2013- Opportunities and Challenges

Keeping positive can be difficult when everything feels as if it’s against us. The weather, the market price, the availability of feed to name but a few, are challenges that are testing management, and resolve for all farmers, not just in the Isle of Man. There will be knock on effects from damaged soil structure, poor stock performance and tested bank balances. However I am confident that we can learn from these challenges and look to the opportunities that may be presented in 2013.

Some simple measurement and monitoring of progress can help give confidence that we are still heading in the right direction. Financial performance is the most obvious measure, but even physical aspects of the business will help boost confidence. Animal growth rates, body condition score, soil nutrient status, pregnancy rates or weed prevalence are all examples of physical indicators that will not only help measure progress but help us to navigate the rest of the winter smoothly and cost effectively.

Growing an asset and limiting the risk is essentially what farmers are looking to do and food production is the vehicle through which we achieve it. Taking time out to list down the risks or threats to your business is a worthwhile exercise along with the strengths, weaknesses and opportunities. Limiting the risks will help to future proof your business (never totally!) and often by building on the strengths and capitalising on the opportunities some of the risks will be reduced.

Within this edition of ASQ we consider how we can deal with some of the issues caused by the weather, stock condition and performance, soil and pasture damage, dealing with rushes and 10 suggested steps to help with making plans for 2013.

The Manx Grassland Society also review their findings from their trip to Lancashire where chairman Neil Masson led a group of Manx farmers around a mix of beef, sheep and dairy farms along with a trip to Lancaster market.

A review of the November winter meetings, where both the beef & sheep and the dairy meeting contained some positive points from some interesting speakers reminds us that there will undoubtedly be both Opportunities and Challenges for us all in 2013, what is important is how we rise to meet them.

We also wish Andy Macdonald and his family good luck as he departs the Island to take up an exciting opportunity and challenge in Scotland.

The Advisory Service remains available and it is very much “business as normal” so if you require assistance with any agricultural issue, please do not hesitate to get in touch either by phone on 685835 or email chris.kneale@gov.im.

Chris Kneale, Agricultural Advisor
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Livestock

Winter Meetings

The DEFA Advisory Services Winter Meetings took place back in November where a good number of attendees heard from a range of speakers informing the audience of how they operated their own farming systems, their business drivers and where next for them. Below are some of the main points highlighted.

On the 8th November Graham Crowe, Chairman of Isle of Man Meats welcomed three beef and sheep speakers: Rob Powell from Wales, Denis Minogue from Ireland and Will Rawling from the Lake District.

The main points from all three beef and sheep speakers centred around:
- Increasing productivity
- Increasing forage production and utilisation
- Increasing profit
- Managing costs
- Reducing reliance on SFP

Denis Minogue, a researcher at the Teagasc beef research farm reviewed his work to date on evaluating suckler cow breeds and performance to try and reduce the cost of production. Denis concluded that the Friesian cross Limousin cow was currently outperforming other commercially available breeds and crosses. This was essentially due the fertility and milk production that the dairy influence brought to the cross. Whereas the predominantly beef crosses have a history for breeding for growth. Stocked at a high stocking rate (2.9LU/ha – approx 1.3 cows per acre) grassland utilisation was important along with a compact calving period and strong maternal component of the cow.

Rob Powell from Mid Wales, informed the audience that he had recently bought a farm and expanded his farming operation. Now running 1800 ewes in three flocks he too was focusing maximising home grown forage utilisation and controlling costs. Monitoring animal performance both physically and financially Rob has been able to implement the Aberdale genetics to help increase productivity whilst targeting good grassland management and reducing wintering costs. Rob was also finishing 250 head of Welsh Black sired cattle and had recently supplied a dairy farm with Welsh Black semen to secure a known supply of calves.

Will Rawling was farming extensively in the Lake District, managing a large area of moorland and severely disadvantaged land to maximise his animal performance and also to maintain his environmental payments. Will had also turned to the Aberdale genetics to increase flock output and has seen animal performance increase as a result. Will acknowledged that his farming system was focused around his environmental payments but was keen to highlight that he would prefer it not to be so reliant on government support. Will suggested that he would be farming differently if there were no support payments to be had.

The following week, 15th November, again at Glen Helen, saw an excellent meeting of dairy speakers, and it was genuinely inspiring to hear people at opposite ends of their careers speak so enthusiastically about their industry, and the bright future they believed it has.

Owen Ashton is a final year student at Aberystwyth University, and had taken a year out of his studies to go and work on dairy farms in New Zealand, as well as working on a large dairy unit run on Kiwi principles in Wales too. His enthusiasm for the dairy industry was impressive, all the more so given that he came from a non-farming background. Both the farms he worked on in New Zealand and in Wales had very impressive performance figures, particularly the calving rate of 75-80% calving within
the first 6 weeks of the block calving period, a statistic many suckler producers would fail to match. Owen was also very clear that he wanted to be farming in his own right in the near future, and had a clear plan about how he was going to do it.

**Matthew Jackson** was an equally impressive young farmer, working on the same farm as Owen had work experience on the Lleyn peninsula in Wales. Again from a non-farming background in Manchester and having left school at 16 with no qualifications, Matthew had managed to prove through hard work, determination, and a willingness to learn that there was a bright future in farming for anyone that wanted it. At the age of just 24 he was going to have a job as a herd manager in 2013, and has already built up his own herd of some 150 cows and heifers, with the clear aim of taking on a new farm in the area on a share milking arrangement in 3 years time. Attention to detail, grassland management, and staff management were all keys to success for Matthew. Also impressive was the fact that he and his boss were not so completely focussed on the Kiwi “grass only” mantra not to realise that there was some yield and financial benefit in supplementing cows with a small amount of concentrates when the milk price merited it. This pragmatic approach was impressive in itself, in that it showed the adaptability of all good businesses to the market situation, rather than sticking to one particular method of production.

The last speaker of the evening was **Terrig Morgan** from mid-Wales, and in common with Owen and Matthew, had come from a non-farming background originally. Terrig was also in the latter part of his farming career, with his son now taking on the main management duties on the farm. Terrig’s production system was quite a lot more capital and input intensive than that of Matthew’s farm, with more machinery, buildings, and feed inputs. However, through careful budgeting, and regular benchmarking of performance along with others in his local discussion group, he knew exactly how his herd was performing, how much profit it was generating, and what he needed to do to improve that performance. And even with input costs and climatic restraints not dissimilar to the Isle of Man, the farm was generating a net margin from the dairy enterprise (AFTER family labour, and BEFORE subsidy) of 5.8ppl. The confidence in being able to maintain a reasonable return on investment for milk production was also what gave the confidence to invest in the farm, build a new shed, and expand the herd further.

**Chris Kneale & Andy Macdonald.**

**Making Plans for 2013**

January is a great time of year to sit back and take a good look at your farming business and make plans for the future. You may be considering your succession plan, possible changes to you business when CCS moves from its planned Historic into flat rate payments, changes to the market place or your own personal ambitions and motivations.

**Where are you now?**
Making plans for the future generally involves understanding where you are now and deciding where you want to go in the future.

What is your farming system (e.g. selling stores/finished animals, growing cereals or purchasing stock/grain)? And what is your target market? It should be clear in your mind what you are trying to achieve, and what you are trying to produce. Many farms have no definite system and as a result there is no targeted trading/sale policy and possibly the failure to maximise the farming profit potential.

Do you know the stocking rate or organic nitrogen rate per hectare (N/ha) on your farm? Do you know how many kilos of liveweight/crop or kilos of carcass you are selling from the farm?

Stocking rate, yield and the amount of beef/lamb/grain you are producing and selling are directly related to profitability so these are the basis for any farm plan.
Where do you want to go?
Would you like to make more money from farming? Would you like to make your enterprise less labour intensive? Do you want to become less reliant on Government financial support? These are questions that need to be kept in mind when drawing up a plan for your farm.
Once you’ve established where you stand now and where you want to go, so how do you get there?

Some simple steps that can be made are as follows:

**Step 1: Decide on a system**
Many farmers have decided on a system based on what suits the land type/facilities or labour that are available. However, if you are not constrained by any of these, it is worth considering the margins involved with different options, scenarios and markets. Speak to potential markets to understand the market requirements further.

**Step 2: Decide on a production pattern – (Lambing/calving dates, drilling/harvesting dates)**
A compact calving/lambing period is the most effective way of increasing weaning weight and concentrating on a known calving/lambing period has many advantages. It means that there will be fewer grazing groups on the farm, which means that grass utilisation can be improved with less work. It also means reduced labour for dosing, etc., as you have animals of a similar age. It does mean that you will be busier during the birthing period, but you may as well be up looking after multiple animals as one.

Deciding on a cropping plan will allow for improved time management, machinery use, rotations, spray and fertiliser utilisation. Consider cash flow within all options and understand how the cash flow will be impacted.

**Step 3: Decide on a replacement strategy (machinery policy)**
To make the most of the calving season/calving spread benefits, a plan for culling and replacing poor performing cows must be put in place. You should consider culling late calving/empty cows and/or cows with poor milk yield or high cell counts. These cows should be replaced with heifers calving at two years of age at the start of the calving season.

The Maternal EBVs should be used to select bulls and cows more suited for producing replacement heifers. This will help to improve fertility and milk in your herd.

Where machinery is involved be clear on what machines are essential and what can be contracted in. The purchase, operation and maintenance of machinery should be considered.

**Step 4: Decide on a harvest strategy.**
Is all the grain to be dry harvested? If so does it need drying or treating to aid storage?
Does crimped grain fit in the system? Are there protein crops to be grown and how do you intend to harvest and store them? Look at the recommended variety list, consider disease resistance issues and also grain quality, straw yield and maturity dates.

In the case of forage – target forage type and quality to match the stock demands.

**Step 5: Decide on a stocking rate?**
If you have good output per animal, then having more of them will improve profitability. Taking EBLEX figures for 2012, increasing the average producers stocking rate from 1.3LU/ha to 1.5LU/ha would increase gross margin by £34.8/ha. This is assuming the same levels of efficiencies on output/animal and variable costs as a percentage of output. So these are the minimum gains possible. On a 100ac farm going from 50 cows (calves sold at weaning) to 60 cows (calves sold at weaning) this is worth over £2,000 (to a gross margin level).

Purchasing dairy calves for sale as stores or finish is another way of increasing output/stocking rate on a farm and has lower start-up costs.
Step 6: Getting the basics right: are there health issues on the farm?
Do you have high mortality rates at calving/lambing time? Is stock health an issue on your farm? If you have any doubts, putting a health plan in place can help to put things right and to make sure you are hitting target weight gains for your stock. A health plan can also help you to save money as inputs can be planned for. Plant health issues should also be considered, it there always manganese issue in your cereals, is there always a particular weed that is a headache? Plan out how you could best deal with these issues.

Step 7: Get grass basics right
Does your cropping/grassland require liming? Have you recently taken soil tests so that correct levels of phosphorus (P) and potassium (K) can be used? Have you old pastures that could do with reseeding? Has the wet weather this year highlighted fields that could do with drainage improvements? Is there a compaction problem?

Step 8: Make a grass plan
Once the basics are in place, make a plan to make the most out of grass. For example, can you turn cattle out earlier in the spring (even by a week or two)? Can you increase the number of paddocks so cattle are getting better quality grass? Have you ever used the autumn planner for closing paddocks in the autumn?

Step 9: Take small steps
Sit back and look at your plan, draw it up, and take simple steps to put your plan into action.

Step 10: Look at your plan again
How have your plans gone? Were there things that could have gone better? Learning from our mistakes is the best way to make improvements!

These steps are largely based around a livestock farming system but the principles apply to any farming enterprise/business.

Chris Kneale. Agricultural Adviser.

Manx Grassland Society visit Lancashire.

The Manx Grassland Society, in September, visited Lancashire with the help and assistance of Mark Perry of Carrs Billington and DEFA’s “Seeing is Believing” scheme.

MGS Chairman Neil Masson summed up the trip commenting that “all these guys were really farming and focused on making a profit from their farming operations, doing an excellent job in some tough locations. With high rainfalls of some 60-70inches and a constant battle to keep the rushes at bay, these guys were not shying away from the challenge.”

Farm 1 - Messrs Verity. A family farm that had recently seen son Mark use his learning from time spent in New Zealand and support from his local discussion group to take this business to the next level.

- 700acres total split with 600acres at home farm. 100acres utilised for the rearing of young stock
- Milking 350 Holstein Friesian cows Autumn block calving
- 8200litres with 3700litres from forage.
- Some crossbreeding of genetics – Swedish Reds and Jersey.
- Focus is on producing as much milk from forage with cows out to grass in March
• Good network of access lanes to support the 24hr grazing paddocks.
• Lanes were constructed of 3-4 inches of stone topped with used Astroturf.
• All heifers were synchronised to keep calving period compact.
• Mating managed through Genus RMS service
• Beef bulls used to as sweepers
• Cows passed through a well thought out 3 stage foot bath using recycled water to wash the foot, a slatted area to allow muck to drop through and a treatment bath.
• New cubicle shed was being erected to increase cow numbers and improve heifer rearing, a permanent footbath was being installed here also.

Stuart Corlett summed the visit up by saying “there are some simple ideas here that I think I could implement within my own dairy system to lift performance and profitability”

Farm 2 – Throup family, two young farming families gradually taking over the farming operation from the parents and appeared to be largely focused on returns from stock rather than buildings and machinery,
• Milking 200 Holsteins with an average yield of 9200litres calving all year round.
• All calves were retained for finishing.
• Simple system with old home made cubicles and covered feed passes, parlour was being pushed to its limits.
• Total mixed ration offered.
• Automated calf rearing had improved calf performance and also reduced labour demand.
• Also lambed 1000 ewes – mix of hill ewes and mules.
• Dirty water reed bed recently installed to deal with all dirty water and reduce slurry volume.
• All finishing cattle placed on a simple silage based finishing ration.
• Cattle all sold through the auction ring. Some black and white bulls were being trialled.
• Throup family were noted mule ewe lamb breeders – recently selling mule ewe lambs to £120 per lamb.
• A wind turbine had recently been erected to provide power for the dairy unit with excess sold onto the grid.

Farm 3 - Mark & Elaine Hartey welcomed us to their farm at Clitheroe where they were focused on breeding pedigree British Blue bulls. Their daughter had also recently established a pedigree Zwartble flock.
• Mark and Elaine were common graziers on the nearby hill where they ran a flock of Lonks breeding Lonk mules.
• There was also 200acres of inbye land that largely supported ewe lambs, the ewes at various times of the year and the cattle.
• The pedigree herd was based around 15 pedigree cows and 10 Hereford cows acting as recipients for flushed embryos.
• The focus for Mark and Elaine was very much on naturally born calves rather than veterinary assisted.
• Breed lines were thoroughly researched to ensure that the bulls were what they wanted and had the potential to build upon their natural calving focus.
• The cows were managed and supervised to ensure that they were in the appropriate condition to calve down and also were grown without being overfed concentrates to ensure bulls were ready for the sale ring.
Farm 4 - Graeme Atkinson was a one man beef and sheep operation. All cattle were bought in and Graeme was prepared to travel to source stock that suited him and also looked to finish stock in to the best markets.

- Finishing 300 cattle and 400 lambs annually
- Generally Graeme purchased both yearlings and weaned calves at spring and autumn sales.
- Young calves (6 months old) were placed on a silage based ration with target growth rates of 0.6kg per day. These cattle were then summered either on the home farm or away off farm, brought back to the sheds and built up onto an adlib cereal based diet.
- Angus cross cattle could be finished off little concentrates, with most of their growth achieved from good grassland management.
- Silage quality was key as barley was costing Graeme £190 per tonne delivered!
- Target carcass weights were 290—340kg for heifers and 350-430kg for steers.
- Cattle were generally slaughtered at 22-30 months of age. Cattle were generally R grades and better.
- All lambs had recently been housed and placed on an ad-libitum diet to encourage them to fatten.
- Second cut silage was still in the fields as it had been too wet to harvest it.
- Graeme was happy to make, build, modify steel buildings and equipment to keep costs down.

James Callow, commented that "Graeme was operating a simple system with a clear focus on buying stock to suit the market for a decent profit margin"

Farm 5 - Mark and Heather Atkinson farm suited a long dry summer being largely on blue clay, surrounded by moorland. Rushes were a constant battle and yet these guys probably impressed the group the most.

- 180 acres with a 120 pedigree Holstein cows with an average yield of 10,000 litres
- Cows were calved all year round and surplus heifers were sold at local markets for an average of £2000 per beast.
- No diet feeder or out of parlour feeders just a trough full of silage with cows fed through the parlour and a blend added on top of the silage.
- Trafford gold, a brewery bi-product, was added into the silage which is a reasonable high energy and high protein (20%CP) feed. This was simple but effective method of boosting feed quality without large investments into machinery.
- The couple had recently upgraded their milking parlour to improve the milking routine and time spent in the parlour.
- Weaned calves were placed into a small pen with a raised lying area which was covered with a mat and sawdust. This encouraged the calves from a young age to lie on the step and not in the walkway.

John Willie Moore claimed "this land is not too dissimilar to Brandywell, to be milking cows and achieving 10,000 litres from such a simple system is remarkable"

Farm 6 - John Carr

- Recently converted from a 7500litre pedigree Holstein herd to 150 Friesian and Jersey cross calving in a tight spring block.
- 90 acre grazing platform, 60 acre support block for heifer grazing and silage.
- Average grass growth was approximately 10,000 kg dry matter per hectare per year.
- Cows were fed on a flat rate of concentrate through the parlour when grass growth was less than demand.
• Concentrates were currently running at 1.2 tonnes per cow – essentially due to a number of spring calving Holsteins remaining in the herd, target was 700 kg/cow.
• New tracks, fencing and water troughs had been installed.
• All surplus machinery had been sold - previously had a machine for every job.
• Contractors chopped all silage, carried out field work and applied slurry.
• Tired leys had been rejuvenated with either a surface seeding or direct drill.
• Profit margins were forecast to increase with budgets set at 4p per litre profit with milk price of 28p/litre. Milk price had increased from the budgets being set.

"Being able to flex and open to change appears to have allowed John to simplify his business, slash his costs and increase profitability" stated Eric Taggart "if I was still milking this is the type of system I would be looking towards".

Lancaster Market was also visited where we saw better quality animals, both in terms of shape and finish achieving better prices but there was good demand for all classes and types of stock. Lots of the cattle sold weighed heavy (500 kg plus) and were generally at 22-28 months of age.


Rented Grazing and Other Issues

Renting grazing is a common practice these days but is it really necessary? There will be costs of rent, fuel, time etc and the rented land may not produce much grass Dry Matter (do you know how productive it is?). Due to uncertainty you are also unlikely to spend much money on lime, Phosphate etc on seasonally rented ground. You can intensify stocking at home by either applying more Nitrogen if your grassland is good and responsive to Nitrogen, or if your grassland is poor by reseeding to improve your DM yield at home- investing in owned land.

<table>
<thead>
<tr>
<th>Rental Cost Of Dry Matter – p/kg DM For Rent Alone Yield</th>
<th>£80/acre (£200/ha)</th>
<th>£100/acre (£250/ha)</th>
<th>£120/acre (£300/ha)</th>
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</thead>
<tbody>
<tr>
<td>4 t DM/ha</td>
<td>5p</td>
<td>6.25p</td>
<td>7.5p</td>
</tr>
<tr>
<td>6 t DM/ha</td>
<td>3.3p</td>
<td>4.2p</td>
<td>5p</td>
</tr>
<tr>
<td>8 t DM/ha</td>
<td>2.5 p</td>
<td>3.1p</td>
<td>3.75p</td>
</tr>
<tr>
<td>10 t DM/ha</td>
<td>2p</td>
<td>2.5p</td>
<td>3p</td>
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We usually reckon that grazed grass costs between 5 and 10p/kg DM. If you are paying rent on top of that it becomes a more costly feed – possibly doubling the cost. Don’t forget though that your own land also incurs an opportunity cost of rental. So what can you do to make more use of your own land rather than renting expensive grazing?

Reseeding
If you rent 50 acres (20 ha) each year at £100/acre then that £5,000 could re-seed 25 acres at home at £200/acre. This could raise the productivity of your own land (10 ha) from 4 t DM/ha to 10 t DM/ha. This equates to 60 extra tonnes of dry matter. Whilst this may not initially be enough to make up for the loss of DM on the rented land (depending on how productive it is) in time your whole farm will be more productive and you will save money.

Applying More Nitrogen
£5,000 will buy you around 16 tonnes of nitrogen fertiliser at £300/t. This equates to 5,520 kg of actual nitrogen. At a response to N of 20 kg DM/kg N then this can grow you an extra 110 tonnes of dry
matter. Assuming your new productive grass can respond well to nitrogen this is excellent value for money compared to renting grass. Your 50 acres (20 ha) of rented land would need to be yielding more than 5.5 t DM/ha to give you more grass than you can grow by applying more nitrogen at home.

**Field Size**
If you are growing more grass at home by re-seeding or applying more Nitrogen (or both) then you need to manage this so you can utilise it. This comes in the form of better grazing management and appropriate conservation into silage. Big fields (in Wales where I come from a 10 acre field was a very big field!) are great for efficient silage making but are a struggle for efficient grazing management. Unlike a dairy herd which has a herd of 100 – 200 cows to graze a field very intensively for a short period most beef and sheep farms are restricted by smaller group size. Investing in fencing to make your biggest field’s smaller or even using electric fencing to split larger fields up into smaller more manageable blocks for rotational or buffer grazing is very worthwhile. Some of these arguments have been simplified and I recognise that in reality the situation may be far more complex. However within the next 10 – 20 years we will have to start producing more food as cost effectively as we can. Getting your own grass fields in order should be a top priority along with managing the grass for optimum stock performance and grass production.

Rhidian Jones, SAC Sheep and Beef Specialist

**Cattle jobs Ahead**

**Spring Calving cows**
- Check bulls are sound e.g. feet etc and starting to regain condition.
- Dung sample one group of cows for fluke, unless they have already been treated.
- Take time to walk through potential heifer replacements to acclimatise them to humans.
- Condition score to ensure all cows are at target condition score (to calve at CS2.5)
- Monitor 2\(^{nd}\) calvers to ensure they are not being bullied at the feed fence.

**Autumn Calving cows**
- Keep a record of which cows are running with which bull.
- Record any service dates you see.
- 22 days after the bull has been turned out check bulling groups, if possible 3 or 4 times a day. If the bull is fertile there should be less than 1 cow per day bulling.
- 6 weeks after the bulls are turned out there should only be 1 or 2 cows per week being bullied.
- Make sure there is a good quality general purpose mineral/vitamin mix included in the calf creep so each calf consumes around 20 g per day.
- Keep the creep as well bedded and ventilated as possible.
- If calves sweat over the shoulders in hot weather consider clipping their backs.

**Growing Cattle**
- Weight a test pen of cattle to make sure they are performing as required.
- Check water troughs and if necessary clean. Dispose of dirty water etc outdoors, not in the pen.
- Dung sample a group to ensure there is no fluke or worm burden.

**Finishing Cattle**
- Check pens frequently for individuals ready for slaughter. Sell animals as soon as they have sufficient fat cover – do not hold onto them to make up numbers for a full load.
- On slats maintain stocking densities to keep cattle as clean as possible.
- Dung sample a group to ensure there is no fluke or worm burden.
**Feeding for Quality Colostrum in the Suckler Cow**

The amount of nutrients supplied to the suckler cow in the last few weeks of pregnancy can affect the quantity and quality (in particular the immunoglobulin content) of the colostrum she produces. In addition to the nutrients needed for maintenance, growth and keeping warm, the new-born calf relies on the immunoglobulin in colostrum to defend itself against disease.

Severe restriction in the amount of energy supplied to the cow can reduce the amount of immunoglobulin produced and the efficiency with which it is absorbed by the calf. Similarly, severe restriction of protein intake will reduce the amount of immunoglobulin produced.

It is usual for spring calving cows that are weaned and housed in the Autumn in good condition (condition score 3) to be allowed to lose some condition through the winter so that they calve in condition score 2.25 to 2.5. This will reduce feed costs and avoid calving problems associated with over-fat cows. With this normal level of loss of condition the extent of energy restriction is mild and will not affect the production of colostrum. It is important that cows in over-fat condition at weaning are managed so that they gradually lose condition over the winter. Reducing condition must not be left to the last two months of pregnancy as this will require a more severe restriction in feed (energy) intake and this may compromise colostrum production.

For efficient rumen microbial fermentation and digestion of feeds the microbes’ requirement for effective rumen degradable protein (ERDP) **must** always be met. For the suckler cow, once this requirement has been satisfied the rumen microbes will supply sufficient protein to the cow for colostrum production.

So, in summary

- A moderate restriction in energy intake in the last part of pregnancy for cows in good condition is unlikely to reduce immunoglobulin production, so the calf will still be able to fight disease.
- The cow’s requirements for ERDP must always be met in full
- Similarly the cow’s requirements for minerals and vitamins must always be met in full.
- Manage cow condition so that daily energy restriction is modest.

**Colin Morgan, Farm Rural Business Services Group, SAC**

**Health Risks Associated with Mouldy Feed**

Feeding mouldy forage or concentrates during the housing period is usually unintentional and occasionally unavoidable. However, the potential disease impacts and reduced palatability of spoiled feed mean that this should be avoided if at all possible.

Organisms which can multiply in spoiled feed and cause disease include:

- **Listeria monocytogenes** – this organism is associated with various clinical diseases including mengingoencephalitis (infection of the brain), anterior uveitis (silage eye), abortion, pneumonia and neonatal septicaemia (generalised infection of young calves). The time between animals eating the affected feed and developing clinical signs can be as much as three weeks, so animals can still develop disease despite no recent access to mouldy feed.

- **Bacillus licheniformis** – this organism is a common cause of abortions and stillbirths in cattle.
This bacterium cannot be avoided as it is widespread in the environment, however it multiplies in mouldy forage posing an increased risk to pregnant cows particularly in late pregnancy.

- Fungal organisms – diseases caused by fungi include placentitis and abortion.
- Moulds

Moulds like to grow in moist and warm conditions. When feeds (grain, straw and hay) are harvested their moisture content is usually higher than the safe level (around 14%) required to prevent mould growth during storage. Therefore, we usually apply a drying process (e.g. forced air for grain and field or barn drying for hay). With very moist materials and in rainy weather, the drying process can be frustrating, expensive and in some cases unachievable. Thus, unless a mould inhibitor preservative, such as propionic acid, is used (at the correct application rate and evenly distributed) there is a danger of mould growth with damp-harvested feeds or feeds that have been allowed to get wet.

Mould growth will cause a loss of nutritional value, a loss of palatability, insect and mite infestation and even the risk of fire.

Mycotoxins are poisonous chemicals produced by certain moulds. Mycotoxins can occur in any feed that is damp and has mould growth – grains, straights, hay, straw (and bedding straw) and silages if the pit face is left uncovered for too long.

**Mycotoxins have a wide range of effects:**

- Respiratory allergies (farmer’s lung)
- Digestive upsets
- Liver damage
- Kidney damage
- Abortion
- Nervous disorders
- Blood circulation disorders and gangrene of extremities (e.g. ergot)

It is difficult to undo the damage so prevention by careful conservation techniques is the best course of action. Take particular care when drying or applying additives. If you suspect that a feed is mouldy (smell and appearance) then it should be tested for the presence of moulds before feeding. If moulds are present in significant amounts then there is a danger that mycotoxins are present too. Such feeds should be diluted with a known good, clean feed and should not be fed to sensitive stock (pregnant or lactating animals and young stock). It is now possible to buy additives that can reduce the effects of mycotoxins. These additives contain materials such as clay minerals and yeast products that bind to the mycotoxin molecules making them unavailable for absorption. Where areas of mould are seen these areas should be removed and destroyed.

If problems occur and you suspect mycotoxins as a cause samples of feed can be sent for analysis. Mycotoxins may be present in many feedstuffs and there are critical levels (which are different for each mycotoxin) that determine whether they will cause problems or not. You should also ensure that other potential causes of the problem have been ruled out. There are many clinical or production problems that are being blamed on mycotoxin involvement where there is an alternative and probably more important cause. Your vet can help you to investigate these problems.

Colin Morgan, SAC Consulting  
David Gibson, Veterinary Services, SAC Consulting
Feed Costs and the Profit Margin of Finished Cattle

Store cattle have made, on average, £60 to £80/hd extra this last autumn. Nobody will begrudge a fair price to suckled calf producers and this additional income will offset additional cost of feeding this winter but since the calf price is up and the cost of feeding is also higher what does it mean for the profitability of finishing cattle?

Assuming a 350kg steer targeted for sale this time next year on a fairly traditional system of average grass silage and cake, out to grass during the summer, hopper feed as required, plus a two month housing period at the end but only consuming half a tonne of barley over the year: this equates to just over £20 additional feed cost – based on a processed grain based ration increasing from £160 to £200/t.

If all costs (excluding working capital) are up £100/hd, a finished steer needs to recoup between 26p and 30/kg dwt extra (for a 380 and 340kg carcase respectively) from the market place this time next year. That is approximately £3.90/kg dwt in the Scottish market if finishers are to retain a similar margin as achieved from this year’s crop of cattle. This would assume that the financial return left by this year’s batch of cattle, sold just now, was/is enough to support viable profit.

The cost of a more intensive grain based diet to finish store cattle mid/late summer 2013 will have increased further due to the higher reliance on cereals. Arguably, while these cattle can be finished more efficiently (having a higher feed cost per day but an overall lower feed cost per kilo of gain), these cattle could be more risky since it further limits the time to achieve a significant market price lift – a price increase that is by no means certain.

For those now committed to finishing cattle, the best method available to protect margins is to focus on technical performance. These factors include:

| 1. Reduce wastage: | Concentrate feed – 5% wastage from store to feedout is not untypical but at today’s feed costs this equates to at least £10/t. Moulds and spillage are not the only issue, spoilage and losses to birds, rats and mice can also account for a significant value over winter. Forages – silo losses of 15% are not uncommon between clamp and feed passage rejections. This would be the equivalent of over £3/t excluding handling of waste silage, additional storage requirements or the rent of additional silage ground. Nothing can be done to improve consolidation and fermentation of ensiled crop now but minimising heating and spoilage of the feed face is an opportunity (use a shear grab or minimise bird damage to bale wrap). Reducing these losses by 5% is worth £1,250 in a 1000t clamp @ £25/t. |
| 2. Provide good ventilation and ensure good health | An excellent ration formulation is worthless without healthy cattle and a good shed design that supplies good ventilation. To review the farms cattle health plan contact your vet. A quick consultation with them could save £1,000’s in hidden losses. With |
| 3. Improve/Maintain feed intakes | Periodically silage sample – forage can vary surprisingly throughout the clamp. Formulate a ration to match the available forage and to meet target growth rates/timing of sale. Without this it will be easy to over feed or underfeed expensive concentrates and compromising the cost effectiveness of liveweight gain and your |
| 4. Weigh cattle | Weighing cattle regularly is the only way of knowing how effective feed is being converted into saleable beef. Without this information it is impossible to know whether it is a good idea to feed less or more, sell now or hold onto cattle to add |

Robert Logan, Farm and Rural Business Services, SAC Consulting
Are Your Stock On Target?

Have your stock changed since they have been housed/winter feeding started? For example –
- Are finishing stock finishing i.e. getting heavier and fatter?
- How much weight has growing stock gained?
- How much condition have breeding stock gained/lost?

Many producers will complain that it is much too early in the winter to be able to tell, but nearly 20% of the winter is already behind us and by the time the festive season is over we will be getting close to half way – particularly for those having an early turnout next spring.

The problem of waiting until stock have been housed nearly 3 months is that there is little time left to make up for any mistakes which might have occurred in our early rationing. For example –
- Each month finishing cattle are 0.2 kg per day below target will add an extra week to the finishing period to achieve the same slaughter weight.
- For each 0.2 kg per day growing stock are below target they are likely to be around 35 kg lighter next spring.
- For each 0.2 kg per day increased weight loss in spring calving cows they will be 0.25 of a condition score leaner in January, so that if they were housed lean they will be a much higher risk of downer cows and reduced fertility at mating next summer.

These potential problems clearly demonstrate the importance of monitoring performance of stock as soon as possible after winter feeding starts. However this can only be realistically done by weighing a sample group every month – 6 weeks, making an investment in a weigh crate essential to the profitability of all beef enterprises.

Basil Lowman, SAC Beef Specialist

Dealing with an outbreak of respiratory disease

Pneumonia is, unfortunately, much more common during winter months when cattle are housed. Indoors, cattle are in close contact and share the same air space, which assists the build up and transfer of respiratory disease between animals.

Prevention is key to reducing the risk of respiratory disease

**Ensuring that:**
- buildings are adequately ventilated
- buildings are not overstocked
- gutters are working and carry water away from the shed
- stock are vaccinated two weeks before housing;

are some measures that can help reduce the risk of pneumonia.

Outbreaks can still occur despite the best laid preventative plans. This article will discuss dealing with an outbreak of respiratory disease in a group of housed calves.

**Causes**

There are several types of viruses (eg: RSV), and bacteria (e.g. Pasteurella) that can cause pneumonia. In many cases, the initial damage is done by a virus which provides the ideal conditions for bacteria to invade secondarily and cause more significant long term damage. Stressful situations such as handling calves, weaning and introducing new stock will increase the susceptibility of calves to respiratory infections.
Symptoms
The first signs may be a decrease in feed intake and increased coughing within the group.

Individual animals may be seen breathing rapidly and standing apart from the rest of the group with a clear or white discharge from the nose. These animals often carry their heads low and stop eating. These animals normally have a high temperature.

Taking an animal’s temperature is a good way of assessing which animals are infected and need to be treated. Temperatures can rise from their normal value of 101°F (38.6°C) to above 104°F (40°C). Ideally every farm should have a thermometer. Some digital thermometers can now give you a reading in just 10 seconds. Once a few animals develop respiratory signs, there are probably another two or three that will have high temperatures. Checking the temperatures of all calves in the group can be a way of identifying which animals are likely to go down with the infection next. Early treatment of these animals will help eliminate or shorten the course of the disease.

Isolate
Animals showing signs of respiratory disease should ideally be removed from the group to reduce the risk of spreading the infection to the rest of the animals. They should then be isolated in a hospital pen where they will have access to highly palatable food and water without competition. The hospital pen should be well bedded and draft free.

Affected animals need to be checked and nursed several times daily.

Treat
Treatment of affected animals normally involves using an antibiotic and an anti-inflammatory drug. It is important to remember that an antibiotic will have no effect on a virus, which is often the primary infectious agent. The antibiotic does however play a key role in controlling and eliminating bacteria that may have invaded secondary to the damage caused by the virus. The anti-inflammatory drug may reduce long term lung damage, reduce the body temperature, and reduce discomfort, thereby making the animal feel better and so keep it eating.

There is widespread concern that over use of antibiotics may promote the development of bacterial resistance to antibiotics. This has implications for the future use of the drug in treating both sick animals and for its use in human medicine. The choice of drugs should be discussed with your vet.

Vaccinate in the face of an outbreak
If the cause of the pneumonia is confirmed as a virus, such as IBR or RSV, the outbreak can be controlled to an extent through the use of live vaccines. To be effective, they must be administered up the nose. These vaccines will reduce the severity and duration of the disease. Talk to your vet about this.

Improve ventilation
Ventilation in the house may need to be improved if an outbreak of respiratory disease occurs. This may involve opening up the sides or creating a small pen for access to the outside using straw bales. Ensure that young stock are not exposed to a draft. Healthy fresh air circulating is essential but a draft at calf level does much more harm than good.

Conclusion
An outbreak of respiratory disease in a group of housed calves is costly and will cause long term effects on growth rates and in some cases irreparable damage to the animal’s lungs. Focusing attention on prevention and prompt identification and treatment of cases will reduce the long term effects.

Alwyn Jones, Veterinary Services, SAC Consulting
Sheep jobs Ahead

Breeding Sheep

December and January are relatively quiet months for breeding sheep. Regardless of when you are lambing the aim is for sheep to maintain condition and to minimise stress levels to ensure they get and remain safely in lamb. Most flocks will have just finished or be nearing the end of tupping.

- Physically check ewe condition score, segregating any ewes in poor condition and feed appropriately. – See article on ewe feeding.
- If moving to fresh grass leave the gate open and let them find it themselves rather than chasing them through with dogs.
- Minimise any handling only to essential tasks that might arise with individual sheep- no flock treatments
- Grass below 6 cm may need supplementing. Any supplementary feeding should ideally be with feed blocks to minimise disturbance – this is expensive but easy and will not cause as much stress as trough feeding. Snacker feeding on the ground is a half way option.
- Check the conditions of the Rams either as they continue to work or once removed from the ewe. Feet and sores (if a harness has been used) should be addressed and condition scored to ensure they regain any condition lost through the tupping period.
- Avoid grazing red clover
- Prepare for lambing – wash and disinfect the area/pens. Stock up on supplies.

Finishing Lambs

- Draw lambs as they are ready and the price is favourable. Hanging on to lambs for bigger weights may give you more price per head but you should be more interested in the margin/head. The longer you keep lambs then the more total feed is required to keep them. Grass will be the cheapest feed but is declining in quality and quantity (and is best used for the breeding flock). Forage crops have been patchy this year and concentrates are very expensive. Whilst lambs have not been finishing easily this year they still need to be sold when they are ready.
- Keep an eye on how forage crops are lasting and consider introducing some concentrates if required to eke out supplies.
- If finishing lambs on red clover do not graze below 6 cm as this will graze the growing point and may kill the plant. If you get re-growth then this can be grazed.
- It may be worth looking at selling some store lambs if you do not have the resources to take them through to finishing.
- Keep on top of any health issues. Lameness can stop lambs growing so this is absolutely essential whilst worming, fluke (remember long withdrawal periods) and clostridial vaccines also need to be considered.
Grassland and Crops

**Ewe Feeding: Forage Composition and Ewe Condition Score**

Variable ewe condition score and low quality/low intake forages mean farmers may need to modify sheep diets and keep a closer watch on ewe condition score this winter.

**Silage Composition**

With the weather conditions prevailing this year silage making has been challenging to say the least. Some producers were lucky and snatched the crop during the few good periods but many had to cope as best they could result in some poor silage. Looking at all silages submitted to the SRUC lab between 1st June and 29th October the ME varies from 8.0 to 12.3 MJ/kg DM and the CP from 66 to 168g/kg DM. So, it is essential that silages are analysed so that they can be supplemented appropriately.

**Meeting the Nutrient Needs of the Ewe**

Energy and protein requirement of the ewe will be determined by her weight, condition score and numbers of lambs carried. With poor quality forages ewes may need more supplementary feed but it is important to manage this to avoid overfeeding starchy cereals or sudden dietary changes that can cause metabolic upsets. Manage the use of body reserves to ensure ewes lamb in condition score 2½ – 3 when lambing in March, or condition score 2 – 2½ for ewes lambing at grass.

![Energy requirements of pregnant 75 kg twin bearing ewes](image)

**Using Condition Score in Management**

The graph above highlights how condition score can buffer the ewe from the need for high levels of supplementary feeding in late pregnancy. For example the graph shows that a fit ewe fed baled silage (lower curve on graph) gets about 11 MJ/day which meets energy requirements up to 6 weeks pre lambing. Fat reserves help keep concentrate requirement to a maximum of around 0.5 kg per day which can be given as a single feed and will not have detrimental effects on forage intake or cause acidosis. However 2012 was a difficult year for ewes due to stressful weather and parasite challenge, so condition score of ewes may be low (upper curve on graph). The graph shows feeding should start earlier at 9 weeks pre lambing and supplementary feeding levels by lambing will need to be higher at around 0.75 kg compound /cereal per day requiring the ration to be split into two feeds. Do not leave it too late, score your ewes now and make planned changes to rations.
Supplementing Thin Twin Bearing Ewes in Mid to Late Pregnancy

Immediately after scanning separate thin ewes out for extra feeding. Supplement with cereal at 0.5 kg per day if the ewes are on low quality silage. Try to at least maintain or improve condition score by up to half a score between scanning and the last three weeks of pregnancy. Low bushel weight cereals are excellent for this purpose and can be a best buy. Feed thin grains whole as less tends to come through in the dung than with plump grains. Note that with 70% of normal bushel weight feeds you have to feed a 30% more volume than normal to get the same weight. Wheat can cause acidosis so the inclusion of a digestible fibre, such as molassed sugar beet pulp at around 20% is desirable. Oats should always be fed whole but barley and wheat can be lightly processed when fed with silage. The inclusion of molasses in home mixes will provide readily available energy, aid palatability, reduce dust and carry minerals.

Colin Morgan, Farm and Rural Business Services, SAC Consulting

Bedding for Ewes

Pregnant Ewes
Straw for bedding may be in short supply again this year. What other options exist for bedding in sheep sheds? Plastic slats are a good alternative for general housing but should not be lambed on. The Sheep Welfare Code states “newly born and young lambs should not be put on slatted floors unless suitable bedding is also provided”. Plastic slats are also a major investment but one that may be worth considering if their use can be extended to finishing lambs and for keeping ewes dry before shearing. One option to reduce straw use would be to place a layer of wood shavings or sawdust in the pens initially with straw being used on top. This will allow moisture to be absorbed by the sawdust, thus keeping the straw bedding drier for longer.

Another option, if you have space is to not house the ewes as tightly. This will reduce the humidity in the building as well as trampling and soiling of straw and will keep the bedding drier. Feeding drier silage or hay and ensuring there are no water leaks is also good practice which will also help to prevent feet problems in ewes and Ecoli infections in new-born lambs once lambing starts.

Lambing Pens
Some farmers use pine shavings for lambing pens. As well as being absorbent they also have an antiseptic property. A deep layer is placed in the pen initially. In between sheep the soiled shavings on the surface are removed and a handful of clean shavings spread in the pen. This also saves work on mucking out.

If straw is to be used then it is also possible to use sawdust initially with straw being used as a top layer. Only the straw would be mucked out and replaced between sheep. Using a dry disinfectant powder such as Ly-san, Cubisan or Stalosan can also help in situations where full mucking out and disinfection of pens is not possible.

Keeping the bedding in lambing pens dry can be aided by not allowing ewes to lamb in the pens, prompt removal of afterbirths and preventing water buckets from tipping over. Use bucket holders which will also keep the bucket off the ground so the water will not get soiled and reduces the risk of lambs drowning.

Lambing may be a few weeks away but plan now for any potential bedding shortages. This may mean putting a few nice clean bales aside which are not to be touched until lambing time commences.

Rhidian Jones, SAC Sheep & Beef Specialist
Soil Compaction

Soil compaction is likely to be a bigger issue this coming year due to the past and current weather conditions. Stock, machinery and just the sheer weight of rain over the past year will have increased the risk of compaction.

**Indicators of Good and Poor Soils.**

<table>
<thead>
<tr>
<th>Good Soils</th>
<th>Poor Soils</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Palatable grass</td>
<td>• Poor Palatability</td>
</tr>
<tr>
<td>• Improved Quality (Improved ME levels)</td>
<td>• Poor Nutrient Uptake</td>
</tr>
<tr>
<td>• Good Nutrient Uptakes</td>
<td>• Phosphate uptake</td>
</tr>
<tr>
<td>• Improved use of soil nutrients</td>
<td>• Nitrogen Cycle</td>
</tr>
<tr>
<td>• Improved use of farm FYM/slurry</td>
<td>• Poor balanced Mineral uptake</td>
</tr>
<tr>
<td>• Improved mineral up take by the crop</td>
<td>• High Molybdenum uptake (effect on fertility)</td>
</tr>
<tr>
<td>• Improved copper uptake</td>
<td>• High Potassium uptake (Milk fevers etc.)</td>
</tr>
<tr>
<td>• Better grass growth (2 tonne/ha extra compared to poor soil)</td>
<td>• Palatability</td>
</tr>
<tr>
<td>• Improved drainage</td>
<td>• Poor Grass Growth</td>
</tr>
<tr>
<td>• Warmer soils improved Grass Growth</td>
<td>• Increased weed grass’s</td>
</tr>
<tr>
<td></td>
<td>• Poor Drainage</td>
</tr>
<tr>
<td></td>
<td>• Fewer worms lead to poor drainage.</td>
</tr>
</tbody>
</table>

When assessing soils dig a square hole, 50cm wide and down to 40cm depth, lift out the section and access carefully for:

- Topsoil depth – shallower under permanent pasture than cultivated soils.
- Colour – soil rich in organic matter will be dark. Rusty, grey mottled soils indicate poor drainage and previous water logging.
- Smell – if water lies trapped in the soil for any length of time, the airless conditions prevents the breakdown of organic matter and manures. A foul smelling dead layer of debris forms.
- Rooting depth – roots will extend to 30cm plus in healthy well structured soils.
- Earthworms – there should be 10-15 earthworms in the section removed.
- Cracks and pores – ideally there should be vertical channels 5mm wide between the blocks.
- Soil structure- good soils will have well formed porous blocks with rounded edges, easily broken down between the fingers when moist. Poor soils will be harder, sharper blocks with horizontal fissures.

Other indicators include standing water, reddish tinge to grass leaves indicating stress, rushes, thistle and Yorkshire fog, scorch marks from urine where drainage is limiting.

<table>
<thead>
<tr>
<th>Compaction type</th>
<th>Typical cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface capping (0-10cm deep)</td>
<td>Grazing in wet conditions High stocking Density</td>
<td>Lime/introduce organic matter to encourage earthworm activity Soil</td>
</tr>
<tr>
<td></td>
<td>Rainfall on new cultivations</td>
<td>aerator with spikes or knives Plough</td>
</tr>
<tr>
<td>Machinery (10-15cm deep)</td>
<td>Silage and muck spreading operations. NB the first</td>
<td>Soil aerator with spikes or knives. Subsoiler or sward lifter Plough</td>
</tr>
<tr>
<td></td>
<td>wheeling creates 70% of the damage – use tramlines</td>
<td></td>
</tr>
<tr>
<td></td>
<td>where possible.</td>
<td></td>
</tr>
<tr>
<td>Plough pans (10-15cm deep)</td>
<td>Repeated cultivations at one depth</td>
<td>Subsoiler or sward lifter Mole plough (heavy soils only) Deeper plough</td>
</tr>
<tr>
<td></td>
<td></td>
<td>below pan.</td>
</tr>
</tbody>
</table>

Do not subsoil in wet conditions or the problem will get worse.

**Chris Kneale. Agricultural Adviser.**
Managing Rushes

Each Rush seed head sheds thousands of seeds annually with each seed having the ability to survive for a long time in the soil, waiting for soil disturbance or wet conditions that allow the seeds to germinate and be more competitive than grass plants. Rushes have become more prevalent over the last couple of years in areas where previously they have been unseen.

**Key factors that tip the balance for the rushes over grass are:**

- Low PH
- Poaching
- Too much winter kill, caused by excess Nitrogen application in autumn
- Too much slurry in winter
- No control of seed heads
- Poor drainage

**Recommended Methods of Control:**

- Hard grazing in summer, cattle are best at this
- Topping in summer (but removing the mulch is necessary, because if it becomes wet, the slush limits grass growth and provides ideal conditions for rushes)
- Liming and use of slag
- Robust and competitive seed mixtures that are suited to the local conditions
- Spraying if appropriate (i.e. assuming not limited by a management scheme). Cutting and then spraying regrowth - ideally with weed wiper.
- There isn’t a spray that will not kill other plants as well as the rushes – so selective spraying or weed-wiping is necessary in permanent pasture. Spraying is only part of the control strategy and won’t get rid of rushes altogether.

**Relative Costs**

- Glyphosate £12/ac, needs an adjuvant, included in estimated cost.
- 2,4D or MCPA £15/ac (better earlier in the season, so doesn’t affect clover so much). MCPA stays in the soil for three months.
- If weed-wiping, it’s best to do two passes at 90 degrees if possible.
- Topping £15-30/ac.
- Full plough and re-seed £20-40/ac per annum. (£150-£200/ac spread over 7 and 5 years).

Where rushes are present and the aim is to control them, then first consider the previous land management. Is there a drainage issue or are there management factors contributing to the problem? If there is no obvious drainage issue then start with an assessment of the soil conditions and also soil fertility. Once the background information has been gathered then a control strategy can be formulated. But if there is an underlying drainage or soil fertility issue then these need addressing first. In some areas, given the recent rainfall the presence of rushes may indicate a pan (compacted soil layer) that may be inhibiting drainage.

*Chris Kneale. Agricultural Advisor.*
Improving spring crop yields

A multi-pronged approach should be taken to improving yields. Areas such as soil fertility and condition, sowing date, seedbed preparation, and crop agronomy all play their part.

During January and February, consider the following, which will help to increase yields.

- Soil sample all target fields (or use samples from up to three-to-four years ago).
- Knowing your soils is the foundation to high yields. Soil sampling costs less than £0.60/acre per annum (based on 5 acre field sampled every 5 years).
- Prepare a fertiliser plan. Match phosphorus (P) and potassium (K) inputs to yields. Many fields are running down reserves of P and K and limiting yields.
- Apply organic manures to tired ground. Organic manures help to create a buffer when the plant comes under stress, it’s useful to build P and K reserves, and adds to the workability of soils, among many other useful properties.
- Assess land carefully in January and February before ploughing. Wet soils and compacted headlands will make spring crop root preparation challenging. The action of the plough and the tractor’s weight will smear and compact the soil. While upturned furrows may be weathered by frosts, smeared and compacted furrow bottoms will not. Only plough and subsoil when it is not doing damage.
- Know your soils, tackling the lighter and drier ones first. Wait if necessary to avoid damage. Be prepared to consolidate the drying furrows quickly if ploughing runs very late.

A soil sampling guide can be found on the DEFA website at: www.gov.im/lib/docs/daff/Agricultural_Services/advisory_service/soilsamplinginfo.pdf

Chris Kneale. Agricultural Adviser.
There has been much talk in recent times about ‘High Sugar Grasses’ but in reality there is nothing terribly new about this term. The Ryegrasses, both Italian and Perennial, are ‘high sugar grasses’ compared to the more traditional pasture species, Timothy, Meadow Fescue and Cocksfoot. The tetraploid ryegrasses, first introduced in the 1960s, are generally higher in sugar content than most diploid varieties (around + 2%).

A high sugar or water soluble carbohydrate content (WSC) confers greater palatability resulting in improved intakes under grazing and generally better digestibility. A high sugar content is also desirable for a good fermentation when grass is conserved for silage. i.e. it confers better quality for both grazing and cutting. It is important to realise though, the sugar content of grass does vary over the growing season. Sugar levels are generally highest in the late spring and early summer and gradually decline thereafter.

What is relatively new however and what has attracted so much attention in recent times are the High Sugar Diploid Perennial Ryegrasses. Some of the latest introductions have sugar levels similar to or even marginally better than many tetraploids and produce a much denser sward, less susceptible to poaching. Several plant breeders have, by chance, produced varieties that have higher WSC levels than most diploids. Unfortunately with recent cut-backs in the statutory testing for quality, including WSC levels, it is now difficult to identify such varieties unless the breeder makes a specific claim for high sugar content. However one breeder has consciously been breeding for improved sugar levels and that is IBERS (formerly IGER). AberDam, first introduced in 1999 and AberAvon in 2001 were the first such ‘high sugar diploids’ to have been consciously marketed as such. Since then we have seen the arrival of AberStar 2005, AberMagic 2008, AberChoice 2009 and most recently AberGreen 2011 – all with sugar levels similar to or better than many tetraploid varieties. Astute marketing by both the breeder and BSH has ensured that these high sugar diploids have received a lot of publicity in recent years. However it is important to realise that not all ‘Aber’ – prefixed varieties are high sugar – they are not! So far, this trait is confined to the 6 varieties mentioned above plus one hybrid ryegrass.

Rarely are new swards sown down to a single variety. Some short term mixtures are relatively straightforward but most medium and long term mixtures consist of a complex matrix of Intermediate and Late Heading Perennial Ryegrasses, both tetraploid and diploid, some Timothy and some White Clover. Consequently the influence of high sugar diploid and tetraploids on the overall characteristics of the sward will be limited and dependent upon their rate of inclusion. There will of course, be good reasons why other varieties and species are included in the mixture to ensure it has many of the other traits such as good winter hardiness, good tillering ability and good disease resistance that farmers have come to expect in their seeds mixtures. Price and relative availability will also influence the rate of inclusion – so, rarely will you find mixtures merely consisting of high sugar diploids and tetraploids on their own.

Peter A Shipway, Crop and Soil Systems, SRUC
Sulphur in Arable Crops

Sulphur is a major crop nutrient, essential for plant metabolism and growth. It affects both yield and quality, and can help control mildew. Sulphur contributes to yield and oil content in rape; it improves bread-making quality in wheat, and malting quality in barley. As a rough rule of thumb, arable crops remove around 15-25 kg S /ha. In the last 30 years the incidence of Sulphur deficiency has increased due to purer fertilisers and significantly less atmospheric pollution. Brassica crops such as oilseed rape and turnips are particularly prone to deficiency. Grass, cereals and potatoes will all show a yield response to Sulphur if levels in the soil are very low.

Sulphur deficiency can be anticipated to some extent depending on soil type and the rotation, and is more prevalent on the east coast of Scotland where rainfall is lower. Fields close to the shore, however, will receive some sulphate from the sea spray. Shortages are most likely to occur on sandy or shallow soils with low organic matter, and in continuous cereals without dung or slurry applications. Soil analysis will give an indication of availability, but as with many nutrients the problem is more often associated with poor uptake, so leaf tissue analysis is a more reliable guide if Sulphur deficiency is suspected. The interaction with Nitrogen is important, so plant S levels should be measured against N. The leaf tissue N:S ratio should be greater than 17:1.

Symptoms in oilseed rape are classical interveinal yellowing in the upper leaves, and paler flowers. In cereals the leaves are paler than normal and can be stunted, but the symptoms are not particularly definitive and can easily be confused with other disorders including Nitrogen deficiency.

The Sulphur demands of potatoes are not high and yield responses are not likely unless the soil status is very low. Ammonium sulphate can have an effect reducing common scab, but this seems to work through its acidifying properties rather than any direct control action.

Sulphur can be provided in sulphate form or as elemental S. (The content of a product may be quoted as SO3 - to convert back to S, divide by 2.5). The sulphates are water-soluble and immediately available to the crop but can leach. Elemental Sulphur is longer-lasting but must be converted to sulphate in the soil before the plants can take it up. Smaller quantities are needed as it is 80-90% S. It is applied as a foliar treatment, ideally in early spring.

There are many sulphate products on the market, and again the best time to apply them is in the early spring. Autumn applications on winter crops are not very cost-effective because of the likely leaching over winter. It is better to go with the first spring Nitrogen application, either by using an N – S compound or ammonium sulphate (24% S). A total product weight of 84 kg /ha of ammonium sulphate will provide 20 kg S/ha.

Gypsum (calcium sulphate, 18% S) is another good source of Sulphur and recycled gypsum can be good value. Spreading 112 kg/ha of this product will supply 20 kg S/ha.

Repeated applications will acidify the soil, so pH levels should be monitored regularly and lime applied if necessary.

Mary Munro, Farm and Rural Business Services, SAC Consulting.
Spring Barley seed treatments.

There’s little point re-hashing the difficulties of the 2012 summer and harvest so our focus should be getting the 2013 crop off to the best start. We know what we are starting with this year – spring barley seed with high levels of the Microdochium / Fusarium complex and of possibly reduced germination and vigour because of small seed size.

These high levels of disease (seldom under 50% incidence in the seed lots we’ve seen tested) can cause a range of problems starting with early seedling blights that can reduce emergence. Two pieces of good news: firstly these tend to have less impact on spring barley when it is sown into warm soils and can grow away fast and secondly seed treatments offer very effective control. Seed testing will be important this year so if you are home saving seed ask for germination and Microdochium as the very minimum and preferably add in loose smut, leaf stripe and net blotch too. Definitely add these diseases if you are considering not doing a seed treatment. In an ‘average’ season this is a perfectly sensible choice for seed of good health status where you know you are drilling into a favourable seed bed and that the crop will grow away fast. Seriously consider this year how many of these criteria are likely to be met – the risk in making that relatively small saving in seed treatment costs in a year with so many known problems is probably too high.

There is no strong proven link between fusarium levels in a crop at the start of the season and those that ultimately re-infect the ear. This is because Fusarium travels between crops in the wind and because of the almost overwhelming influence wet weather at flowering and ripening has on its ability to infect. The inoculum must come from somewhere so managing Fusarium early on and reducing these early infections is certainly not going to hurt.

One more disease that is worth particular mention for this season is loose smut. This disease used to be rare and is easy to control with seed treatments. We’ve seen a far higher number of cases in the last couple of seasons and one theory is that the use of certain seed treatments, and possibly the use of reduced rate seed treatments has let more of this disease survive into the daughter crop. The table below shows that not all seed treatments are effective against this diseases and we’ve seen a couple of cases where seed treatments were used in mixture but at reduced doses. If the partner product like Redigo with activity against loose smut is used in mixture with a seed treatment with no efficacy you can imagine that there isn’t enough of the active product to fully eradicate the loose smut. Loose smut can be trickier to control compared to other seed-borne diseases in barley as it is carried deep within the seed, in contrast to most others which are carried on the surface and are relatively easy to target. Watch for loose smut carefully in crops you intend home saving for seed. Buying in certified seed provides some assurance as there is a maximum infection level in certified seed of 0.5% and 0.2% in HVS. Always test for it in seed you are home saving – especially if you intend cutting corners with the seed treatment.

Seed treatments for spring barley for 2013.

<table>
<thead>
<tr>
<th>Products for spring barley</th>
<th>Loose smut</th>
<th>Leaf stripe</th>
<th>Seedling blight</th>
<th>Net blotch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beret Gold</td>
<td>X</td>
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<td>✓</td>
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<tr>
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<tr>
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</tr>
<tr>
<td>Redigo</td>
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<td>✓</td>
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<td>X</td>
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<tr>
<td>Kinto</td>
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<td></td>
</tr>
</tbody>
</table>
There is never more truth in the saying that you should not make plans on last year’s experience and so it is with grass weed control in winter crops this autumn. The autumn of 2012 has followed the wettest summer on record with saturated soils making cultivations for winter crops problematic let alone drilling. Producing clod free seed beds to optimise activity of residual herbicides has been all but impossible. While most of those planning winter barley have successfully drilled to plan, much of the winter wheat has been late drilled, if drilled at all. To be at their most effective autumn residual herbicides require moisture which is in plentiful supply, and also require as clod free a seed bed as is possible. Thankfully wheat drilled after mid October misses the peak germination pattern of annual meadow grass from seed, although if there was a “grassy” stubble and the crop was min tilled in, then clods of annual meadow grass could re-grow and still be a problem. The next peak of annual meadow grass germination is in March and April which could still be problematic to late drilled winter wheat. The best advice is not to put the sprayer away until the spring. If a spray day presents itself over the winter months and it is possible to travel, it may be possible to apply a residual herbicide to wheat and barley to control annual meadow grass. This will be better than trying to control tillered meadow grass in the spring, especially on winter barley. Thankfully there are products that can be used late on winter wheat and also some on winter barley. Liberator, (flufenacet + diflufenican) has a new label extension for use up until the 31st of March at the 0.3l/ha rate. On winter barley use is up to GS24 and GS23 on wheat. The Pico, (pendimethalin + picolinafen) products may be used up until GS30 of both winter wheat and winter barley. If all else fails then Othello, (mesosulfuron + iodosulfuron + diflufenican), has great flexibility to control tillered annual meadow grass but in winter wheat only.

The control of grasses other than annual meadow grass, requires a programmed approach which in the autumn and early winter of 2012 may well have been impossible. Brome is the most competitive grass weed in Scotland with black-grass still only confined to relatively few areas. Brome control in winter barley is more problematic than in winter wheat. It relies on a single dose of a high rate, (double that for meadow grass), of an autumn applied residual such as Liberator or Crystal. If due to the autumn weather these have not been applied, there are no follow up treatments.

In winter wheat there are more options and a two pronged approach is more effective rather than relying on single applications. Whether or not an autumn residual has been applied and if a spray opportunity presents itself, follow with Broadway Star, (florasulam + pyroxsulam) + 800g ai/ha of pendimethalin product + a label recommended adjuvant. For best control the Brome must be actively growing which is often the case in a mild winter. A short mild spell after frosts/snow is not enough, there has to be a prolonged period of mild weather.

If you have confirmed black-grass on the farm then it is important to avoid it setting seed and or spreading around the farm. As with Brome a programmed approach is required. If at all possible a high rate of Liberator/Crystal should have been applied pre-emergence in combination with Defy, (prosulfocarb), or Hurricane, (diflufenican) and followed with Unite, (pyroxsulam + flupyrarsulfuron-methyl sodium) + 800g ai/ ha of Pendimethalin + a label recommended adjuvant. Unite can be used up GS31 of the crop and GS24 of the black-grass. An alternative spring application for black-grass control is Atlantis, (mesosulfuron + iodosulfuron) assuming the black-grass population is not resistant! It should not be used on it’s own but in a programme as described above. Note Unite and Atlantis are only approved in winter wheat.