Jerman
t: 01874 625856
m: 07838 591799
kjerman@theandersonscentre.co.uk

Michael Haverty
t: 01664 503219
m: 07900 907902
mhaverty@theandersonscentre.co.uk

Oliver Hall
t: 01664 503200
m: 07815 881094
ohall@theandersonscentre.co.uk

ANDERSONS EASTERN

Jay Wootton
t: 01284 787830
m: 07860 743878
jwootton@andersons.co.uk

Nick Blake
t: 01284 787830
m: 07748 631645
nblake@andersons.co.uk

Jamie Mayhew
t: 01284 787830
m: 07540 686759
jmayhew@andersons.co.uk

Ben Burton
t: 01284 787830
m: 07775 877136
bburton@andersons.co.uk

Pam Jacobs
t: 01284 787830
m: 07787 445433
pjacobs@andersons.co.uk

ANDERSONS MIDLANDS

John Pelham
t: 01544 327746
m: 07860 508019
jpelham@andersons.co.uk

Sebastian Graff-Baker
t: 01664 821931
m: 07831 454320
sgraff-baker@andersons.co.uk

Mike Houghton
t: 01722 782800
m: 07836 707096
mhoughton@andersons.co.uk

Lily Hiscock
t: 01722 782800
m: 07854 811464
lhiscock@andersons.co.uk

Harry Batt
t: 01722 782800
m: 07948 245525
hbatt@andersons.co.uk

ANDERSONS NORTHERN (ENGLAND)

Greg Ricketts
t: 01347 837100
m: 07768 883111
gricketts@andersonsnorthern.co.uk

James Severn
t: 01347 837100
m: 07836 707094
jsevern@andersonsnorthern.co.uk

David Wadsworth
t: 01347 837100
m: 07759 815116
dwadsworth@andersonsnorthern.co.uk

Laura Ricketts
t: 01347 837100
m: 07813 343903
lricketts@andersonsnorthern.co.uk

Josh Thompson
t: 01347 837100
m: 07512 647780
jthompson@andersonsnorthern.co.uk

ANDERSONS NORTHERN (SCOTLAND)

David Siddle
t: 01968 678465
m: 07885 809119
dsiddle@andersonsnorthern.co.uk

Ben Kellagher
t: 01968 678465
m: 07770 652959
bkellagher@andersonsnorthern.co.uk

Alex Caraffi
t: 01968 678465
m: 07970 984545
acaraffi@andersonsnorthern.co.uk

Charlotte Dun
t: 01968 678465
m: 07572 149631
cdun@andersonsnorthern.co.uk

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ANDERSONS THE FARM BUSINESS CONSULTANTS

Visit Andersons Website: ***www.andersons.co.uk***

ANDERSONS MIDLANDS

www.andersonsmidlands.co.uk

SALISBURY
Contact: Mike Houghton
Tel: 01722 782800
mhoughton@andersons.co.uk

LEICESTER
Contact: Sebastian Graff-Baker
Tel: 01455 823425
sgraff-baker@andersons.co.uk

HEREFORD
Contact: John Pelham
Tel: 01544 327746
jpelham@andersons.co.uk

ANDERSONS NORTHERN

www.andersonsnorthern.co.uk

YORK
Contact: James Severn
Tel: 01347 837100
jsevern@andersonsnorthern.co.uk

EDINBURGH
Contact: David Siddle
Tel: 01968 678465
dsiddle@andersonsnorthern.co.uk

ANDERSONS EASTERN

www.andersonseastern.co.uk

BURY ST EDMUNDS
Contact: Nick Blake
Tel: 01284 787830
nblake@andersons.co.uk

THE ANDERSONS CENTRE

www.theandersonscentre.co.uk

MELTON MOWBRAY

Farm Consultancy
Contact: Joe Scarratt
Tel: 01664 503211
jscarratt@theandersonscentre.co.uk

Business Research
Contact: Richard King
Tel: 01664 503208
rking@theandersonscentre.co.uk

Corporate Consultancy
Contact: David Neill
Tel: 01664 503200
dneill@theandersonscentre.co.uk

The Pocketbook
Contact: Graham Redman
Tel: 01664 564508
enquiries@thepocketbook.co.uk
www.thepocketbook.co.uk

Agro Business Consultants
Contact: Richard King
Tel: 01664 567676
enquiries@abcbooks.co.uk
www.abcbooks.co.uk

BRECON
Contact: David Thomas
Tel: 01874 625856
dthomas@theandersonscentre.co.uk

KOESLING ANDERSON
Contact: Jay Wootton
Tel: 01284 787830
jwootton@andersons.co.uk

ANDERCOURT
Contact: Jay Wootton
Tel: 01284 787830
jwootton@andersons.co.uk

ANDERSONS