



### Leading the Development of Ireland's Farming and Food Industry

Teagasc, the Agriculture and Food Development Authority, supports science based innovation in the agri-food sector and the wider bioeconomy to underpin profitability, competitiveness and sustainability.

Through Research (food and agriculture) and Knowledge Transfer (education and advisory) Teagasc delivers six programmes:

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- Livestock Systems
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- Beef
- Sheep
- Pigs

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- Improve the competitiveness of agriculture, food and the wider bioeconomy
- Support sustainable farming and the environment
- Encourage diversification of the rural economy and enhance the quality of life in rural areas
- Enhance organisational capability and deliver value for money





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cheap and so in order to keep down costs, each cow needs to be fed individually based on her analysed needs

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Magazines Ireland

### INTRODUCTION

Liam de Paor

# How to improve farm incomes in 2013



Liam de Paor EDITOR

As we all know 2012 was a very tough year for farmers due to the prolonged period of wet weather during critical periods in the farming calendar. This impacted on grass and forage quality, reduced cereal and silage yields significantly. The reduced quality and shortage of forage impacted on milk production, livestock performance and herd health. Indeed many farmers are still paying for their greatly increased winter feed costs.

On a more positive note cattle prices were quite good last year. Despite the horsegate saga prospects for quality assured cattle are excellent. With the reduced price of dairy calves, exports for veal have resumed to Holland so this is helping to maintain current prices.

Obviously, rearing dairy calves for beef is now a more attractive proposition for drystock farmers who have much lower incomes than dairy farmers. The resumption of live cattle exports to markets such as Libya will also keep the pressure on factory buyers to pay more competitive prices. As regards sheep the prospects for lamb and wool are quite good. Indeed the number of ewes is increasing after years of decline. For those returning to fulltime farming after the collapse of the construction sector, sheep are well worth considering. After all it costs a lot less to stock land, and they assist grassland management. With modern equipment bigger flocks can now be managed with a lot less labour. For dairy farmers, last year was quite difficult and lower milk prices had a significant impact on dairy farm incomes and confidence levels. However, milk prices are recovering nicely and a super levy is not likely to be a problem this April. The abolition of milk quotas after 2015 is also focusing minds on future expansion, new equipment etc

The reduction in fertilizer application over the years has seriously impacted on soil fertility. Teagasc advice is that a target of Index 3 is essential for intensive farming systems. Due to the wet weather last year this is an even bigger issue as many nutrients have been leached out of the soil. This has implications for both grass yields and animal health. So, farmers need to do their soil tests and fertilise their lands as appropriate.

Animals and heavy machinery did a lot of damage on wet land last year. So, farmers know they need to repair damaged paddocks and reseed more permanent pasture this spring with better varieties. Some fields will also need drainage work done if optimum yields are to be achieved. All this will improve forage quality and availability while reducing the need for supplementary feeding with expensive concentrates. Nevertheless even on the best farms and with normal weather conditions there will always be times when grass is in short supply.

So, feeding stock to reach their genetic potential will always pay rich dividends. Cattle will finish quicker at higher weights and make better prices. Replacement heifers will reach their target weights for calving down and produce more milk over subsequent lactations. Indeed most of our cows have the potential to produce 25 per cent more milk and higher solids if the nutrition is right. These cows will also have less fertility problems and other health issues.

Cows are not responsible for a shortage of grass arising from bad weather or for grassland management. They have a specific requirement for lots of quality grass and an adequate level of nutrients at all times. They will reward consistent good nutrition by delivering lots of top quality milk. As the old Irish saying says "look after the cow and she will look after you". Looking to the future, younger farmers are much better educated and more IT literate. While we do have an aging farming profile at present it must be noted that thousands of students have attended or are attending agricultural colleges, and agri related courses in IT colleges, UCD and elsewhere. Around 50 per cent of dairy farmers now use computers while the younger generation live on Facebook, Youtube and are tweeting to their counterparts worldwide. So, the future of Irish farming will be in capable hands.

**NEWS** 

### TANCO - CELEBRATING 50 YEARS IN BUSINESS

Tanco is celebrating its 50th year in business this year. It is is now exporting to over 35 countries and their product range extends from light engineering equipment to front loaders of key contractors from 2005 to 2009, in tough conditions, to develop this model. During farm trials, over 15,000 bales per year were wrapped on sloped and wet fields.

Tanco has a number of 1400s wrapping for two high-output

and specialist balewrappers. The company focus is on innovation and providing consistent quality products to farmers and agri contractors. The E100 Eco 'farmers' trailed wrapper was first sold in Ireland last season. Bales wrapped were 500-900kg with 50-55 bales wrapped per hour. The 1320 'wrap and stack' system is increasing in popularity. Mounted on a



three-point linkage, it can be used like a trailed wrapper. In the wet 2012 season, this worked well as bales could be lifted straight off the ground, wrapped and dropped on a dry area or brought to a storage area.

The tough, wet season in 2012 has really shown the potential of the 1400 high-speed wrapper. Tanco worked with a number

balers running together and the wrapper keeps up at all times. With unpredictable weather contractors, require a fast, reliable, strongly built balewrapper that's easy to use and can cater for heavy wet bales and light haylage bales. Six layers of film instead of four is becoming more popular, so speed is important. A number of key contractors and large farmers have been running the Tanco 1400 inline,

directly behind baler. The integration has been very smooth so this is a real option for baled silage operators.

To connect a wrapper to the baler takes less than five minutes (simply hitch up, one double-acting hydraulics connection, one electric cable). Tanco recommend that a camera is fitted to the back of the baler.

### IAM LAUNCHES NEW CONTINUOUS FLOW SYSTEM

The new continuous flow system (CFS) system is unique to Strautmann. It has an accelerator-roller fitted between the pick-up and rotor for better distribution of the swath, resulting in a reduced horse power (hp) requirement. CFS has performed exceptionally well during 2011/12, with very positive testimonials claimed from users all over the country. Customers have experienced approximately 10 per cent higher loading capacity, with 10-15 per cent less hp requirement.

All CFS machines are fitted with camless pick-up, which means less wear and lower maintenance costs. IAM expect increased interest during 2013 after receiving a new product award at the FTMTA Show.

Based on the success to date with CFS, Strautmann has introduced the new mega-vitesse CFS short-cut forage wagon for 2013. This gear-driven rotor model slots in neatly between the super-vitesse CFS and the giga-vitesse CFS models.

The mega-vitesse CFS is available in three sizes, (28m<sup>3</sup>, 32m<sup>3</sup> and 36m<sup>3</sup>). The wagons are equipped with a 40-knife cutting unit (39mm cutting length), an all-steel body with a wooden floor/four steel chains. Pick-up and CFS drum are identical with the unit on the Giga-Vitesse CFS, as is the rotor/cutting device, apart from the knives (40 vs 45) The CFS system is now available on all giga-vitesse and selected super-vitesse models – also on the mega-vitesse model.



Dr P.J O'Connor

# Maximising efficiency with Grassland Agro

Grassland Agro is a new entity in the Irish market as a result of the merger between Timac Agro Ireland (part of the Roullier Group) and Grassland Fertilizers. Its primary objective will be to enable Irish farmers become more efficient after milk quotas are abolished and to meet the globalisation trends in food production

The focus of Grassland Agro will be to maximise the return on investment from conventional quality fertilisers and also from the Timac Agro patented high-performance range of enhanced fertilisers, soil enhancers, biostimulators, dairy hygiene and mineral blocks.

The new comprehensive range from Grassland Agro will contribute significantly to bringing Irish agriculture and fertilisation practice to the next level. We need to share innovations, and to prepare for the upcoming challenges of growth, both in production and quality, in a sustainable way that is respectful of the environment.

Grassland Agro is entirely committed to quality manufacturing and the traceability of its raw materials. Grassland Fertilizers has been involved from the beginning in the Fertilizer Association of Ireland, the first organisation to establish a code of good practice.

While the Roullier Group has enhanced research and development with environmental sustainability at heart, it specialises in plant, animal, and human nutrition and has successfully diversified into renewable energies. Based in 43 countries around the world, the Roullier Group achieved revenues of €3.2bn in 2011.

Over the past few years, we have seen the emergence of unpredictable wet and dull weather which has placed considerable pressure on farmers. Last year was a devastating year in terms of summer rainfall (June-August) with an average increase of 66 per cent. This resulted in considerable losses of nutrients, leading to poor growth.

Applying nutrients in periods of high rainfall can result

in considerable losses of Nitrogen (N), a main nutrient responsible for grass growth, to the groundwater. Over the past few months, I have noticed from analytic results that soil nutritional status is at crisis point. Over 60 per cent of soil analysis performed in Index 1 and 2 for P and K, while the results for trace elements are showing considerable signs of malnutrition. Inappropriate soil nutritional status will therefore reduce crop quality.

N plays a major role in grass growth because it increases both leaf production and photosynthesis directly (Parsons and Chapman, 1999). Nitrogen use efficiency (NUE) within intensive farming systems is known to be very low (O'Connell et al., 2004). Improved N-use efficiency within a farm system can be achieved by utilising the N in organic manures, the N supplied by soil and the N supplied fertilisers (O'Connell et al., 2004).

Improved NUE results in increased production efficiency, farm profitability and also reduces losses to the environment (O'Connell et al., 2004). Improved N-use efficiency is becoming more important with the higher cost of fertilisers. A recent development launched by Grassland Agro is N process technology which provides a balance of nutrition to the plants that matches the plants requirements. So, what is N Process and how can it help in increasing nutrient efficiencies?

### **N-Process fertilisers**

They have varying amounts of urea included in the granular and ammonium, which is easily released into the soil for plant availability. N is released from uniform CCF granules based on temperature and humidity matching the crop requirements. Molecules extracted from seaweed encourage mineralisation of N and promote availability of soil organic N. Physiological activators stimulate conversion of nitrate within the plant to utilisable proteins.

Easily available secondary elements (Magnesium, Sulphur) optimise the efficiency of N fertilisation with all enhanced fertilisers. The conversion and release of N from the granule is regulated by temperature and moisture of the soil, therefore matching the needs of the plant for N. Grass growth is promoted by increases in temperature and also a supply of moisture to utilise nutrients from the soil. The regulation in the release of N from the granular allows for efficient use of

applied N and limits the losses of N from fertiliser. As part of the enhanced technology of N Process, molecules from seaweed have been extracted to target specific enzymes within the plant. These stimulate the conversion of nitrate to amino acids and protein which are essential to improved production. Proteins and energy are essential components of forage and are key to delivering high growth rates or sustained milk production.

By activating plant enzymes, N-Process allows:

- Less accumulation of nitrate within the plant
- Increase in conversion of N to protein and energy
- A nitrogen starvation at the leaf level which stimulates utilisation of subsequent applications of N to the soil

### Supply and Demand

Over the past few years, farmers focused on providing a supply of N while depleting soil reserves of P and K. However, there are over 32 nutrients used by the plant to grow not just NPK. Calcium, magnesium, sulphur and trace elements are all important. A balanced supply of nutrients can deliver a crop that has the quantity and quality to maintain animal performances.

### Utilisation

The cost of concentrates is increasing, so improved grass utilisation is a key factor in delivering profitability for farming enterprises. Grass is the cheapest produced feedstuff and increasing grass in the diet can allow for farmers to maximise their profitability (Dillon et al., 2005). Make sure that grass is grazed and cut at the right time to ensure maximum yield and good regrowth. Reducing grazing rejection through the use of topping or the inclusion of sodium will allow farmers to optimise profitability.

### Conclusion

N-Process, features:

- New fabrication process with a new matrix agent.
- A gradual release of N to match plant needs.
- A better mineralisation of the organic matter.
- A better transformation of N into the plant.



The effects of Sodium on pasture utilisation (experimental farm Radinghem UK (FR-62)

N-process, benefits:

- Increase the yield and crop quality (protein, energy).
- Better use of N from the soil and organic matter.
- Increase N uptake by the plant.
- Reduce losses in the environment.



Mary McEvoy

# The new Grass Economic Index from Teagasc

The Grass Economic Index was developed to apply economic values to the traits of importance for a grass based ruminant production system and, in turn, provide a platform for the ranking of cultivars based on their total economic merit

The economic merit of an individual grass cultivar across a full production year has not being quantified previously. In cattle breeding, the development of the Economic Breeding Index (EBI) has been successfully adopted at farm level to assist farmers in identifying the most profitable bulls. The development of a similar approach to rank grass cultivars is a significant advancement in grass selection to guide grass breeders, research scientists, advisors and farmers in identifying grass cultivars that would deliver the highest increases in profitability at farm level.

Economic values were calculated for the important traits within a grass based production system. These traits are seasonal dry matter (DM) yield (spring, mid-season and autumn), silage DM yield (first and second cut), quality (across the months of April to July) and persistency.

The calculated economic values are as follows:  $\leq 0.15$ /kg DM spring yield;  $\leq 0.03$ /kg mid-season yield;  $\leq 0.10$ /kg DM autumn yield; the quality value was  $\leq 0.001$  (April);  $\leq 0.008$  (May);  $\leq 0.010$  (June) and  $\leq 0.009$  (July) per unit change in DMD per kg DM yield;  $\leq 0.036$ /kg DM first-cut silage,  $\leq 0.024$ /kg DM second-cut silage and - $\leq 4.961$  per 1 per cent decrease in persistency/ha/year.

These values are then applied to individual cultivar performance data to determine the total economic merit of a cultivar. In addition, cultivars can be selected for specific requirements based on their performance within the subindices. For example, if reseeding a paddock close to the milking parlour, cultivars that have a high economic merit in seasonal yield and quality may be selected. However, if reseeding the silage block, then the performance of cultivars for first- and second-cut silage would obviously be more important.

Research work is ongoing between Teagasc and the Department of Agriculture, Food and the Marine to further develop the index. The economic merit of individual cultivars will be available in spring 2014.

### **On-farm Variety Trials**

In 2010, a study was set-up by the Animal and Grassland Research and Innovation Centre, Moorepark, to examine the performance of perennial ryegrass cultivars on commercial farms. The objective of this study is to evaluate the yield and persistency of cultivars, sown as monoculture, on commercial farms.

This information will improve our understanding on how cultivars can be expected to yield and persist when sown on commercial farms. There are currently over 45 farms involved, with this number increasing steadily, and it is expected that over 100 farms will become involved. Cultivars are sown as monoculture (one single cultivar). Only one cultivar is sown per paddock.



A late heading diploid (Tyrella) is used as the control cultivar and this is sown on all farms, then depending on how much is being reseeded and how many paddocks each farmer is interested in sowing to monoculture, between one and six other cultivars are sown on each farm. Each farm has a minimum of two cultivars, with the maximum number of cultivars on any farm currently standing at seven monocultures. The farmer is responsible for completing a weekly farm cover throughout the growing season and this information is used to determine the DM yield performance of each cultivar. During the winter period each paddock is visually assessed for ground cover or proportion of perennial ryegrass in the sward by Moorepark personnel.

This information will be used to determine the persistency of each cultivar across a range of soil types. The data generated within the study will increase the information available to farmers on the potential performance of cultivars and their expected persistency under animal grazing across different soil types and locations in the country.

This is a long-term study, the performance of each cultivar will be monitored on each farm for the lifetime of the sward. This information will be useful to all grassland farmers in the future when selecting cultivars for reseeding.

### With 5 Layer Technology the benefits soon add up



Introducing Silotite 5 Layer Technology Balewrap, Available in green and white, this innovative new silage stretchfilm has five separate layers of polythene each of which is uniquely tailored to deliver complementary performance characteristics. Silotite 5 Layer Technology film:

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### Deirdre Hennessy and Michael Egan

Teagasc, Animal and Grassland Research and Innovation Centre, Moorepark, Fermoy, Co. Cork.

In the past, Irish dairy production has relied heavily on perennial ryegrass swards with high nitrogen (N) fertiliser application and white clover has not been widely used in grass swards for milk production. However, there is now increased interest in including clover in grass swards as the cost of N fertiliser continues to increase, and application rates are limited under the Nitrate Directive. Clover fixes atmospheric N and makes it available for grass growth.

In the past, farmers applying fertiliser to grass swards have been reluctant to include clover in swards as its persistence in fertilised swards can be poor. However, good grazing management, such as 18 to 21 day rotations and grazing to 4–4.5cm post-grazing sward height, is likely to benefit clover persistence as high herbage masses do not accumulate and so shading of clover is minimised.

Some research has also shown that including clover in grass swards can increase milk production. In 2012, an experiment was undertaken at the Dairygold Research Farm, Teagasc Moorepark to compare milk and herbage production from well-managed grass only and grass clover swards, both receiving 250kg N/ha/year.

### The Experiment

A grass only and a grass clover sward were sown at the Moorepark Dairygold Research Farm in May 2010. The grass only sward was a 50:50 perennial ryegrass mixture of Astonenergy (T) and Tyrella (D) cultivars sown at a rate of 37kg/ha. The grass clover sward contained the same grass mixture as the grass sward and a 50:50 white clover mixture of Chieftan (medium leaf) and Crusader (small leaf) clovers sown at the rate of 5kg/ha. Twenty cows were allocated to each treatment in early February 2012.

Treatments (swards) were rotationally grazed until October 31, 2012. Both sward types received 250kg N fertiliser/ha. Daily herbage allowance was 17kg DM/cow/day. Cows received 1-2kg concentrate/day when herbage supply was below nutritional requirements. Measurements included pre grazing herbage mass (>4cm), pre- and post-grazing sward height, sward clover content, milk yield and solids content. Data were statistically analysed to determine significant differences between treatments.

### Results

Cows grazing the grass clover swards had higher total milk yield and milk solids yield than cows grazing the grass only treatment for the experimental period (Table 1). Average daily milk production and milk solids was similar for both treatments in the first half of lactation, while in the second half (week 19 onwards) the grass clover treatment resulted in increased daily milk yield and milk solids compared to the grass only treatment (Figure 1).

Both treatments had similar pre grazing (10.6cm) and post grazing sward height (4.0cm). Herbage production was approximately 1.1t DM/ha greater on the grass clover sward (14.7t DM/ha) compared to the grass only sward (13.6t DM/ ha) (Table 1). Sward clover content increased across the grazing season from less than 10 per cent in February to a peak of 29 per cent in June, and sward clover content remained high at between 22 per cent and 27 per cent until the experiment was completed at the end of October.

	Grass only	Grass clover
Milk yield (kg/cow/day)	17.0	18.6
Milk solids (kg/cow/day)	1.41	1.53
Cumulative milk yield (kg/cow)	4788	5048
Cumulative milk solids yield (kg/cow)	388	400
Total herbage production (t DM/ha)	13.6	14.7

 Table 1 Daily and cumulative milk yield and solids production from cows grazing grass only and grass clover swards between early February and the end of October 2012 and total herbage production on the grass only and grass clover swards.

### Conclusions

Including white clover in grass swards receiving high fertiliser N input resulted in increased herbage production and milk yield/solids production. The tight, frequent grazing practiced in this experiment is beneficial to clover persistence in a sward as it allows light penetrate to the base of the sward for stolon production. This experiment indicates that including clover in fertilised, well-managed swards is beneficial to both herbage



Figure 1 Milk production (kg/cow/day) from cows grazing grass only and grass Clover swards between early February and the end of October 2012.

production and milk production. Research is on-going in the area of white clover inclusion in grass swards for high stocking rate systems.

### Acknowledgements

This experiment was funded through the Dairy Levy Trust and the Teagasc Walsh Fellowship Fund.



Diarmuid Murphy, Germinal Seeds

# Profit from new grass varieties

Looking forward to 2013, assuming the weather plays its part, grass reseeding rates should once again be high



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Not only did the inclement weather of last year result in land which had been ear tagged for reseeding not being completed but, furthermore, land, which was in good condition prior to 2012, is also in need of urgent attention now.

There should be sufficient grass seed stocks available for a normal years reseeding. However, the newer-improved varieties will sellout first so, farmers should plan any reseeding carefully and choose the best varieties available as per the Irish recommended list. There is a severe fodder shortage due to the above average in-house feeding period making farmers reluctant to take out paddocks for reseeding. In addition, due to rising agricultural commodity prices thus far in 2013, availability of funding or capital may be a limiting factor. Not to reseed for these reasons nevertheless is a false economy.

Reseeding is one of the best investments available to grassland farmers. Grazed grass is the cheapest feed for cows and drystock, and grass silage is among the cheapest winter feeds you can produce. Teagasc estimates that unproductive pastures with a low proportion of perennial ryegrass are costing farmers up to €300/ha due to loss of production and reduced nitrogen (N) efficiency throughout the season.

If the cost of reseeding is estimated at approximately €600/ ha, the increased profitability of the reseeded pasture would cover the cost within two years. As the case has been for the last few years, high and volatile agricultural commodity prices are likely for 2013. Therefore, given the competitive climate dairy farmers find themselves in, the opportunity to increase sward productivity, reduce silage requirement, improve grass quality and swards with 25 per cent increased responsiveness to N, make reseeding an absolute requirement for all farmers in 2013.



Top 5 Extend, the leading grass seed mixture from Germinal Seeds, has been further upgraded in 2013 with an exciting new grass variety Abergain. Abergain is a variety that satisfies all the criteria as regards (i) exceptional total yield (ii) superb spring growth (iii) excellent digestibility (highest on the Irish recommended list for all three criteria). This variety has been specifically bred to meet the needs of Irish grassland farmers by virtue of its excellent digestibility, superb early-spring and late-autumn growth, providing nutritious leafy forage at the critical shoulders of the grazing season.

Abergain is the most recent addition to the Irish Recommended List of Grasses and far exceeds existing varieties in many production categories making it a musthave variety in 2013. Top 5 Extend containing Abergain, Drumbo and Tyrella, is available from all co-ops and agri merchant stores.

The three most important factors in selecting a grass-seed mixture are total yield, digestibility (D value) and seasonal growth. D value is related to the energy content of the grass, which drives milk production and is a critically important aspect of variety performance on Irish farms. The varieties in Top 5 Extend have been carefully selected and contain specific grasses that have the highest scores for D value available. The consequence of high D value grasses is simple - higher utilisation of grass which means higher milk yields and solids. Recent research from Teagasc shows a one unit increase in D value will give an increase of 0.24kg milk/cow/day. This equates to 10c/cow/day in increased profitability.

The focus is now on early-spring and late-autumn growth to provide nutritious leafy grass in the diet at the shoulders of the grazing season and, therefore, maximise the number of days at grass. The current Moorepark blueprint for spring-calving dairy herds is to produce 90 per cent of total milk production from grazed grass. Hence, using varieties with maximum early-spring and late-autumn growth is critical to achieve this. Top 5 Extend contains varieties with the highest values for spring and autumn growth in Department of Agriculture, Food and the Marine trials. These ryegrasses go the extra mile in delivering a far greater return on investment for the Irish farmer.

Looking specifically at grazing yields, the highest yielding, lateperennial ryegrasses on the Irish Recommended List offers a 0.8t of DM/ha advantage over the lowest yielding. Using recent Teagasc data of an increase of €160 profit per hectare with each additional tonne of DM/ha produced, this gives a 'top to bottom' financial benefit of €128/ha. This is a significant saving, especially this year given the competitive climate dairy farmers find themselves in and the challenge to maintain and improve profitability.

In 2013, not only does Top 5 Extend contain leading varieties such as Tyrella and Drumbo but, it now contains the newest top variety Abergain. This makes Extend the leading mixture in 2013 for farmers who wish to maximise their grazing season and produce high volumes of excellent, quality nutritious feed throughout the season.

Top 5 Extend is available from all leading co-ops and merchants nationwide.



Ollie Carter, Technical Product Manager, Seedtech Ltd



In light of what has happened in the past year and with the backlog of reseeding work to be carried out on farms it will be more crucial than ever in 2013 that a very careful and planned programme be well thought out before any final reseeding plan is put in place

Unfortunately, 2012 will be remembered for the dreadful wet summer, autumn and winter even though it did start well with high grass covers and stock out earlier than usual, in most parts of the country, taking advantage of the good growing period and dry conditions. It's hard to believe but there was even talk of water shortages both here and in Britain around this time. Unfortunately from April onwards wet weather prevailed leaving with it a trail of destruction such as poor silage harvests (both yield and quality suffered) and badly poached ground by stock and machinery.

When planning reseeding for 2013 asking the right questions will guide your decision process on the type of cultivation, grass mixture and management practices required for a successful establishment. Careful discussion with an advisor or merchant agronomist will be extremely helpful when planning a program for the coming season.

Taking into consideration some of the problems and situations to be faced on farm in 2013, below is an outline of some of the more pertinent questions that farmers need to answer when making reseeding plans this year.

### Has poaching been severe and is land level?

Last year saw rainfall figures of 200 per cent of the 30-year average, saturated land with livestock out suffered severe poaching in places resulting in a breakdown of soil structure and drainage properties along with very uneven surfaces. Grass paddocks poached badly by stock in 2012 will need overseeding at the very least or else they will become infested with weeds such as docks and weed grasses.

### Is the field suffering from compaction?

Heavy silage harvesting equipment travelling on saturated soils which happened on many farms in 2012 will have caused compaction, breakdown of soil structure and ultimately inhibit drainage. Immediate surface compaction can be relieved by surface cultivations like power harrowing while deeper compaction will require ploughing and in severe cases ripping of compacted soil pans with a sub-soiler. If this problem exists and is not dealt with it, it will lead to poor reseed establishment and performance especially where min-till and direct reseeding methods are used.

### What is the perennial ryegrass content of the existing sward?

A general rule of thumb is pastures with less than 65 per cent perennial ryegrass content should be reseeded.

### What is the weed content of the field?

Land heavily infested with dock leaves, dandelions, buttercup, and thistle will need to be sprayed off with broad spectrum herbicides (e.g. Glyphosate)

### What machinery is available at time of reseeding?

This is the most obvious influence on farmer's options; however the majority of farmers will have access to most machines through contractors etc.

### What is the top soil depth in the field?

The depth of the topsoil will determine if a plough can be used. If ground with shallow top soil is ploughed the fertile soil on the surface will be dilute with infertile subsoils.

### What is the stone content of the field and how deep

### are stones?

The stone content of a field should have a bearing on the cultivation technique chosen; ploughing will bring stones to the surface while depending on the depth of stones in the soil profile power harrowing shallow may be an option. The end result of the choices made from Table 1 should be a clean seedbed with good seed to soil contact. This is vital for the

# to reseeding in 2013

seed to take up adequate moisture to promote germination. Moisture will be conserved in a firm seedbed by rolling. The field should be level free of wheel ruts and evidence of poaching. Plough-till-sow methods tend to produce the most consistent fine tilth with trash buried. Where minimum tillage equipment like discs, power harrow or rotavator is used it is crucial that it leaves a fine seedbed free of clods.

Whichever method is chosen from Table 1, the aim remains the

### Table 1. Advantages and disadvantages of main methods of reseeding

same: "To produce high-yielding, good-quality grass swards". It is imperative that all the boxes are ticked before carrying out any reseeding this year. Reseeding is too expensive and grass is too valuable to be making rushed and ill-informed decisions.

Ollie Carter provides technical sales support to farmer and trade customers in the cereals, grass, maize and fodder beet sectors. He also liaises with end users in the brewing and baking industries.

Plough Till Sow		Minimum Tillage		Stitch seeding/Direct seeding	
Cleans seedbed & buries debris	а	Cultivation for shallow topsoil	а	Efficient way to renew swards	а
Helps restore soil structure	а	Repairs moderate poaching	а	Cheapest of the alternatives	а
Relieves soil compaction	а	Incorporation of debris	а	No soil disturbance	а
Repairs major ruts and poaching	а	Steep fields cannot be ploughed	а	Fertile soil remains at surface	а
Very uniform seedbed and germination	а	Fertile soil remains at surface	а	Firm seedbed for early grazing	а
Not suitable for shallow topsoil	Х	Not suitable for badly rutted land	Х	Not suitable for compacted soils	Х
Not suitable for very stony soils	X	Not suitable for deeply compacted soils	Х	Not suitable for heavy trash	Х
Most expensive of the three options	X				

### FOR FARMERS WHO DEMAND MORE FROM THEIR GRASS SWARDS



Dr Tom Butler M.Agr.Sc. , UCD and Ph.D. (Animal Science), Cornell University, New York

### Singe quality ality well down in 2012

Apart from a brief period at the end of May and early June, the weather that prevailed throughout the silage season in 2012 was not conducive to the making of good quality silage. Because of the incessant rainfall, problems were experienced with delayed harvesting and many farmers were forced to salvage crops by proceeding with harvesting when ground conditions were not suitable

In discussing silage quality in any year, as portrayed by laboratory analysis, it should be recognised that only a small proportion of the total silage harvested in Ireland is analysed. It is likely that the vast majority of the more inferior quality material is never sampled for laboratory analysis, except when it is deemed necessary by a veterinary practitioner. The data in Table 1 summarise the principal parameters analysed in 2012 grass silage samples by FBA Laboratories.

### Dry Matter

Despite the extremely wet weather, the mean dry matter (DM) value of 25.7 per cent was quite good. While this is partly attributable to forage being more mature when harvested, there is also greater awareness of the importance of mowing grass when dry, and achieving some degree of wilting whenever possible. In 2002, when there was also a difficult silage year, the mean dry matter of samples analysed was 18.9 per cent, compared with 24.0 per cent in 2001.

lable 1					
Summary of Grass Silage Analysis, 2012					
	Analyse	Desirable values			
	Mean Range				
Dry matter %	25.7	17.0 - 52.3	20 - 30		
pH	4.2	3.6 - 5.4	4.0 - 4.7		
Ammonia N as % of total N	5.3	0.8 - 14.0	<10.0		
Ash %	7.8	4.6 - 11.6	<8.6		
Neutral detergent fibre%	55.3	40.2 - 68.7	<45.0		
Dry matter digestibility%	63.8	45.9 -77.2	>69.0		
ME MJ/kg	9.1	6.2 - 11.2	>9.8		
UFL per kg	0.65	0.37 - 0.85	>0.85		
Crude protein%	10.8	6.1 - 15.9	13.5 - 17.0		

### pH and Ammonia Nitrogen (N)

Quality of preservation is determined by pH and Ammonia N values. Preservation quality was much better than expected with a mean pH value of 4.2, and only a small proportion of samples having Ammonia N values (as a percentage of total N) exceeding 10.0 per cent It is worthy of note that this was achieved largely without the use of additives. Significant progress has been made with preservation quality in recent years due to recognition of the value of higher DM at ensiling and more regular reseeding of pastures to produce better quality grass for ensiling.

### Ash

Because of the difficult ground conditions experienced on many farms, there was speculation that problems with excess ash would be widespread. The ash values in the samples analysed were generally not a cause for concern, although somewhat higher than desirable in a minority of samples. Samples analysed for mineral profile showed a general tendency towards reduced major and trace minerals because of the maturity of the herbage. The varying degrees of soil contamination resulted in elevated Iron and Cobalt contents.

### Energy

The energy value of silage is determined by the botanical composition, and the stage of maturity at harvesting. All of the factors associated with energy assessment were at the inferior end of the normal scale:

(i) NDF%: The mean natural detergent fibre (NDF) value of 55.3 per cent was 10.3 units higher than the target upper value of 45 per cent.
(ii) DMD%: The mean dry matter digestibility (DMD) value of 63.8 per cent was 5.2 units lower than the target minimum value of 69 per cent.

(iii) ME and UFL: The mean metabolisable energy (ME) and net energy value for milk production (UFL) were at the lower end of the normal range. Some silages had energy values that were insufficient for the maintenance of any category of cattle.

### Protein

As would be expected, protein values were low on all silages that had become excessively mature due to delayed harvesting. The low mean protein value of 10.8 per cent was partially attributable to soil N losses due to rainfall.

### Table 2

Comparison of Analysed Grass Silage DMD and Protein Values in 2011 with 2012					
	2011 % of samples	2012 % of samples			
Dry matter digestibility (DMD) %:					
>65	85	46			
<60	Nil	23			
Crude protein %:					
>12	64	29			
<10	5	32			

### Comparison with 2011 Silage

The DMD and protein values of silage samples analyses in 2011 and 2012 are compared in Table 2. These data show the significantly lower DMD and protein values in the 2012 samples.

### **Animal Performance Effects**

The FBA Laboratories silage analysis report gives a summary of predicted animal performance and feed supplementation requirements. The majority of 2012 silages required higher than normal levels of concentrate supplement to achieve target performances in either liveweight gain or milk production. The concentrate feeds required increased protein contents e.g. 22 per cent protein required in many dairy rations.

The silages of greater concern were those at the lower end of the scale in terms of preservation quality and nutrient content. Animals dependent on these silages to meet their dietary requirements would suffer the consequences of depressed intake, and low nutrient density. The feeding of such silages, without adequate supplementation could cause irreparable damage to vulnerable animals such as weanlings and pre-calver cows.

### **Arable Silages**

As well as affecting grass silage, the wet weather conditions in 2012 also adversely affected whole crop maize and wheat silages. Maize silage grown on unsuitable sites was particularly badly affected with low yields, low DM content (less than 20 per cent) and some very low starch values (less than 10 per cent). The good maize silages were confined to the better sites and where cover was used. Wheat crop silage yields were generally lower than normal.



Dermot Forristal, Owen Fenton, Rachel Creamer

Teagasc CELUP, Oak Park and Johnstown Castle

# ealing with soil damage in silage fields

Digging out a spade-full of soil for examination is essential before considering any soil loosening actions. (Teagasc photo)

Last year's wet conditions presented challenges for silage harvesting and machinery operations on wetter heavier soils

About one year in three wet weather causes problems for machinery operations on heavy soils so action is required to minimise soil damage.

While soil provides the nutrients, water and support mechanisms for growing plants/grass, it must also support the weight of machinery and animal traffic to utilise the grass. Soils differ hugely in their carrying capacity for wheeled or animal traffic. The moisture content, which is determined by rainfall, but particularly by the drainage characteristics, is the most important factor. Heavy textured poor-draining soils are particularly challenging. Even with good drainage systems, water movement is slow, and in wet periods they are easily damaged by animals and machinery.

A year like 2012 can leave a legacy of damage which stimulates interest in remedial measures and damage prevention. So it is important to consider the main types of damage caused.

### Soil and Sward Damage

The main damage in a wet year is caused by animals or machinery. The flow of water on the surface and delivery of silt to lower lying areas can exacerbate other related problems, but is of lesser importance. The damage caused by traffic is dependent on:

- Soil moisture and type;
- Presence of a grass sward;
- Density, weight and duration of animal/machinery traffic; and,
- Machinery tyres and ground pressure.

Avoiding damage is the best option, but difficult in challenging years where grass must be utilised or conserved. The damage limitation options are as follows:

- Drainage which is expensive and a major decision;
- Grazing management to reduce poaching;
- Timing of machinery operations (limited scope in practice); and,
- Axle loads and tyre options on machinery.

### Visible and Invisible Soil Damage

Ruts and poaching result in sward damage which can impact on yield and lead to an invasion of weed grasses etc. The surface irregularities caused can also result in soil contamination of silage. The surface soil can also be damaged by severe poaching or rutting with soil aggregates broken down by the puddling and smearing action of hooves or tractor tyres on very weak (wet) soil.

Perhaps of more importance is the sub-surface compaction damage caused by animals and heavy machinery on soil structure. If we compact a soil, we reduce the size and number of larger pore spaces thereby restricting a roots ability to penetrate the soil and inhibiting effective drainage. This can adversely effect grass yield.

### Teagasc Research Trial

Some years ago, the impact of different levels of silage machinery traffic on grass yield was determined on two sites over a three year period. On the dry-land site the use of larger, low-ground pressure (LGP) tyres resulted in a 9 per cent increase in yield. With zero traffic, there was no further increase in yield. On the heavy wet land, the LGP harvesting system increased yield by 17 per cent compared to conventional tyres and with Zero traffic, 32 per cent more grass was harvested. Clearly compaction causes yield loss.



### Alleviating Surface Damage

If sward damage is not excessive or deep, it will recover quickly. Rolling in quite dry conditions can be beneficial where the surface damage is more severe. Rolling, generally, will not exacerbate compaction; but can smear the surface if conditions are wet. Grass harrows or gentle spiking may improve surface damage also.

### **Alleviating Compaction**

Research on spikers or aerators indicates an occasional positive response, but more often there is no response, and they can reduce grass yield. This emerged from a comprehensive Teagasc study at sites in Kilmaley, Oak Park, Knockbeg and Solohead. The aerator will have a positive effect if there is a very definite discrete compact layer within about 100mm (4in) of the surface. Sub-soilers or pan-busters are designed to work from 250 to 450mm deep. They loosen the soil by creating a general soil lift or 'heave' around the deep-working tines. These are expensive machines to operate and their use can actually cause harm in some situations. Research with sub-soilers on grassland shows a mixed response, with few showing a persistent positive effect on yield.

The risk with sub-soiling is that by loosening the soil to depth, it is more vulnerable to re-compaction and to a greater depth. It is imperative that the soil is not re-compacted in the season following loosening.

Timing of shallow (spiking) or deep loosening is critical. The soil must be dry to the depth at which the machine is working to get the required soil shatter. Usually the best time is the autumn, which also allows any root damage caused to repair over the winter avoiding yield loss.

### **Inspect Your Soil**

As aerating and loosening is only beneficial in limited circumstances, examining the soil for compact layers is essential. Extracting intact spade-fulls of soil and careful examination of the structure can identify any compact layers. These are often indicated by a horizontal pattern and plate-type elements in the soil structure, whereas un-compacted soil has a more crumblike structure. As soils vary a lot, this can be difficult to assess. It may be useful to compare mid-field and headland soils with un-compacted soils from under a fence line, to indicate if there is a true compaction problem.

If compaction is found, the most important step is to prevent/ reduce future problems by managing machinery and grazing traffic. Often the best soil repair action may be to leave the soil recover itself. The shrinking and swelling of the soil as it dries and wets will help its structure provided further compaction is avoided.

Deep-loosening should only be considered as a last resort and is not suitable for all soil types. If you are in doubt, it may be best not to sub-soil. If deep-loosening is deemed necessary, only work as deep as necessary and only loosen when the soil is dry. Be prepared for a temporary grass yield depression immediately after the operation in a dry season. Above all else avoid future compaction by careful management of machinery and animal traffic. The old adage 'prevention is better than cure' is certainly true. Michael O'Grady and Aidan Foley

### arasite con ce eleme rass Award winning Cassidy family farm near Cootehill, Co. Cavan.

Last year's inclement rain made grazing conditions very poor, grass growth was way back and grass was underutilised. Forage quality on many farms was 10-30 per cent below target in 2012. The wet weather parasites also flourished so many farmers experienced unprecedented liver and rumen fluke burdens

In addition the monsoon showers washed away many of the major and micronutrients from the grass so the quality of winter forage was lower. Plus animals seldom had a dry area to lie down and roadways were continuously muddy resulting in softer hooves and increased lameness.

Over-wintered animals on many farms are in poor body condition and are being turned out to grass at lower weights than normal. Below are some strategic plans to improve performance and minimise health issues in 2013.

### **Dosing Strategies**

To ensure minimal parasite burdens going forward to the grazing season, all cattle and dairy cows not fluke dosed (since housing or within eight weeks of housing) should be dosed prior to turnout. For ewes outdoors for the winter, continue to dose monthly for liver fluke. Final doses for rumen fluke may also be required.

### **Trace Element Deficiencies**

These can cause ill thrift, poor performance and lower immunity. Deficiencies can come from dietary and antagonistic elements that may make the element unavailable to the animal.

### **Trace Element Benefits**

• Cobalt is involved in the synthesis of Vit B12 and energy metabolism.

Selenium is important for good muscle development in the calf. It is essential for fertility, placenta expulsion and the immune system.

2012 winner of NDC Kerrygold milk quality award.

- Manganese is important for overall animal health and also helps with bone development in calves.
- Iodine is important for calf viability and fertility in cows.
- Magnesium helps with milk let down, muscle contractions and grass tetany prevention.
- Copper is vital for bone development, thrive and appetite. High Molybdenum levels locks up copper. It is involved in combating stress, preventing heart problems in calves and strengthening their bones. It helps fertility and immunity.
- Zinc is important for uterine involution, udder restoration, SCC reduction, colostrum quality and the immune system of the newborn calf. It hardens hooves and in involved in growth, immunity and fertility in males and females.

### **Trace Element Supplementation**

These can be supplied in the ration, in bag and bucket minerals, as tablets or liquids, in water or in boluses. Trace Element Boluses are growing in popularity. With the Osmonds Electromin Bolus range there are no losses of trace elements and vitamins through the liver or faeces, as the animal only gets what it needs daily.

The bolus uses an advanced release system giving a balanced and controlled supply of traced elements over the life of the

bolus. The trace elements are absorbed in the intestine after natural chelation by rumen bacteria. The Osmonds range include High Fertility Bolus (a high iodine, six month); Copper Plus (high Copper bolus, four month); Super Grazing (8.5 month); Elite Dry Cow (three month); Sheep Bolus (four month) and Calf Bolus (four month).

The Super Grazing Bolus uniquely lasts 250 days, weighs only 220g and contains very high levels of the five essential trace elements – Zinc, Copper, Iodine, Selenium and Cobalt. It is ideal for dairy and suckler herds to boost fertility and performance. It lasts from turnout to housing next winter.

David and Kathleen Cassidy are award winning farmers from Cootehill, Co. Cavan. Last October, they were overall winners of the NDC and Kerrygold Quality Milk Awards. They supply milk to Glanbia and much of which goes into Bailey's Irish Cream. Their herd average is 8,000L, with 3.96 per cent butter fat and 3.29 per cent protein. "Our aim is to maximise cow comfort and to produce top quality milk," remarks David. At drying off the Cassidys fluke and worm drench their cows with Flexiben SC and also give a high fertility and copper plus bolus. "We find this a convenient and trustworthy way to get trace elements into our cows," says David.

### **Precision Farming**

Attention to detail is paramount on farms whether its husbandry at calving, keeping farm records, managing grazing or silage platforms to maximise intakes of quality fresh or preserved forages, right down to monitoring animal performance or the correct level of dose.

Many more progressive farmers are now weighing animals regularly to assess performance against targets. They can then take remedial action as required. On a dairy farm it's important to have heifers at the correct weight for bulling. On beef finishing farms it's vital to know performance at key dates and monitor live weight gain. In addition, knowing the exact weight of animals ensures they get the correct level of dose to manage resistance (it is estimated that up to 15 per cent of animals are over or under dosed).

Jimmy O'Halloran is a beef farmer from Six Mile Bridge in Co. Clare. He invested in an Osmonds' weighing scales at the Ploughing Championships last September. He wanted to weigh cattle when they arrived on farm so as to know the starting weight. Then to weigh them every month to monitor performance and then weigh before they go to the factory so as to be able to measure the KO per cent. "This Osmonds' cattle scales helps me to pick the best bulls to buy and also see how well the diet worked," says Jimmy. "I can now monitor weight gains and make key management decision in time."

### Health and Safety on Farm

Farmers are rightly becoming more safety conscious. Many tasks can tend to be hazardous, whether it's agitating slurry, using farm implements or handling stock. Farms in many circumstances are one-man operations so it is vital they keep their own health and safety plus the safety and welfare of their animals in mind. This can be down to good gates around the yard and good crush facilities.

### **Animal Handling**

Last year, most farmers used more oral doses to control liver and rumen fluke which is never as easy as using pour-ons. Hook dosing guns go some way to reduce the hassle. In addition, the use of the Osmonds' cattle immobiliser at the crush gate makes it far easier to restrain strong and stubborn animals. It is custom made, sits snugly at the front of the crush and holds the animals head safely. So the farmer can dose, tag, vaccinate, castrate and even administer boluses. It makes all these jobs a one man operation. In addition the Osmonds' backing-bar connected to the side rails of the crush prevents animals going backwards and can even be pulled up behind them to keep them tighter in the crush.



### Pat Cahill, Volac

### Focus on forage for more milk and live weight gain

With significant increases in cost of production and poor weather conditions 2012 is a year to be forgotten. However, it did demonstrate the importance of forage quality on animal performance

Now that we are into a new year and hopefully a better one, the emphasis must not be lost on optimising forage quality for maximum profitability. To do this, we must break down the production of top quality silage into three main areas: the crop to be ensiled, the ensiling process and, finally, the fermentation.

### Crop to be Ensiled

This is your foundation for good quality silage. Reseeded grassland will always produce a higher quality crop and also more grass over the season. Remember, reseeded grassland can lose up to 80 per cent of the new ley in five years. Therefore implementing a reseeding policy is a must for productive grassland usage.

Applying slurry early to reduce risk of contamination of the forage and leaving a week between slurry application and fertiliser application will also increase productivity.

### The Ensiling Process

Be prepared, give you contractor plenty of notice when your silage will be ready to be harvested, or if you do it yourselves make sure all equipment is serviced well in advance. The last few days before you start to harvest should be spent cleaning out clamps rather than waiting for parts to arrive. Remember from last season, the weather window can often be very small so you must be ready to go.

Aim to wilt your grass to optimise dry matter intake and fermentation losses. However, this should be a rapid wilt and if possible within 24 hours. If you spread your grass, research has shown this should be done immediately after mowing to maximise water loss however only if ground conditions allow for little soil contamination.

### The Fermentation Process

Clamp management is now becoming the bottle neck when it comes to maximising silage quality. For the fermentation process to start all air must be removed from the clamp. This should start from the very beginning with the first load arriving at the clamp. The load should be spread evenly on the floor and packed with a maximum of 6" per layer. The capacity of the new foragers often means that grass arrives at the clamp too quickly. If you are not achieving this minimum packing, additional tractors should be placed on the clamp or clamping process slowed down.

Once all is completed, pack the top and seal immediately with a minimum of two covers and as much weight as possible on the surface.

### **Maximising Animal Performance**

Maintaining optimum performance from the grass silage will also be achieved by not only speeding up the fermentation but also increasing the efficiency of the process. Using an internationally proven silage inoculant will not only improve animal performance but also provide a significant return on investment. Ecosyl from Volac has been independently proven to increase dairy cow performance by an average of 1.2L of milk per cow per day over 15 trials, of which four have been carried out in Ireland. Its unique formulation of adding over 1m bugs per gram of L. Plantarum (MTD/1) speeds up the fermentation process thus maintaining nutrients for animal performance. The trials were carried out over a large range of dry matters and weather conditions. Also, 19 independent trials have demonstrated that animals fed Ecosyl treated silage have on average shown an increase in liveweight gain of 15 per cent thus fewer days to market and greater profitability.

These trials have shown an overall return of three times the money invested in a good silage additive.

# New developments in baled silage technology

Using the film and film system from Silotite the New Holland balewrapper can bale and wrap silage without using twine or netwrap

With Silotite 5 Layer Technology, all mechanical aspects of the film are consistently reliable, high performance balewrap. In order to provide the ideal ensiling environment balewrap needs to have strength, puncture and tear resistance, elasticity, UV stability and the ability to cling in all circumstances. If just one of these features is missing a film will not perform effectively. The five-layer manufacturing process enables the controlled placement of specific raw materials within the blend. So, superior UV stabilisers are placed on the outer surface of the film to face the weather; a bespoke tack on the inside face for a perfect seal between layers in both cold and warm weather (leaving no adhesive residue on the pre stretcher rollers) and the mechanical strength, tear and puncture resistance elements form the nucleus of the film.

This highly-effective five layer structure combines to form a superior, high performing stretchfilm that is robust enough to withstand tough handling by modern, bale wrappers. Additionally, this stretch film is better able to withstand the tough, stemmy, forage often selected for baling and wrapping. Silotite film also has enhanced resistance to oxygen ingress. Available in green and white it can be used on all types of bale wrappers. Whatever the conditions it delivers even stretch, effective sealing and higher bale throughput.

### Innovative New Packaging

This high performance five layer balewrap is now available in a 100 per cent recyclable, printed polythene sleeve. The unique packaging format provides enhanced pallet stability during transit. In addition to technical information, each sleeve provides 100 per cent traceability via a unique label while instructions for use are outlined through easy-to-follow icons. Each reel end is protected by a cardboard disc with the uppermost disc bearing a highly visible red arrow that indicates correct film positioning and unwind direction. The flexible nature of the new packaging ensures a close fit around the balewrap to minimise contamination by dust or dirt.

A big plus for the new packaging format is its 100 per cent recyclability. Made using the same base material (low density polyethylene) as the balewrap itself, the protective sleeve can be easily recycled through the same channel as used balewrap thereby aiding management of the waste stream on farm. Speaking of the new development, Sean O'Connor, General Manager Ireland said: "This innovative new packaging helps farmers and contractors to minimise waste handling while continuing to provide useful technical information." He continues: "Like the balewrap it protects this new sleeve is innovative and easy to use."

### New Dual Film Technology

The film and film system is a new, dual film technology from the manufacturers of Silotite (used to wrap +40m bales worldwide pa) that delivers better quality silage through greater bale density and an enhanced oxygen barrier. This innovation minimises waste of scarce and valuable forage while facilitating easier recycling of the products used. Reflecting the success of the film and film system is its adoption by a number of high-profile equipment manufacturers including New Holland and Orkel who have developed machines that can bale and wrap silage without using twine or netwrap.

This involves the combined use of a wide polythene film (known as 'mantle' film) alongside Silotite Pro Technology balewrap. Mantle film replaces the traditional netwrap used to bind crops into a bale format. Together these two films form the film and film system.

Having visited farmers who used the new system, Sean O'Connor, General Manager for Ireland, has been impressed by the quality of the mould free bales when opened. Another benefit is a cost saving (at current netwrap prices) of about 70c/ bale or around 15 per cent.



Liam de Paor

### Farm security advice



Due to the recession and the ongoing decline in standards, valuable equipment and livestock are more likely to be stolen from your farm. So what precautions can you take to minimise these risks to your property and even your person on occasions?

Both An Garda Siochana and the Police Service of Northern Ireland (PSNI) have lots of useful information on their websites at www.garda.ie and www.psni.police.uk For example, a farm security booklet was developed in collaboration with An Garda and the PSNI in 2010 to assist in preventing farm related crime. This is on the website and is packed with useful information.

In Northern Ireland the Farm Watch Scheme, which one can join, and under this scheme you are provided with roadside/ property signage plus warning signage for your machinery and a unique ref number.

The PSNI website also has a useful risk assessment form one can use to improve farm security with almost 50 questions worth answering. For example, has your equipment at least two ID marks – engraved (internally) and painted externally? Another one is have you considered the use of CESAR electronic marking scheme for your high value equipment? Construction Equipment Security and Registration (CESAR) is a registration scheme in Britain and Northern Ireland, where equipment is protected by state-of-the-art technology. It is a visual deterrent to thieves and aids ID, making it easier to return to its owner, if stolen and recovered.

Another option is to look at fitting electronic vehicle recovery systems such as a Tracker. The UK company's system involves hiding a covert transmitter in one of several dozen places around a machine. There is no visible aerial, so the thieves won't even know it's there. Tracker has installed nearly one million systems and using VHF and GPS technology, it enables the police to pin-point stolen machinery and vehicles, even if they are hidden in a container or lock-up. To date, Tracker has recovered more than 20,000 stolen vehicles since 1993 with 68 per cent of recoveries within 24 hours of machinery being stolen.

Dundalk-based Omniscout (Ireland) Ltd provides GPS/GSM tracking and security systems for tractors and other mobile equipment. The Plant Files company, also based in Dundalk, has a data registration service to record farm machinery.

Other good tips in this risk assessment form include the following:

- Are all fuel tanks/pumps secured and locked? Nowadays fuel theft is rampant so farmers and agri contractors need to take precautions.
- Are all valuable animals photographed or videoed?
- Are you using well-sited CCTV with remote monitoring and the latest technology? Are these working along with security lights on time sensors?
- Do you keep an inventory of your expensive agrochemicals with all relevant details (full product name, container, batch number etc)?
- Basics not to be neglected include checking stock regularly, let your neighbours know if you are away, remove keys/batteries, etc.
- Naturally gates, fences, doors and windows need to be properly secured. Do not make access easy by leaving ladders, tools etc lying around.
- If possible, remove temptation such as stock near main roads, park equipment out of public view and take photos of strangers and their cars.
- Naturally, one should never buy 'bargains' for cash. Pay by cheque and ask for a receipt. If the goods are stolen you are liable so buyer beware.

Dr Conrad Ferris, AFBNI

## Alternative dairy breeds and crossbreeding



Robust cows, that get in-calf easily, produce milk efficiently with few health problems and survive over multiple lactations, are key to profitable dairy farming. The Profitable Lifetime Index (PLI) can be used to select sires that transmit 'functional' and 'production' traits. It can also provide evidence that the increasing use of PLI has started to reverse some of the downward fertility trends previously observed within the Holstein breed

However, other breeds may offer opportunities to introduce 'robustness' traits through 'crossbreeding' or 'breed substitution'. These two approaches have recently been examined within DARD and AgriSearch co-funded research programmes led by Dr Conrad Ferris and AFBI scientists. This research was on 20 local farms, while more detailed measurements were done at Hillsborough.

### Crossbreeding

Within low-to-moderate concentrate input systems (up to 1.7t/ cow/year), Jersey crossbreds produced less milk than Holstein cows (approximately 560L less across three studies), while producing milk with a higher fat and protein content (Table 1). As a result, milk solids and value of milk produced were similar for both genotypes. In contrast, within higher input systems (over 2.5t/cow/year) the crossbreeds used part of the extra food nutrients for body tissue gain, and produced approximately 66kg less milk solids/lactation than the Holstein cows. So, Jersey crossbred cows do not appear to be suited to very high input systems.

However, in general, crossbreeding with Jersey sires resulted in less mastitis (although not a lower somatic cell count), fewer hoof problems, improved fertility and longevity. For example, on average Holstein cows survived for 3.6 lactations, compared to 4.8 lactations for the Jersey crossbreds. When the economics were examined, the crossbreds had a net profit £39 (€46) per cow per year greater than for the Holstein cows. This takes account of cull cow value, bull calf value, milk composition, cow survival, health and fertility.

### Table 1

Performance and survival of Holstein-Friesian and Jersey crossbred cows within lower input systems.

	Holstein-Friesian	Jersey crossbred
Lactation milk yield (litres/cow)*	6350	5790
Butterfat (%)*	4.25	4.71
Milk protein (%)*	3.35	3.62
Lactation fat + protein yield $(kg/cow)^*$	490	490
Mean survival (lactations)	3.6	4.8
Net profit (£/cow/year)	373	412

\* Mean of three experiments

### **Breed substitution**

The Holstein breed is only one of many dairy breeds within Europe, and some 'alternative' breeds appear to exhibit traits 'lacking' within the Holstein breed.

For example, Scandinavian cows have superior health and fertility compared to many other countries. So a research programme was established to examine if the Norwegian Red breed could make a positive contribution.

This breed had a poorer temperament than Holstein-Friesian cows, especially during their first lactation, and poorer 'type'. Indeed, 6.8 per cent of Norwegian Reds were culled due to 'poor udders' compared to only 1 per cent of Holstein cows. However, differences in production performance between the two breeds were relatively small (Table 2). The Holstein-Friesian cows had higher 305-day milk yields than Norwegian Reds during lactations 1-3 (mean: 6,476L vs 6,219L), but not during lactations 4 and 5 (mean: 7,206L vs 7,178L).

Nevertheless, there were very real differences in functional traits between the breeds. For example, Norwegian Reds had fewer calving difficulties with a lower incidence of still births. Somatic cell counts were approximately 40 per cent lower with the Norwegian Reds, with the improved udder health reflected in the fact that 9.0 per cent of Holstein cows, compared to 4.1 per cent of Norwegian Red cows, were culled due to mastitis. Norwegian Reds also had improved fertility, with 28.5 per cent of Holstein-Friesian cows and 11.8 per cent of Norwegian Red cows culled as infertile. Overall, Norwegian Reds had improved longevity, with 27.2 per cent of Norwegian Reds and 16.3per cent of Holstein-Friesian cows surviving until the end of their fifth lactation.

When extrapolated to give lifetime survival, on average Holstein-Friesian cows completed 3.5 lactations while Norwegian Reds did 4.2 lactations. An economic comparison indicated that net profit/year was £78/cow (€91) (22 per cent) higher with the Norwegian Reds compared to the Holstein-Friesians.

This study has clearly demonstrated that the use of selection indices that incorporate functional traits of economic importance (such as Total Merit Index (TMI) in Norway), improves robustness and performance. Thus, irrespective of which breed you use real economic progress will be made by selecting sires that are at top of the Profitable Lifetime Index (PLI).

### Table 2

Performance and survival of Holstein-Friesian and Norwegian Red cows.

	Holstein-Friesian	Norwegian Red
305 day milk yield (litres/cow)*	6768	6603
Milk fat (%)*	3.75	3.85
Milk protein (%)*	3.24	3.32
305 day fat + protein yield (kg/cow)*	471	472
Mean survival (lactations)	3.5	4.2
Net profit (£/cow/year)	361	439

\* Mean of lactations 1 - 5

### Conclusions

Neither crossbreeding nor alternative breeds will solve poor management or nutrition problems. You need to clearly identify what is the problem that you are attempting to solve. Ask yourself will alternative genetics provide part of the solution or are management changes likely to be equally effective? For many genetic 'problems', the solution may well be found within the Holstein breed. Selections indexes (e.g. PLI) that have a major emphasis on functional traits are now in place so bulls which can help to overcome existing herd weaknesses can be chosen.

Crossbreeding can be particularly beneficial for health and fertility, but not for other traits. Crossbreeding solely for the benefits of hybrid vigour is unlikely to be justified. Also hybrid vigour is not passed on to the next generation.

The use of alternative breeds or crossbreeding is a long-term commitment. It will be two to three years before the benefits become apparent within the herd, and at that stage these crossbreds are unlikely to comprise more that 25 per cent of the herd.

Alternative breeds and crossbreeding can complicate management in relation to housing and milking facilities. Depending on the breeds used, smaller and mixed cows cause problems in the milking parlour and cubicle houses. In general, Holstein cows have better quality udders than other breeds. If considering alternative breeds, it is important to choose sires that transmit good udders. The impact of crossbreeding and the use of alternative breeds on the value of cull cows, male calves and surplus breeding stock should be considered. In addition, the long-term value of the herd needs to be considered.

Alternative breeds should be suitable for the production system (i.e. low vs high concentrate input). In most cases, a breed should be chosen to minimise any loss in milk production, while maximising the gain to be made in other traits. Any alternative breed being considered should have an associated breed improvement progeny testing programme, with a significant focus on traits of greatest economic importance. The choice of sire within a breed can be even more critical than the choice of breed itself. Sires chosen from any alternative breed should be top sires for PLI from within the breed selected.

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Liam de Paor



Vincent McGee, his wife Agatha and son David have a modern dairy farm at Barnasragh, Co. Sligo. David has a degree in Agricultural Science from UCD, went to study milk production in New Zealand for one year and now works fulltime on the family farm. Their daughter Carleen, David's twin sister, is a Career Guidance Counsellor in Blackrock College, Dublin, and loves to get involved on the farm during weekends and holidays.

The family milk a herd of 55 high-yielding pedigree Holstein Friesian cows and supply liquid milk 365 days a year to the Connacht Gold liquid milk plant at Sligo Dairies. In fact the plant was built on Viewmount farmland and Agatha's late father Tommy Harte was a founding member of Sligo Dairies. His brother Joe was well known to farmers because of his research work at Grange and as a speaker at agri conferences and seminars. Agatha's grandfather established the original herd in the 1930s and her dad pioneered the introduction of black and white Friesian cows in the 1960s. All females have been registered with the Irish Holstein Friesian Association since 1967.

Their land is fairly dry and near the sea so cows are out early. This year they were out on February 19. They farm around 120ac, which includes some rented land. The grazing platform is 75ac and the farm yard is quite central. First cut of silage (50ac) was made on May 25 last. It had an excellent analysis with a dry matter of 29.5 per cent, an M.E of 11.0, DMD of 70, a pH of 3.9 and a protein of 11.1 per cent. The second cut of 30ac made on July 29 was also top quality.

They use Richard Brennan, a local contractor, for all their silage work, "mostly pit silage and sometimes round bales if





Although they use a contractor for all the silage work this is a well mechanised farm and their equipment includes a 2,000gal Hi-Spec slurry tanker and Agitator and a Hi-Spec diet feeder, which is used to feed silage, straw,

soya, mineral supplement etc to the milking cows, dry cows and replacement heifers. They also have three tractors (a John Deere 6610 with front loader, a John Deere 6520 and a Massey Ferguson 185). For grassland operations they have a Bogballe fertiliser spreader (one tonne), a Honda quad with fertiliser spreader for paddock work, an Abbey grass topper and a Gaysa sprayer.

They have made a significant investment in the farm infrastructure. All paddocks are now accessible by the farm roads, which are regularly repaired and resurfaced with quarry dust etc. However, cows have to cross a main road to access 40 per cent of their land. Grassland management is first class and the cost of fertilisers is minimised by making good use of slurry. This spring they spread 2,500gal per acre on the grazing ground.

### Reseeding on the Farm

Some years ago they put a reseeding plan in place for the entire farm. According to Vincent: "Our aim has been to reseed between 5 per cent and 10 per cent of the grassland annually. We want to increase sward productivity by introducing new grass varieties which will help us to increase the number of grazing days. Improved grass quality with greater feed value and regrowth will give us a higher milk output per hectare and a better response to fertiliser."

They prefer spring reseeding on this farm mainly due to the more dependable weather at that time of the year and "we can also utilise the new sward during the grazing season". They use ploughing or minimum cultivation, depending on the type of soil and location of the field. They have had good success with both systems. "I see reseeding to improve the productive capacity of the grazing platform as vital as we continue to increase cow numbers and litres per hectare."

Maiden heifers calve down between 26 and 28 months. The long-term plan is to increase herd size to around 75 cows. Acquiring extra land is not really an option so Vincent says that their stocking rate will increase and grass production improved to facilitate this expansion. Last year, cows were grazed for 230 days and 2.5t of concentrates were fed/cow.

### Massage for Pedigrees

As Vincent explains, the cows hooves (like our nails) can become overgrown and cause some discomfort, which, if unattended, can lead to lameness. The cows are moved into a specialist crate where they can be worked on safely by a hoof care specialist. Any trimming can be carried out with no stress for the animal or the operator.

According to Agatha: "Proper hoof health and reduced lameness has been a valuable investment for us as a cow feeling any discomfort will immediately drop her milk yield if not treated. Feet and legs must be looked after as our cows carry a lot of milk a long way especially on pasture in the summer."

David explains: "good nutrition and adequate fibre in the diet are essential to hoof health and preventing laminitis problems as this will impact on milk production and herd fertility so straw is included in the diet using the TMR system." He adds that: "cow comfort and hygiene are important to us. The cows just love the DeLaval swinging cow brush. The brush starts to rotate on contact and in addition to cleaning, it massages the skin which leads to better blood flow and a more active metabolism."

### Impressive Herd Yield

The Viewmount herd averages an impressive 9,000kg per annum (around 2,000gal) over 305 days, average lactation length is 330 days, with a calving interval of 395 days. Their cows average 475kg of milk solids at 3.9 per cent butterfat and 3.37 per cent protein. Milk quality is excellent with Somatic Cell Count averaging 190,000 and Total Bacteria Count 6,000 for the year to date. The average milk price for 2012 was 36.5c/L including bonuses, VAT etc.

Their oldest cow is Viewmount Conchita Jabo EX90 who is 11 years old. In her lifetime she has produced nearly 70,000L of milk, 2,724kg fat and 2,372kg protein or over five tonnes of milk solids. From eight calvings she has produced five daughters, four



One of the Pedigree Holstein Friesian cows on Viewmount farm. Average herd yield is around 2,000gal and 475kg of milk solids at 3.9 per cent butterfat and 3.37 per cent protein.

of whom are all currently in the herd. Thankfully she has no plans for retirement.

In the past, they sold in-calf heifers, but for now all heifers are retained to facilitate herd expansion. Cows and heifers that are over 40 days in calf are regularly scanned by vets from the local Inishfree Veterinary Hospital. "This is a vital part of the breeding program" says Vincent. This modern practice, includes vets, Brendan Leahy, Anthony Sweeney and Darren Carr along with six veterinary nurses and assistants.

Recently, Anthony scanned a group of cows and heifers and all were confirmed 'mothers to be'. This is an exceptional result so top marks to Agatha who does the AI work. The bulls used during 2011/12 were Goldwyn, Emerald, Zabing, Wyman and Loydie. Average days to first service were 70 depending on yield and body condition score with on average 1.9 serves to conception.

### Social Media

The McGee family are also very active on social media and in contact with farmers and consumers from Europe, North America and New Zealand. They also get regular visits from local schools and Agatha has been profiled on the milk cartons used by Sligo Diaries.

Teagasc estimates that 50 per cent of dairy farmers are now using the internet so Irish agribusiness needs to take note and up their game.

This is a sports mad family and they make time to engage in their hobbies. Agatha plays golf and tennis player and their daughter Carleen also plays tennis and football. David is captain of the local Coolera GAA club senior team and also plays soccer. Vincent is a keen golfer. Every Sunday morning at 9.30am after milking and chores he can be found on the first tee in Rosses Point.

In the past, Vincent played soccer for Sligo Rovers, he still plays seven-a-side once a week. Indeed his brother, Paul (David's uncle) won a League of Ireland title with Sligo Rovers in 1977. Paul also played for Ireland at senior level. His clubs included Queens Park Rangers, Burnley and Preston.

### Hi-Tech Milking Parlour

Daily milking times are 5.30am and 4pm. So how does a busy family dairy farm find time for all this social media activity and

enjoy a quality lifestyle? Well, the addition of a new hi-tech milking parlour will certainly help. Their old six unit DeLaval plant had recording jars and it was 32 years old. 'Milking was a slow process,' says Vincent. Cows were fed in parlour but it was not an automated system and the plant cleaning system was old and inefficient.

So in February this year they commissioned a new 12-aside, DeLaval Midiline Herringbone milking parlour with room for expansion and stall work for 16 units. This hi-tech plant has an Alpro computerised feed to yield system with Auto ID and an ACR (automatic cluster removal) system so cows are never over milked no matter who is the operator.

The Harmony lightweight clusters are half the weight of the previous ones and the cows now stand at a 50 degree angle in the parlour (used to be 30 degree) with the help of the Euro 50 curved rump rail. According to DeLaval, the Harmony clusters with its patented top flow technology eliminates cross flow from one quarter to another and this, in turn, eliminates cross infection in the cluster helping lower SSCs. "The cows are very comfortable and more content. Indeed, the cows adapted quicker than the humans," says Vincent.

The new parlour was accommodated in an old cubicle house and this has improved the cow traffic flow. Cow comforts include a DeLaval swinging cow brush. The parlour pit is deeper and more comfortable to work in. One person can now milk the cows – it used to be a two person operation. Feeding is automatic. The plant gets a more consistent wash with the Hygenius 200 auto plant washer." (DeLaval Ultra Liquid detergents are used).

### Improved Lifestyle

Vincent, Agatha and David are all delighted with the new parlour – they save one hour a day on the milking. Seamus Goggin, their DeLaval Area Manager points out: "No cow will be over-milked with this innovative ACR system - consistent milking is good for cows." As each cow is finished, the cluster is gently removed without any input from the operator and these valuable ladies can then relax while awaiting departure. Seamus also says that "the Hygenius C200 auto plant washer uses 40 per cent less water, less detergent and there is a significant saving on energy. The C200 monitors cleaning performance and alarms when a problem arises."

The Alpro herd management system allows the McGee family to feed cows to yield so this optimises feed conversion efficiency and body condition. They can check daily cow yields, record AI and calving dates. This system simplifies daily operations, analyses what is happening now and provides essential information for long term planning. Vincent expects "to make significant savings using this innovative IT system."

### Protecting the Rural Environment

The McGee family have a keen interest in their environment and in the flora and fauna that can be found on the farm. So, in 1999 the McGee family joined the Rural Environment Protection (REPS) Scheme, which encourages the maintenance of hedgerows, grassland, stone walls and wildlife habitats among others.

As part of their REPS plan they designated a 2ac wildlife habitat. This low lying marsh area provides an ideal location for frogs and butterflies. Plants thriving there include Marsh Marigold, Iris, Mint and Water Cress. Herons and Curlews can be seen



regularly along the nearby river.

Underneath the hedgerows can be found an abundance of wild flowers including primrose, buttercups, wild rose, dog violet, vetches, daisies and bluebells. There are many mature trees on the farm, mainly the native ash and sycamore. The REPS scheme encourages farmers to be more environmentally aware and sets down guidelines regarding fertiliser and slurry use, stocking rate, animal welfare and general good farming practices. Vincent points out that farmers take great care and pride in managing and protecting the environment. "We strive to produce quality food using farming practices and production methods which reflect the increasing concern for conservation, landscape protection and wider environmental issues."

### Flowers & Wildlife

As well as providing a natural boundary between pastures, a lot of hedges have been retained on the farm, these are trimmed (out of nesting season) to provide a breeding ground for birds and other wildlife. "We also create wildlife 'corridors' by leaving a strip of grass around the field edges which helps to protect wildlife habitats and endangered species of flora and fauna." Animals we encounter when gathering the cows for milking on a spring or summer morning include foxes, badgers, hares and rabbits. Vincent says that "we have had occasional sightings of a pine martin or hedgehog." According to Agatha "the hedgerows are a haven for birds including finches, sparrows, robins, wrens and wagtails to name a few."

The swallows return to their nests in the farm sheds and we are always amazed how the seagulls appear as soon as the first swathe of meadow is mown or the slurry tanker appears in the field. Of course, the recent wet winters has ensured that we always have a pond for the ducks," says David the fourth generation of farmers at Viewmount.



### Lameness awareness through calving and early spring

Ned Dunphy

Farm Relief Services hoof care expert

A great deal of lameness occurs later in spring due to conditions that occur while animals are housed or calving, or as a result of dietary and environmental factors – such as housing, scrapers, cubicles etc.

In order to minimise lameness farmers need to be aware of these problems and deal with them promptly and effectively.

### Changes at Calving

- Increase movement of pedal bone due to softening of ligaments;
- Changes in diet and stress; and,
- Increase in laminitis (claw disease) due to calving and change of diet.

### Management to Reduce Lameness [laminitis]

- Gradual introduction of concentrates, especially to heifers

   poor silage last year led to an increased concentrates
   feeding;
- Avoid walking long distances, especially after calving. Keep freshly calved cows near for up to 48 hours to allow pedal bone to settle back;
- Gentle handling and movement around yard;
- Good access to food and water; and,
- Have roadways in the best condition possible.

### Minimise Risk of Mortillaro Infection

Mortillaro [Digital Dermatitis] is one of the most common infections of the hooves that cause lameness. It is very infectious, so it is important to recognise it at a very early stage and deal with it effectively.

Look out for a strawberry type legion in the heel and front of the claw, when rubbed it bleeds with a bad smell. Also the hair stands up in and around the area of infection.

During and after calving there is an increased spread of Digital Dermatitis due to animal's lower immune system, stress [especially in heifers] and softer claws.

### Foot Bathing Treatment

If a problem occurs on your farm immediate action is needed.

• Foot bathing with antibiotic footbath; or



Continue with ordinary footbath to prevent problem e.g. bluestone and healthy hooves, Provita etc.

Usage rate: 3kg bluestone + 2.5L healthy hooves/ 100L of water Cost approximtely: €36

Provita: 1 per cent solution, 1L/100L of water

Cost approx. €12

If you do not control the problem, it will re-occur. Control it by:

- Regular scraping of passageways;
- Remove build-up of slurry at the end of passageways;
- Eliminate pooling of water or slurry; and,
- Reduce stress on animals [especially heifers bulling and new environment].

Do not allow cows to go badly lame: lift and check at early stages of lameness.

### **Cost of Lameness**

Direct costs:

- Vet/hoof trimmer and farmers time;
- Milk withdrawal and milk loss; and,
- Weight loss.

### Indirect costs:

- Culling and reduced heats; and,
- Cost of extra service.

Average cost of a lame animal is approximately €290. Different types of lameness have different associated costs e.g. solar ulcer is much harder to heal than Mortillaro and would have higher treatment costs.

### Lameness Observation

Observe cows walking in yard or roadways. Cows walking stiffly, with a slight limp or with severe lameness are stages 1, 2, 3 of lameness, respectively.

Observe cows during milking and wash cows feet.

- 1. Check heel of claws for Digital Dermatitis lesion treated immediately;
- 2. Overgrown claws hoof trimming is required; and,

3. Significant difference between inner and outer claw. Hooves need to be trimmed to distribute weight evenly.

### **Taking Action**

Farm Relief Services (FRS) provides an expert Hoofcare service to farmers. It recommends routine preventative hoof trimming and also provide curative hoof trimming and advice. Farmers can purchase footbaths and solutions and get product advice from their local FRS office.

Each FRS Hoof Care Technician can advise the farmer on lameness problems and what steps the farmer can take to prevent or minimise problems. FRS also do hoof care demos and advice clinics for farmer groups or at livestock marts on request.



Tom Ryan, Teagasc, Kildalton and John Upton, Teagasc, Moorepark



Energy audits carried out by Teagasc, Moorepark, on 22 farms in 2011 show a breakdown of the main areas of electricity use on dairy farms

These are: milk cooling 31 per cent; operating milking equipment 20 per cent; water heating 23 per cent; other equipment 18 per cent; water pumping 5 per cent; and lighting 3 per cent. The average cost of electricity was 0.51c/L (from 0.26c/L to 0.89c/L). So on average, electricity costs  $\leq 24$  per cow/annum, (from  $\leq 12$  to  $\leq 42$  per cow). A wide range like this should encourage anyone to estimate costs for their own farm and make improvements, if necessary.

### **Electricity Tariffs**

Most farms should make good use of nightsaver rate. Compare your pricing and tariff structure with that of other electricity suppliers on www.bonkers.ie

All you need is information about your present tariff, annual and night rate usage to calculate possible savings. If you decide to switch suppliers it is important to read the small print. Check the standing charges and for any termination charges. Average potential savings of  $\in$ 500 a year are possible between the dearest and cheapest electricity supplier.

### **Costing Electricity**

Knowing how much electricity is used by motors, lights and electrical appliances, and being able to put a cost on it, makes us aware of how electricity bills mount up. The wattage of an electrical item is shown on the rating plate or stamped on the appliance.

For example, if we want to estimate the running cost of five twin fluorescent lamps for one hour, and 1.5m long fluorescent tubes are either 58 or 49 watts. So, five twin fluorescent lamps would use 5 x (49+49 +14) = 560 watts per hour or 0.56 kW. One unit of electricity is 1kW (or 1000 watts) for 1 hour. Therefore, 0.56kW uses 0.56 units per hour. This would cost almost 9c/hour at day rate or 5c/hour at night rate. If these

lamps are left on unnecessarily during the day costs could mount up.

### Analysis of Bills

Simple calculations can be made to gauge electricity costs. Firstly, add up the total electricity charges over the year excluding standing charges, VAT and PSO levy. Multiply by 100 to convert from euro to cents. Next, add up the total number of litres of milk sold to the processor over the same period. Dividing the electricity cost in cents by the number litres will give the cost in cent/ litre. However, if the domestic house is on the same electricity meter the costs will be overestimated. Consumption of a domestic house depends on occupancy levels and heating type. A figure of somewhere between 10-25 per cent could be deducted for domestic usage. Table 1 shows an analysis of electricity bills from a dairy farm in 2012 with 63 spring-calving cows. The table shows the analysis of the usage pattern and costs, as well as various scenarios.

The actual usage of night rate on this farm was 37 per cent or 14 units a day. The breakeven usage for night rate is almost 16 per cent or six units per day. The money saved with night



This rating plate from a 3-phase water pump has a 5.5kW motor which is using approx. 5.5 units of electricity per hour

### Table 1 Electricity usage and costs for a 63-cow spring-calving dairy farm

	Actual (37 per cent night rate)	Scenario 1 Breakeven (16 per cent night rate)	Scenario 2 (50 per cent night rate)	Scenario 3 (63 per cent night rate)
Household usage	15 per cent	15 per cent	15 per cent	15 per cent
Number of cows	63	63	63	63
Number of days usage (2012)	365	365	365	365
Yield estimate – litres per cow	5450	5450	5450	5450
Day rate units	8688 (63%)	11632 (84%)	6895 (50%)	5102 (37%)
Night rate units	5102 (37%)	2158 (16%)	6895 (50%)	8688 (63%)
Average usage in units/ day	38	38	38	38
Average night rate usage in units per day	14	6	19	24
Night rate units used per cow	81	34	109	138
Electricity cost in cent per litre (excl. VAT, PSO / standing charges)	0.59	0.67	0.54	0.50
Amount saved by night rate use in cent per litre (farm only)	0.09	0	0.14	0.19
Amount saved annually by using night rate excl. VAT and PSO levy (farm only)	€270	€0	€435	€599
Amount saved annually by using night rate excl. VAT and PSO levy (farm and home)	€318	€0	€512	€705

rate is  $\in$  318. If 50 per cent of electricity used was on night rate (scenario two) the savings would have been  $\in$  512. The present cost of electricity at 0.59c/L ( $\in$  32 per cow) is above the average of the Moorepark findings. Further investigations and knowledge of the installation/appliances on this farm may determine where savings can be made.

### Water Heating

The average farm is using 40 per cent day rate for heating water. All electrical water heating should use night rate only. Typically, a saving of  $\in 170$  per year is possible . To heat 100L of water to 80 degrees will cost  $\in 1.00$  at night rate and  $\in 2.03$  day rate. The capacity of the hot water cylinder should match the

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daily needs for washing without using the daytime electricity. Generally, the minimum requirement is 9L of water at 80°C per milking unit for each hot wash cycle, plus a reserve for bulk tank washing. The bulk tank will require at least 1 per cent of the volume of the tank for hot washing.

Other points to note:

- Ensure that limescale is not affecting the efficiency and capacity of the hot water cylinder. A water softener should be installed in areas of hard water.
- All hot water pipes and hot water storage tanks should be heavily insulated.
- Review washing procedures to reduce costs, i.e. perhaps fewer hot washes, using cold washes, reducing temperature. However, to control thermodurics and wash milk meters effectively, frequent hot washes may be necessary. TBC tests must be consistent to avoid penalties or bonus loss.
- The hot water supply should deliver hot water into the wash trough at between 75 and 85°C. Check this by comparing the morning hot wash temperature with the thermostat setting (if possible) and adjust, if necessary. The water could be losing a lot of heat during transfer. Insulate the pipes from the water heater to the wash trough.
- Ensure that the timer turns off the power to the heater before any hot water is used in the morning. The heater should be timed on night rate and heated not long before it is to be used. The timer should switch off the power before water is used, to avoid standing losses and unnecessary heating of water.



Correctly plumbed plate cooler for efficient pre-cooling



This timer is not synchronised with night rate. The picture was taken at 5pm, yet the time on the clock is after 10pm. The clock is set from 5am until 9am. So, if hot water is used before 9am then it will heat again before the timer switches off.

- Where appliances are required to operate during night rate hours, e.g. water heaters, digital time clocks with battery back-up should be used. Analogue timers without battery back-up will be out of sync after power failures.
- Eliminate hot water (and cold water) leaks and wastage, e.g. general joint leaks, teat washers, mixer units, etc.
- Conserve heat by only filling the wash trough immediately before the wash cycle. The wash trough should fill quickly, i.e. if pipe sizes are correct, and be close to the wash trough. The cylinder should have baffles to limit incoming cold water from mixing too readily with the hot water and cooling it while emptying.
- Air entry to the milking machine, via the suck-up tube should be prevented during hot washing by having a closed circulation system. Unnecessary air entry will cool the wash solution too quickly. It can also reduce vacuum level and wash solution speed from the slug wash in the milkline.
- Extended hot wash circulation times are unnecessary and can cause wash solution temperature to drop below effective levels which may cause resoiling of the machine.
- The hot water cylinder may boil secretly at night due to faulty or incorrectly set thermostats. Check overflow pipes/ pressure relief valves for steaming or signs of overnight discharge.

### Milk Cooling

Effective pre-cooling of milk can reduce costs by 50 per cent. Variable speed milk pumps deliver better milk pre-cooling. The aim is to achieve milk to water flow ratio of at least 1:2. Unrestricted water flow from the well or mains supply through the plate cooler in large diameter pipes is needed to achieve this aim. The temperature of the milk leaving the plate cooler should be within 4-5°C of the well water entering the plate cooler. To check the efficiency of pre-cooling take the temperature of the water entering the plate cooler and of the milk entering the bulk tank. If the temperature of the well water is, say, 9°C then milk should be entering the bulk tank at about 14°C. If the temperature is higher than it should be measure the flow rates to investigate further.

Control the flow of water through the plate cooler with a solenoid valve so that water is not being pumped unnecessarily. The plate cooler should be sized correctly for the milking machine output. Adding extra plates to existing plate coolers will have only moderate effect on the performance of the plate cooler. Increasing, the flow of water through the plate cooler will have a much more dramatic effect.

A thermostat controls the compressor motor so it automatically turns off when the bulk tank reaches 4°C (or perhaps closer to 3°C with three day collection). Check the thermostat setting and the accuracy of the temperature gauge on the tank by comparing it to the temperature of the milk.

Other points to note:

- The plate cooler should not restrict the cleaning solution flow rate during the wash cycle.
- Use the coldest available source of water, e.g., well water.
- The cooling water and milk must flow in opposite directions through the plate cooler. Don't allow water to flow in the plate cooler while washing the milking machine (especially hot washing).
- Protect the refrigeration unit from rain and direct sunlight; an ideal location would be on the north-facing wall of the dairy.
- Locate the condensing unit to take advantage of wind movement and allow unrestricted airflow to and from the unit. There should be no recirculation of hot air through the condenser radiator. Condensers under a hot roof may

not perform optimally. Anything that restricts the supply of fresh air and/or causes the recirculation of warm air will increase running costs and reduce compressor life.

• Finally, the vacuum pump exhaust should be far enough away from the condenser to prevent oil build-up on the fins. The condenser cooling fins should be clean and undamaged and the compressor and refrigeration motor clean and free of oil leaks.

### Variable Speed Vacuum Pumps

Variable speed drive (VSD) pump motors can save over 60 per cent of the energy used by vacuum pumps. The VSD can adjust the rate of air removal from the milking machine to match the air entering the system at a given vacuum level. All the energy used to move air through the conventional vacuum regulator is saved.VSD installation is straightforward and cost-effective with three phase electricity, but can also work successfully on single phase systems albeit with higher initial capital costs.

### Purchasing New Equipment

When replacing a piece of equipment (pump, motor, etc.) consider the most energy efficient option. Try to plan this before a breakdown occurs. If you are due to install new equipment always ask for an energy efficient option. The slightly higher cost is all that the energy savings have to repay and this will often be repaid very quickly.



Albert Johnston, CAFRE Senior Grassland Technologist



Following the very challenging weather of last summer no one needs reminding of the difficulties faced in trying to make high quality silage. This past winter has also reinforced the need for high quality silage as higher levels of concentrates were used to compensate for poor quality silage. So what lessons can be learnt from last year?

Plan ahead and be prepared to move quickly and harvest silage during the short windows of opportunity when weather conditions are favourable. To achieve this and make high quality silage, you need to consider the following points. Repair the damage caused last year to silage swards.

### Soil Nutrients

The prolonged periods of wet weather has lead to higher levels of nutrients being leached out of soils especially potash and sulphur. These nutrients are already low in many silage fields, therefore soil analysis should be used to ensure the correct nutrients are applied.

### Surface Compaction and Rutting

On many farms, heavy machinery on waterlogged ground has lead to surface compaction and this can be identified by digging test holes to view soil structure. If this is an issue, either a soil aerator or a subsoiler should be used. However, make sure these operations are undertaken when soil is dry perhaps after first cut silage is harvested. It is also important that any ruts are levelled in and rolled to prevent soil contamination of the silage harvest. The ruts can be levelled using a grassland harrow, land leveller or digger.

### Sward Quality

Weed grasses have ingressed into many silage swards. These

Table 1: the levels of Phosphate (P) and Potash (K) required at various soil indices for first-cut silage

	Soil Index				
	0	1	2	3	>3
Phosphate kg/ha	100	70	40	20	0
Potash kg/ha	140	110	80	30	0

Every 1000gallons of slurry applied per acre will provide, 5.4kg of Phosphate(P) and 11kg of Potash (K).

grasses are lower yielding and less responsive to fertiliser. Waiting on these swards to bulk up only reduces the overall D-value of the silage. It is important in early spring to assess the sward quality and identify fields that need to be reseeded by using full or minimal cultivation techniques.

### Be Ready to Cut Early

Research work at AFBI Hillsborough has continually shown that this is the most important factor affecting digestibility. For each week harvesting is delayed the digestibility falls by 2-3 units of D-value.

### Apply Correct Level of Nutrients

Fertiliser applications can have a major effect on the quantity and quality of silage produced. Nitrogen (N) supply is particularly critical, apply too much and the silage will have high ammonia and butyric acid concentrations. If too little N is applied, both yield and crude protein content could be poor. For first-cut silage, 120kg N /ha is the normal recommendation and this should take account of both the N applied in the slurry and in the inorganic fertiliser. If 3,000gals of slurry is applied per acre this will supply 30kg N and reduce the requirement for bagged fertiliser to 90kg N/ha.

It is important that N fertiliser is applied in good time so that harvest isn't delayed waiting for the N to be used up. As a general rule of thumb, grassland will utilise 2.5kg N/ ha (equivalent to 2 units of N/acre/day) under ideal weather conditions. It is important to set a target date for cutting and work back as to when your fertiliser needs to be applied. It is better to plan for an early cutting date and be ready when the weather is good.

If soil analysis reports are available it is important to use them to determine the phosphorus and potash levels to be applied.

### Wilt Quickly

High Dry Matter (DM) silage helps animal intakes and enhances the performance of both dairy and beef cattle. Aim to wilt the silage to 30 per cent DM. This should be achieved in less than 24 hours to prevent excessive sugar and protein losses. The first step in achieving this is to cut when it is dry preferably after 12 noon, with no dew or rain on it. In ideal weather if the crop can be spread out over 100 percent of the field immediately after cutting, the target of 30 per cent DM can be reached within eight hours.

### **Clamp Management**

The priority is to make the clamp as airtight as possible.

- Ensure grass is spread in even layers of no more than 15-25cm and rolled consistently to remove air.
- When silage layers are too thick, pockets of air can form slowing fermentation, leading to increased yeast and mould growths. Silage is also more likely to heat up when the clamp is opened.
- Always cover the silo at night. It takes just 20 minutes to use up the oxygen in a silo and start a lactic acid fermentation.
- Don't roll next morning as it squeezes out carbon dioxide, sucks in fresh air and disrupts the fermentation.
- Completely seal the silo and weigh down shoulder and top sheets as soon as possible.

### Conclusion

Improving the feeding value of grass silage must be a priority for this year. The production of high intake, highly digestible grass silage, capable of supporting high levels of stock performance is vital in improving the profitability of farm businesses. Farmers who consistently make the best quality silage each year ensure the basics are done well, plan for an early cut and are ready when the weather is suitable. Remember, it takes the same fertiliser, diesel and contractor costs to make average silage as it does to make top quality silage without the added benefits.



# Control high cell counts in your herc

Michael Dore M.Agr.Sc.

Dairy Hygiene Manager at Grassland Agro

According to Teagasc, reducing SCC by 100,000 plus in a herd of 80 cows can gain you as much as €12,000 in farm income due to savings in associated mastitis costs per year

It is widely accepted that pre- and post-spraying is a vital management tool to achieve a significant reduction of your herd's cell count.

The Virolac range includes pre- and post-teat sprays and dips such as Quick Spray RTU, Virolac Concentrate and Virolac Film. These products are all based on lactic salicylic acid technology (LSA) developed by Grassland Agro's sister company Hypred in Brittany, France.

LSA is an active complex of hydroxyl-acids, combining AHA lactic acid and BHA salicylic acid. The combination of these natural organic acids ensures an extremely fast-acting, broad spectrum disinfectant.

LSA is effective in 30 seconds on mastitis causing bacteria such as Staph. Aureus, Strep. Uberis, Strep. Agalactiae and E.Coli. It is also effective on yeasts, cowpox and cow herpes. The lactic acid is effective against bacteria while the salicylic acid is effective against both bacteria and viruses. A completely safe formulation, LSA will not taint milk or irritate the skin. Both of the hydroxyl-acids are naturally occurring acids that work to condition the teat skin as both have emollient properties. Lactic acid is a humectant that softens the teat skin and the salicylic acid present in LSA exfoliates the teat skin.

### Hypred Quick Spray RTU

Quick Spray is a ready-to-use, high emollient teat spray combined with the breakthrough LSA disinfectant for preand post-spraying. It contains a complex emollient system including propylene glycol for excellent teat condition. This top quality teat spray is excellent for controlling SCC and Mastitis during peak milk production. The combined disinfectants in LSA give reinforced, fast-acting effectiveness against bacteria that starts to work seconds after being applied.

### Virolac Concentrate

This product is recommended by one of the biggest co-ops in Ireland for controlling cell counts on problem farms. It is a versatile 4:1 concentrated pre- and post-teat spray combined with the breakthrough LSA disinfectant for an all-round economical formulation.

### Virolac Film Udder Dip

This is an advanced teat barrier technology product with the breakthrough LSA disinfectant for the ultimate udder dip. It is ready to use (no mixing or dilution necessary). Virolac Film is designed with film-forming agents and cannot be used before milking. The combined disinfectants in LSA give a reinforced, fast-acting effectiveness against bacteria that starts to work almost immediately.

Virolac Film is enriched with a complex emollient system, including Lanolin, Glycerol and Aloe Vera to ensure outstanding teat condition.

A rheology complex allows the formulation to cling to the teat for longer periods without dripping, thus optimising the disinfection and cosmetic action on the teat skin. Also a superb capillary action plugs the teat canal.

### Thermoduric Bacteria

Most bacteria present in raw milk are non-pathogenic and

are readily destroyed by pasteurisation, however, 'thermoduric bacteria' can remain active even after pasteurisation and, consequently, adversely impact on product quality by reducing shelf life and flavour content. Milk with 1,000 thermoduric bacteria/ml is not suitable for processing so it will be rejected by the co-op or Plc.

### Sources of Thermoduric Bacteria

Animal faeces, livestock bedding and soil contain large numbers of 'micro spores' particularly in dry and dusty conditions. These are the most important sources of thermoduric bacteria (Bacillus, lactobacillus and Clostridium) which survive as heat resistant spores.

Cows housed indoors are frequently in direct contact with contaminated bedding and, therefore, susceptible to infection. Equally, cows lying on outdoor pastures around dung paths are also at risk. Contamination occurs via the teat surface with these micro-organisms readily transferred to the milk during milking. These bacteria will in turn contaminate the clusters, pipe lines and bulk tank. In hard water areas where limescale is a problem, contamination is more severe with the high alkaline harbouring the bacteria and contributing to a reservoir of bacteria if not properly or frequently removed. Also, biofilm formation on pipelines (which are often corroded or jagged lines) result in extensive bacterial growth if not frequently removed by proper hot washing of the milking equipment.

### Controlling Thermoduric Bacteria in Milk

The key here is to remove the contamination on the teat surface prior to cluster application. Firstly, thoroughly clean the teats pre-milking with an approved teat conditioner such as Dermisan Plus, Hyprazur dairy cloth cleaner or Virolac Concentrate. The moisturising properties of these will not only clean the teat can be eliminated by a rigid machine and bulk tank wash routine. This involves the correct use of daily detergent sterilisers and at least once weekly use of a quality descale/milkstone remover i.e. Unipred (50 per cent Phosphoric acid+ surfactants) at a rate of 1L:45L water. Circulate the solution for seven minutes at 55°C discard the wash afterwards. A daily hot wash of Hyproclor Ed at 300mls/45L water should be used and re-use the solution in the evening wash. Alternatively, a cold high caustic based detergent such as Unisan liquid/Plus powder will give satisfactory plant cleaning at 400mls/45L – liquid and 5grms powder/L (5,000ppm) respectively. It is now common practice to replace chlorine in the final rinse due to the risk of TCM residues with a paracetic acid-based product i.e. Perfo Grif at 60mls/100L of water.

### Milking Parlour Hygiene

The immediate environment around the parlour should always be clean and tidy to prevent lateral spread of faecal bacteria to dairy cows both entering and leaving the collecting yard. The yards and walkways should be washed down after each milking. The surrounds of the dairy should ideally be concreted to facilitate bulk milk collection and feed delivery.

Steps to maintain low Thermoduric bacteria levels in milk:

### PRESENT CLEAN COWS FOR MILKING Pre- milking preparation, spray & clean

Change rubberware twice annually

Use cleaning products as recommended for machine & bulk tank

Use correct quantity for wash & rinse

Use hot water (75-80° C), check temperature regularly

Descale milk plant and bulk tank at least once weekly (twice if hard water)

Avoid storage of warm water (plate cooler) for machine cleaning

and kill all surface bacteria within 30 seconds. The teat disinfectant needs to be wiped off to achieve maximum kill on the teats. Washing cow's teats on its own will not remove the bacteria and may lead to further contamination due to the creation of a moist environment and mobilisation of surface contaminants from the teat to the milking cluster. Water can be a source of bacteria spread, so it must at all times conform to the highest quality.

surface but also disinfect

### Hygienic Milking Equipment

The next potential source of thermoduric bacteria build up is in the milking plant itself. The risk here

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The Helen family have been farming at Kilgarriffe near Clonakilty in scenic West Cork since 1954. There are three generations of the family currently on this outstanding dairy farm which will host the Irish Holstein Friesian Association National Open Day on June 26

The total area farmed is 200ha, of which 70ha are at Kilgarriffe. Richard and Marion took over the farm from Richard's parents (Richard Senior and Bella) in 1982. However, they remained actively involved in the farm for many years. All of the younger generation (Mervyn, Andrew, Wendy and Avril) have been involved on the farm since childhood, with Mervyn returning home to farm alongside Richard and Marion after completing a degree in agriculture at Bishop Burton, Yorkshire.

When Richard and Marion took over the farm, the dairy herd was at 60 cows and the milking took place in a 7-unit double-up plant. Liquid milk is supplied to Clona Dairies and they also supply milk to Carbery Creameries for cheese manufacture through Lisavaird Co-op. In 2006, the farm entered a partnership with Peter Jennings, which brought additional labour, land and quota to the enterprise.

This autumn- and spring-calving herd (50:50) is now at 200 cows on a milking platform of 60ha. Average yield last year was an impressive 9,132kg at 4.06 per cent butterfat and 3.35 per cent protein. There are 36EX, 102 VG and 60 GP classified cows in the herd. The Kilgarriffe herd of Holstein Friesians has won many awards at local and national shows. Bulls used in recent years include Shottle, Oman, Seaver, Doberman, and Shout.

As one would expect, grassland management on the farm is first class and 20 per cent of the grassland is reseeded per annum. Grass is utilised fully in the herd's diet. A high proportion of the feed required for their high yielding herd comes from grass, home-grown forage (grass and maize silage), cereals (whole cropped or combined) and fodder beet. They do all their own machinery and forage work with the aid of only two part-time workers.

For winter feed, they conserve 90ha of grass silage (first and second cut) along with 20ha of maize silage. This is supplemented with 25ha of winter wheat, 16ha of spring wheat, 10ha of spring barley and 4ha of fodder beet. The cows are on a TMR diet.



Mervyn, Richard and Marion Helen



### Hi-Tech Milking Parlour

A Hi tech Gascoigne 24-unit herringbone swing over milking parlour was installed in 2006 to cope with the increase in cow numbers and to reduce milking time. The new plant has an automatic removal (ACR) system and Auto ID which makes milk recording and other management activities much easier. They also installed a 12,000L energy efficient bulk tank. This is obviously a top-class milk production operation with excellent breeding and a significant tillage enterprise so the family have invested in a good education. Mervyn completed a degree in Agriculture at Bishop Burton College (awarded Best Student in his final year) in Yorkshire, and returned home to farm with his parents. His brother Andrew was awarded the Victor Truesdale Prize (awarded annually to a final year student from Ireland) at Harper Adams University College, in Shropshire. He is currently working in the telematics department of JCB. Wendy is working locally while completing her masters and Avril is currently studying Agricultural Science at UCD.

### Award Winning Family

The Helen family have won numerous awards in the Cork Holstein Friesian Breeders' competition over the years. These awards included first place for the Best Family in the 2009 premier section. In the 2010 premier section they had the second place Best Calved Heifer and in the 1998 premier/elite section they also won the Best Breeders Herd (Over 60 Cows category) for home-bred cattle. During the 1980s, they picked up 12 championships at local shows including the Dry Cow Class at the First National Dairy Show in 1982 and they still exhibit occasionally at a local level. The family has also done very well at stockjudging.

Mervyn represented Clonakilty in the Macra Dairy Stockjudging Finals in 2011 which was held at the IHFA Open Day in Wicklow. Richard has won many prizes through the years - in 2012 he won the Senior Stock Judging Cup presented by the Cork Holstein Friesian Breeders Club.

Avril was a member of the award winning Cork YMA team at the IHFA Open Day in 2010. She has been twice awarded Cork YMA Club Person of the Year. All the family compete regularly at the Cork Holstein Friesian Club field evenings.

Jerseys were purchased in 2005 as a hobby breed and Kilgarriffe is home of Braymeadow Junos Mickie EX94, the highest classified Jersey in the Republic. She was also five times Champion at the National Spring Fair and at Emerald Expo.



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### Dr Dan Ryan

Reproductive physiologist

## Sexed semen and fertility assessment for high pregnancy rates in dairy

Spring-calving accounts for approximately 90 per cent of milk production in the South of Ireland. The primary objective is cost-efficient milk production from grazed grass

There is also a national plan to expand milk production by 50 per cent in the Food Harvest 2020 campaign. Breeding programmes have focused on the development of a genetic base capable of delivering on herd health and reproductive performance from grass-based milk production.

The primary concern of farmers when using dairy sires is the birth of heifer calves. Male calves frequently have little value and may often not receive the required intervention when sick. This creates welfare issues which in the current turmoil created in the market place by the horse DNA scandal has to be avoided.

The staff at CowsDNA determine the sex of pregnancies in cattle between 51 and 110 days of gestation. You can feel like the grim reaper as you cull out male pregnancies which appear to be present in an inordinately high percentage. What makes matters worse is indentifying a multiple pregnancy with the primary "female" tag with an accompanying male pregnancy. The male co-twin causes sterility in the female, which is commonly referred to as a freemartin conditions. Developments in technology have resulted in the ability to sort semen into the foetal sex determining male and female sperm. Cogent in Britain were one of the primary developers of the technology with the introduction of sexed semen on to

the commercial market thirteen years ago. Initially, pregnancy

rates were close to 30 per cent in maiden heifers with the

accuracy of foetal sexing between 70 and 80 per cent. Now in their fourteenth season selling sexed semen globally, Cogent has perfected semen sexing technology, with pregnancy rates averaging at 50 per cent in maiden heifers and in excess of 95 per cent accuracy of foetal sex. There are extra costs associated with generating each pregnancy but the return on investment surpasses all associated costs.

### Herd Health Impacts on Pregnancy Rates

Caution should be exercised however, in that pregnancy rates will be very poor if herd health is not optimal. Using our unique USART (ultrasonographic assessment of the reproductive tract) technology we have identified sub fertile maiden heifers, on the basis of outbreaks of pneumonia, coccidiosis and cryptosporidium as young calves. This relationship is explained as an epigenetic effect whereby a previous experience affects genetic expression in the future. It is essential that maiden heifers get no setback prior to mating with sexed semen.

Nutrition and housing environment have to be correct to avoid any impairment of egg quality which dictates events leading to heat, fertilisation and early development of the embryo. As herd size increases, there needs to be a commensurate increase in housing area. However, many farmers leave their young stock with inadequate space for lying and feeding. CowsDNA



has shown that this will increase the percentage of heifers with delayed puberty and induce same in heifers previously cycling. Heifers housed on slats, without rubber walk ways, will suffer more in terms of cyclicity and pregnancy rate to services. Farmers use the CowsDNA USART technology with maiden heifers to also identify the stages of the oestrus cycle whereby targets can be set for natural heat detection or synchronisation of heats at minimal cost. The pregnancy rate using sexed semen in maiden heifers which are synchronised is the same as that achieved with natural heats once the heifers have been identified fit for AI using USART technology.

Maiden heifers need to achieve the desired stature and weights prior to breeding sexed semen resulting in heifer calves, which will be smaller at birth, less dystocia, and faster reproductive tract recovery post calving does not give a license to breed heifers under their target weights. It is essential to work with your nutritionist to ensure the rearing of calves through to calving at 24 to 27 months is optimised. The young stock on your farm are technically the best genetics for your farming system and the use of sexed semen will maximise the opportunity to harvest genetics for the next generation of replacements.

### Sexed Semen Use in Multiparous Cows

Sexed semen has been primarily advocated for use in maiden heifers, where pregnancy rates of 50 per cent can be achieved with good management. Pregnancy rates using sexed semen in multiparous cows have been variable. However much of this can be explained by dairy herd management from the dry cow period through to the time to breeding post calving. CowsDNA using USART technology between 14 and 44 days post calving can identify the outcome of dairy herd health management in the transition period described by eight weeks pre calving through two weeks post calving. We can identify these cows with the highest probability of going back in calf within six months of calving. These cows can be selected on the basis of USART for matching with sexed semen sires. In our experience over the past year using sexed semen in high production potential dairy cows the pregnancy rate averaged 35 per cent which was 7 per cent lower than that achieved using conventional semen in the same herds.

Some farmers will only use sexed semen in lactating cows when they are greater than 80 days calved on the basis that they will be in a positive energy state and growing body condition. Based on USART data Cows DNA use the status of the reproductive tract to dictate when cows are suitable for AI with sexed semen. This will reduce the calving interval which is the primarily driver of profitability in the business.

### More Twin Births

It is worth noting that the incidence of twin births increases with the genetic potential for milk production. The CowsDNA USART technology can identify cows with an increased risk for twin births. We have successfully used sexed semen in these cows resulting in the birth of twin heifers. The dairy industry is a significant source of beef progeny for the beef industry. The recent use of crossbreeding with Jersey sires has had a negative impact on the value of male calves for the dairy farmers. These Jersey cross bull calves do not meet export standards and create welfare issues as they are not welcome in the food production chain. Sexed semen using beef sires on a higher proportion of the dairy herd offers an opportunity to redress this situation. It is essential to use USART technology to both select and manage the dairy herd when using sexed semen in the latter part of the breeding programme.

In conclusion sexed semen can be used successfully in the both maiden heifers and dairy cows. Replacement dairy stock can be proactively selected from the best dairy stock. It is essential to use USART technology to maximise the opportunity offered with sexed semen as part of your breeding programme.

## Emerald Expo grows from strength to strength



Pictured at the recent launch of the Emerald Expo 2013 dairy event in the RDS, Dublin are Kevin Tuck, Managing Director, Alltech Ltd, Dunboyne, Co. Meath, Aileen Barron, KW Forage Systems, Ballymountain, Waterford with Charles Gallagher, Chief Executive of the IHFA and Henry Corbally, Kilmainhamwood, Co. Meath Vice Chairman of Glanbia Plc.

Emerald Expo continues to develop as a prestigious showcase event for Ireland's dairy sector. At its heart is a unique relationship between the Irish Holstein Friesian Association (IHFA) and the renowned global animal health company, Alltech

This year's event will take place on Saturday April 27 at its now traditional venue the Hub at Cillin Hill Mart Complex, on the outskirts of Kilkenny City.

But Emerald Expo is much more than a pedigree dairy cattle event. In reality, it represents a tremendous opportunity for commercial milk producers to learn at firsthand about potential developments within the agri sector, which could have a major influence on their businesses over the coming years. A case in point is the series of workshops on dairy expansion and renewable energy which will be ongoing throughout the day. Teagasc's Dr Padraig French will be in attendance to discuss the challenges and opportunities that exist at individual farm level as the Irish dairy sector shapes up to expand its level of output by 50 per cent over the next seven years.

The production of renewable energy at farm level represents



Pictured at the recent launch of the Emerald Expo 2013 dairy event in the RDS, Dublin are Monaghan man, Brendan Greenan, Chairman of the YMA (IHFA-Young Members Association), Donal Carey, IHFA Development Officer, Kells, Co. Meath with IHFA President, Kathleen Kelly and UCD Ag Science student, Avril Helen, Clonakilty, Co. Cork.

another opportunity for dairy farmers to develop new incomes streams during the period ahead. Assisting the Emerald Expo team to the coordinate the Renewable Energy session is IFA's Thomas Ryan.

"We are delighted to be working with the IHFA again on what is a true highlight of the Irish dairying calendar," confirmed Cathal McCormack, Alltech country manager for Ireland.

"Emerald Expo provides Alltech with a unique opportunity to align ourselves with Ireland's top dairy cattle breeders. The event also provides us with a tremendous backdrop to showcase our range of nutritional solutions for the dairy sector as a whole." Cathal continued: "Emerald Expo continues to grow from strength to strength, both as a pedigree dairy show and as a platform for new thinking within the dairy sector as a whole." Show Co-ordinator Richard Whelan believes that the combination of a one day event, as opposed to two day format followed in 2012, plus the decision to bring the event back to a slot in late April will suit the vast majority of dairy farmers throughout Ireland.

"The fact that we are catering for all dairy breeds this year, including Jersey, Shorthorn and pure British Friesian, represents a further attraction," he further explained.

"The involvement of our young members in the event will also help to boost its appeal to milk producers of all ages throughout the country.

"The island of Ireland is home to a number of Europe's top pedigree dairy cattle breeders. And this year's Emerald Expo will provide them with the perfect opportunity to highlight their ongoing investment and unique stockmanship skills in a truly appropriate setting."

Richard Whelan concluded:

"The future prospects for milk production throughout the island of Ireland are extremely promising. Emerald Expo 2013 will provide dairy farmers with an opportunity to gauge how they can achieve this in the most profitable way possible."

This year's event will also include a very strong trade dimension with many of Ireland's leading supply businesses exhibiting on the day.

But at its heart Emerald Expo represents everything that is good about dairy farming in Ireland. Cathal McCormack again: "Agriculture as a whole has just endured one of its most challenging years in living memory. However, as 2013 starts to unfold the prospect of better farmgate prices is already putting a spring back into farmers' footsteps.

"Milk production will remain at the very heart of Irish agriculture. The potential for profitable growth within the sector is more than significant. Given this backdrop, Emerald Expo 2013 will provide dairy farmers with an opportunity to view a selection of the best pedigree stock on this island while, at the same time, learning about the real potential that exists to grow their businesses and, moreover, how this can be achieved in the most effective way possible."

He concluded: "The Hub at Cillin Hill has been specifically chosen to host Emerald Expo as it is the most suitable venue of its kind in Ireland.

"I would like to commend the IHFA for putting on such a tremendous event, which will appeal to every milk producer throughout Ireland and other family members."

NORTHERN AGRI VIEW

**Richard Halleron** 

### Time to get serious about grassland management



It's hard to believe that spring is here and the prospect of getting stock out to grass and silage made is now a genuine a reality. Let's just hope the sun comes out to play in 2013 and the agricultural industry is allowed to get on with its business without the added challenge of a weather-related catastrophe to contend with

Farmers, north and south, rightly complain about the horrendous price of all crop and livestock production inputs at the present time. The much used term – 'the three 'Fs': feed, fertiliser and fuel, continues to hang over agriculture like the Sword of Damocles. But, in truth, this is only part of the story. Unfortunately, many farmers still choose to ignore the real elephant in the room, which can be best summed in the question: how efficiently is Irish agriculture making use of the inputs that are utilised on farm?

Let me tease this theme out with an example. The benefits of soil testing have been known about for years. Yet I sense that only a relatively small proportion of Irish grassland farmers commit to spending the few bob that will give them the basic information around which they can plan an efficient – and ultra cost effective - fertiliser policy.

It turns out that the biggest obstacle in the way to optimum

### NORTHERN AGRI VIEW

fertiliser utilisation is soil pH. When this figure drops below 6.0, the fall off in crop nutrient uptake is dramatic.

A recent survey of the analysis results derived from 500 Irish different soil samples, has confirmed the inherently acidic nature of local soils, particularly in grassland areas. The average pH of the samples analysed was 5.83. In contrast, the soil pH that will generate optimum plant and crop growth is in the range 6.3 to 6.8.

The need for increasing numbers of farmers to include regular liming as part of their fertiliser programmes is obvious. Potash is a vital nutrient for both plants and livestock. But could it be that we are spreading too much of it on to our grassland? Analysis results show clearly that putting between 3,000 and 4,000 gallons of slurry on to silage and grazing ground in the early spring will provide all the Potash the growing swards need. So, topping all of this up with bagged K thereafter is a direct waste of money.

Moreover, swards will essentially 'suck up' all of the Potash applied to them. Luxuriant uptake will lead to palatability issues for grazing livestock while high potash forages will predispose dry cows to Milk Fever and other metabolic problems post calving.

The implementation of an effective grassland reseeding programme should be a priority for every Irish livestock farmer. Recent years have been marked by the development of new diploid and tetraploid grass varieties. In fact, Ireland is the envy of the world when it comes to the effective implementation of such crucially important research programmes – yet the uptake of this groundbreaking work by local farmers remains very disappointing.

The reality is that modern grass varieties can produce significantly more dry matter per hectare than their predecessors, without the need for additional fertiliser to be applied. On those grounds alone, regular re-seeding should be an absolute 'no brainer' for dairy, beef and sheep farmers. Regular travellers in the Irish countryside will be fully aware of the regrettable fact that rushes are fast taking over the landscape in even the driest parts of the country. And I am not the only one to have noticed this unwelcome development. Numerous industry commentators have highlighted the significant deterioration in ground and soil conditions that have become such a feature of local agriculture over recent years. And with the climate becoming increasingly wetter, the sad reality is that our drainage infrastructure is no longer fit for purpose. On that basis, the introduction of a drainage scheme, with realistic support levels from government built in, would do wonders in improving crop responses to all inputs while, at the same time giving local precast concrete and contracting businesses a much needed boost. It stacks up as a win: win scenario to me!

But where will the money come from to fund such a scheme? In my opinion Pillar 2 of the new CAP should contain provision for the implementation of essential capital development projects, one of which should come under the general heading of improved drainage.

Put it this way, there is nothing coming out of Axis 1, within the current CAP Reform proposals that will benefit production agriculture. Harvest 2020 commits Irish agriculture to increasing the output of many sectors by as much as 50 per cent. This will only be achieved by improving our soils. The implementation of a national land drainage programme would help to improve agricultural output no end while, at the same time, many new jobs in rural areas.

Most farmers take for granted that grass grows well in this part of the world. However, few seem to realise just how unproductive many of our grassland swards actually are. This concerning state of affairs confirms the huge potential there is to increase grassbased output across this island.

And it won't take cast sums of money to rectify this state of affairs – in fact the opposite is the case. Too many Irish farmers are operating in the dark. Producing grass and silage in the most efficient way possible is the future. But there is a right way and a wrong way of achieving this. The way to minimise input costs and maximise grassland output can be most effectively achieved by implementing a three point plan: improve drainage, adjust soil pH as required and re-seed regularly. Thereafter, it's a case of letting nature take its own course.

It grieves me to point out that all of these fundamentals have been known about for years. It's time that Irish agriculture started to act on them.

Richard Halleron is an agri chemist, a former Chairman of the N. Ireland Institute of Agricultural Science. He is the current Executive Member for Ireland on the International Federation of Agricultural Journalists.



**Richard Halleron** 

# Fiber Tech mixer feeder is focal point of Co. Donegal farm

demo

George Roulston loading a 24 cubic metre Redrock Fiber Tech mixer feeder.

Farmers in Donegal, Derry and Tyrone were given a unique opportunity to see a new Fiber Tech mixer feeder, from Redrock Machinery, put through its paces courtesy of a full working demo

The event was hosted recently by the Roulston family on their farm- near Newtowncunningham. Brothers John, Keith and George milk 400 cows – 25 per cent autumn calving and 75 per cent spring calving.

They recently-purchased a 24 cubic meter feeder from Redrock. On the day of the demo it was loaded using a new Redrock All Round Shear Bucket, attached to a 320 JCB telehandler. The many farmers in attendance saw at first hand the Fiber Tech machine's ability to handle a wide range of forages, including baled and clamp silage, straw etc. The event was organised by D&M Farm Services of Limavady. Up to now, the total mixed ration (TMR) approach to nutrition has been regarded as a means of feeding cows in a way that allows farmers to make most cost effective use of the various feed ingredients on the market.

"But the process is not that cost effective if the user does not have total control over the entire mixing process," stressed Redrock Machinery's managing director Frank Flynn. "Our new Fiber Tech mixer feeder has been designed to do exactly that. Irrespective of who the operator is the new machines determine the loading sequence of inputs, the exact weights of ingredients required and the exact time required to ensure that the optimal mix is obtained."

Significantly, demand for the new Fiber Tech machines is growing throughout Europe.

"What makes us unique is that fact that the discharge mechanism rotates in the opposite direction to that of the mixing paddles in the body of the machine," Frank Flynn further confirmed.

"Our wagons can feed out to the right hand side while, at the same time, maintaining the full integrity of the mix prepared by the wagon. French dairy farmers, in particular, are expressing great interest in the new feeder range." The Redrock Machinery Fiber-Tech Mixer feeders have been

designed to meet the specific nutritional requirements of dairy cows, beef cattle and sheep. At the very heart of the new machines is the new Fiber-Tech cutting system.

"This ensures that all the components of the diet, including straw, are cut to the precise length in order to encourage optimal rumen function," Frank Flynn further explained.



"The Fiber Tech system will be offered as standard in our new feeder range. We are also offering customised nutritional advice in terms of diet formulation, in tandem with a TMR Tracker system. This provides farmers with a total solution in managing feed costs and ensuring optimal livestock performance." He added: "The tracker system is fully compatible with all herd or farm record systems. At its most basic level it will serve to check the programmed ration against that which is actually fed out. The system will also calculate and register daily feed costs, dry matter intakes and daily refusals. The new system also provides an integrated tracker function for online data exchange with nutritionists and advisors.

"In essence, the TMR Tracker is an integrated management system, allowing complete on-line data exchange between the farmer and his Redrock nutritionist. It can also be used to monitor all aspects of the feeding operation."

And, you have the renowned Redrock reputation for reliability and robustness. Key technical features on the new Fiber Tech feeders include: a high feed discharge rate; easy attachment and automatic lubrication.

Frank Flynn continued: "With this TMR all forages, grains and other feed ingredients are mixed thoroughly. Therefore, animals are not able to search for individual ingredients and must eat all the roughage as well as the more palatable concentrates. "Completely blended feeds, coupled with carefully grouped cows allow greater flexibility and accuracy, feeding exactly the recommended amounts of nutrients at their particular stage of growth or, in the case of dairy cows, individual milk yields. "The end result is the more efficient use of feed, thereby

allowing farmers to both improve performance while, at the same time, saving money on expensive inputs."

Frank Flynn also indicated that extensive, on-farm trial results with Fiber-Tech feeders have confirmed the benefits of the new system. Another advantage of the new Redrock feeders is their energy efficiency. As Frank Flynn pointed out, a 90hp tractor is all that's required to operate them.

"The Fiber Tech models are easy to drive and can be utilised in all feeding passages," the Redrock MD stressed. What's more they are perfectly suited to the mixing of small feed batches. Again, waste levels are minimised."

Frank Flynn concluded: "Our new feeders combine the highest standards of engineering with bespoke nutrition and a uniquely effective record keeping, or tracker system. The key to successful nutrition is not just raising energy levels. Of equal importance is the need to match each megajoule with an exact proportion of roughage. The main source of roughage on most farms is straw. "Research has shown that the intake is maximised when it is cut



to precise length for full absorption and utilisation. The exact ratio of roughage per unit of energy can be achieved from the mixed ration with the Fiber-Tech cutting system. This is the most effective cutting system available in a mixer-feeder. "Courtesy of our dealer network, throughout Ireland, we provide a comprehensive service and repair facility to our farmer customers. This is delivered by a team of highly-qualified service engineers. A bespoke nutritional advice service is also available. All of this comes with the traditional Redrock reputation for reliability. Our machines are built to last."



Dr Tommy Boland, lecturer in Sheep Production and Ruminant Nutrition, Lyons Research Farm, UCD

## Achieving high lamb growth rates at grass

With strong lamb prices over the last three years and a renewed interest in sheep production, it is now appropriate to examine some of the factors that will influence lamb growth rate which is one of the major drivers of profitability on sheep farms

The maximum potential growth rate of a lamb is an inherited character, which reflects the breed characteristics of its parents and their particular genetic merit. However, under most commercial conditions the costs of production relative to the end product have a greater influence on growth than the actual maximum potential growth rate of the lamb.

The main economic factors, which have a bearing on lamb growth, include the type of end product (e.g., slaughter lamb or breeding ram), the price of that product and the amount of feed that can be economically used. Additionally, factors such as sex, type of birth and especially rearing status (reared as single or twin), feed quality, and health status of flock are other factors which combine to influence growth rate.

It's often said that a ewe rearing twin lambs in early lactation is expected to perform at the same level as a dairy cow producing 30kg of milk per day. I think it's also fair to say that in most instances the dairy cow gets a lot more attention than the suckling ewe.

In typical commercial production the conditions necessary for the lamb to achieve maximum growth rates are usually far from ideal. Yet figures of over 600g per day have been recorded for individual lambs. At the other extreme, even on lowland farms, some lambs post weaning may be growing at considerably less than 100g per day.

### Research Work at Lyons Estate

Recent work in Lyons indicates that triplet lambs intensively fed from birth can achieve growth rates from weaning (at six weeks of age) to slaughter of 390g per day. This is phenomenal growth rate and is equivalent to almost 1.2kg of gain per litter per day.

Now this doesn't reflect what will happen at grass. It may present an option in some cases, but most importantly I believe it demonstrates the potential that exists within a lamb. Why won't this happen at grass? Well there are a number of reasons. The lambs won't be able to consume enough grass, the nutrient content of grass will be lower than that of concentrates, parasites are a major issue at grass and trace element deficiencies also present difficulties to the grass fed lamb.

In a thriving flock, lamb growth rate accelerates in the first few months of life, it slows down towards puberty and continues to decline progressively as maturity is reached. However, there are many nutritional and non-nutritional factors that can upset this typical growth pattern.

For the first six to eight weeks of a lambs life it's almost totally dependent on its mothers milk for growth. Consequently, growth rate and ewe milk yield are directly related. Milk

production is very poor when a ewe cannot rear one lamb well. When lambs are two to three months old, large differences in the size of single and twin suckling lambs within a flock indicate that the ewes were not milking well. Early life is the most efficient period of a lambs life. In the first month or so if a lamb consumes 1kg of milk dry matter this will promote 1kg of growth. This type of conversion doesn't last for long but it does show how important it is to maximise milk yield in early lactation. Ewe milk yield will peak between three (twin suckling) and five (single suckling) weeks after lambing. Intake will always lag behind this peak milk yield, just like the dairy cow. Therefore to maximise milk yield the ewe must be able to break down some of her body reserves. There are two important factors influencing this. Firstly the ewe must be in good condition at lambing (approximately BCS 3) and there must be sufficient protein in the diet to allow her to mobilise her body reserves. With



lush spring grass there is generally sufficient protein for this to happen.

### Birth Weighs & Ewe Condition

However, there is more to lamb growth rate in early life than the ewes milking ability, which can be abundantly evident if lamb performance between farms is compared. The size of the lamb at birth and the condition of the ewe at lambing are critically important. Heavier lambs at birth maintain their weight advantage during the critical growing period. Estimates suggest a 2-3kg heavier weaning weight for each kilogram increase in lamb birth weight

At birth, there is often about one kilo of a difference between the weight of a single and twin lamb and triplets weigh about one kilo lighter than twins. When such lambs are reared as they were born, twins tend to grow at about 80 per cent of the rate of singles and triplets about 80 per cent the rate of twins. This results from a combination of lighter initial birth weight and less milk being available per lamb suckling as litter size increases. Where triplet born lambs are reared as twins, their growth rate is closer to that of naturally produced twins than it is to that of triplets. Consequently, rearing type is more important than birth weight.

When to wean is an important decision and will have a major influence on the performance of this year's crop of lambs and also how well the ewe will perform at the subsequent breeding. If weaning occurs too early then the lamb will suffer a major growth check and time to slaughter will be greatly increased. So when is it too early to wean? The lamb must be capable of fully replacing milk with solid feed intake in order for weaning to be successful. Research from Britain suggests that the very earliest this can happen is 11 weeks of age and in most instances it will be 12-14 weeks before grass intake will be sufficient. Late weaning is more of an issue on farms than early weaning. In some cases this will not present a problem but can be a big issue with higher stocking rates, higher litter size and when grass growth is poor in a particular year.

Once the lamb is capable of replacing the lost milk with grass it becomes more efficient to feed that grass directly to the lamb rather than to the ewe. It will also allow the ewe to recover body condition prior to mating hence ensuring a good lamb crop for the following year.

### Parasite Control is Important

Parasite control is another important issue in the lamb flock. The traditional view of controlling bowel worms has changed in recent years. There was a traditional timed anthelmintic administration regardless of visible signs of infection. There was also the recommendation to dose and move. Also single products were used for prolonged periods and dose rates may not always have been correct. These are ideal conditions for anthelmintic resistance, and that is exactly what has occurred, with most farms now resistant to at least one class of anthelmintics. A new movement 'Sustainable Control of Parasites in Sheep' (SCOPS) aims to address this issue. SCOPS incorporates the targeted use of anthelmintics, rotation between different classes of anthelmintics, and the use of a 'dose and return' strategy rather than a 'dose and move' strategy. This is based on the fact that some worms are naturally resistant to anthelmintics and you want to minimise to chances of these worms increasing in number.

When you dose with any anthelmintic you won't get a 100 per cent kill. By moving animals directly to a new pasture the resistant worms will shed eggs on this pasture. Therefore the eggs the animals are exposed to are resistant to the anthelmintic being used. However, if the animals are returned to an old pasture for a few days they are exposed to susceptible and resistant worms, ensuring that the anthelmintic will work again at the next dosing.

Brian Campion, M.Agr.Sc., Premier Molasses

# The role of molasses and other liquid feeds

The short- and long-term production responses to feeding molasses include it being an ideal complement to grass, silage or straw diets, giving an increased nutrient density of diet and promoting an efficient and healthy rumen

There are both short- and long-term production responses from feeding molasses. The immediate effect is increased total energy content of the diet. This gives the animal more energy for maintenance and production. Other effects include the manipulation of solids, increased lactation length and increased dry matter intake (DMI) due to better rumen functionality. The use of molasses aids in improving DMI, cow behaviour, milk production, condition management, and energy parturition. These things combined will result in less animal health problems – a healthy animal is less likely to get sick.

Molasses is a complementary feed when fed in a grass based diet dilutes protein and fibre excesses, as well as increasing carbohydrate and energy intakes. Grass is our cheapest feed but at different stages of the year there is a nutrient gap that either needs filling or reducing in order to provide the animal with the most efficient balance of nutrients.

Irish grass (and silage), particularly in spring and autumn, contain significant amounts of rumen degradable protein (RDP) which produces ammonia. In order for rumen bacteria to capture this ammonia and convert to microbial protein, they need a supply of rapidly fermentable carbohydrate (e.g. molasses).



Supplementation of a grass diet with an energy source improves the capture of ruminal Nitrogen (N) and increase the efficiency of microbial synthesis. The increase in milk protein concentration with molasses inclusion in silage diets is attributed to an increased microbial protein synthesis, thus amino acids production.

The implementation of molasses into a diet will aid in the utilisation of fibre consumed. The lactating cow has a fibre requirement in her diet of 35 per cent Neutral Detergent Fibre (NDF). The NDF of pasture varies throughout the year; molasses helps re-balance the NDF to the desirable range. Molasses is characterised by a high content of soluble sugars (SS). This high sugar level in molasses will balance out the lowered SS in pasture at certain times of the year and because of the high sugar content, will increase the microbial bacteria in the rumen to improve digestion of high protein and fibre in grasses. In order to assist in getting cows cycling soon after calving they should be fed a well balanced energy dense diet to encourage optimum intake. Molasses aids this situation as it will provide the palatability and energy density required in the diet. It will also provide consistency of rumen bugs if supplied continually throughout the season.

### Glycerine - a new feed ingredient

Glycerine is a colourless, odourless, hygroscopic, sweet tasting, viscous, energy dense liquid that is a co-product of biofuel production.

Researchers have determined that the net energy value of glycerine in sheep, steers and dairy cows was equal to or greater than that of corn grain. Studies have shown that feeding glycerine to dairy cows decreased the acetate:propionate ratio, increased ruminal butyrate concentrations, and stimulated more water intake. These changes would be beneficial to the dairy cow because:

- 1) Increasing ruminal propionate would increase the supply of this gluconeogenic substrate to the liver;
- 2) Increasing ruminal butyrate would support the growth of the ruminal epithelial tissue and perhaps increase nutrient absorption from the rumen; and,
- 3) Increasing water intake would supply the mammary gland with the water necessary for milk synthesis.

It was concluded that glycerine can replace rapidly fermentable starches in diets for ruminants up to concentrations of 10 per cent DM without negatively affecting feed and water intake, ruminal nutrient degradation and whole-tract nutrient digestibilities. Glycerine can help improve energy supply to high yielding dairy cows, both before and after calving and thereby have an impact on health and performance during the entire lactation.

Use of glycerine in ruminant diets will depend upon desired outcomes. When fed, glycerine provides a supplement that is essentially 'pure energy'. It will enhance fermentation characteristics and feeding efficiencies.

### **Delactose Whey**

Another key ingredient in the Premier Molasses feed range is delactose whey concentrate (DLC). DLC is a nutritious coproduct of the Irish dairy industry and contains lactose sugar as its energy source. Including DLC in concentrate rations of lactating dairy cows has been shown to prevent most of the milk fat depression associated with such rations, without reducing concentrate consumption. Lactose also enhances the absorption of magnesium in the rumen and is a good source of available phosphorus to the animal. Premier Molasses strives to support the Irish dairy industry by including DLC in many of its liquid feeds.

### **Featured Products**

The latest addition to the Premier Molasses farm liquid feed range is Nutri-Thrive. Nutri-Thrive combines a high energy density with an excellent protein level to produce the ultimate high energy liquid feed, suitable for both dairy and beef diets. Together with molasses, both glycerine and DLC are key ingredients in Nutri-Thrive, which delivers a superb blend of both energy and protein in a highly palatable liquid feed.



Grass Tetany Prevention Magnesium is the most important mineral to supplement in the cow's diet. Deficiency can cause grass tetany/ grass staggers - the major cause of death in cows at grass (especially spring and autumn). Premier Molasses's Ultra-Mag is a high quality magnesium supplement targeted at supplying daily dietary requirements

**Dm** basis

to aid in the prevention of both grass tetany and milk fever. Ultra-Mag, when fed at a rate of 1kg/cow/day will supply most cows' daily requirements (25g). Ultra-Mag uses magnesium chloride as the magnesium source which has a higher bioavailability to the animal than the more commonly used magnesium oxide (Cal-Mag). The excellent palatability of Ultra-Mag always ensures adequate intakes, which can sometimes be an issue with other magnesium supplements.

### **Methods of Feeding**

Open trough; Ad lib lick balls or lick wheels; Poured on or mixed with dry feeds and silage; In shed/parlour feeders; and, Incorporated into total mixed rations (TMR) in mixer wagons.

### **Feeding Directions**

Molasses should be made available to livestock at the following rates: Lactating cow: 1-4kg/hd/day (up to 20 per cent of diet DM) Dry cow: 1-1.5kg/hd/day Adult beef cattle: 1-3kg/hd/day Weanlings: 0.5-1kg/hd/day Ewes: 0.2-0.5kg/hd/day

## Texels – a popular choice for sheep farmers



The Texel Sheep Society is one of the largest sheep breed societies in Ireland, in terms of increasing membership and promotion. Part-time farmers that left the land during the 'Celtic Tiger' are now returning to agriculture and getting into sheep, and many are turning to Texel sheep on their farms

This is due to the lower start-up costs associated than with alternatives such as beef or dairying. Texel members are reaping huge benefits from the Society's close working relationship with Lamb Plus, through participation in their recording programme and computerisation of pedigree records. At last there is an objective measurement of each ram's potential (in format of the €uro star evaluation) that the serious commercial farmer can avail of, compared to the PBNR rams and those that will just 'do the job'. This star valuation is one of the main conditions to be involved in the new ICBF/Lamb Plus programme.

### New Sheep Technology Adoption (STAP) Programme

This is where the farmer uses three star rams with flock ewes. The function of this programme is to increase genetic merit of the flock by using a ram of superior genetic merit. Indeed the latest research data from Teagasc demonstrate that lambs sired from a five star ram show a 4kg advantage at weaning over those sired by a one star ram. Not alone is this important for new Texel breeders as they have less competition from nonpedigree breeders, but also it places them on a more level playing field with the established breeders who allow their stock a more generous level of nutrition than many of their counterparts. Obviously the greater the uptake of this recording service, the quicker Texel breeders will have accurate and useful data. While recording is a very useful tool, it is still a necessity for farmers to see an animal that is 'pleasing to the eye'.

Needless to say we need sheep that are physically sound with recognised characteristics of the breed. Exhibitors enjoy the show ring, but equally important is the sharing of information regarding bloodlines, husbandry and many other aspects of what is an interest, above and beyond, the normal run of things i.e. pedigree breeding.

### Why Are Texels so Popular?

One reason is that Texel cross lambs are extremely hardy after birth, and very tolerant of harsh weather. Texel's also have better kill out percentages with lower fat scores.

In addition Texel cross lambs finish quicker than any other breeds. They also have higher worm resistance, reduced labour and dosing costs. Another plus is that Texel ewes are excellent mothers with a prolific milk supply.

Edward Plunkett has a significant flock of ewes, which he runs in conjunction with a small suckler herd. He farms near Clonegal in Co. Wexford and has been using Texel rams for over 20 years. He mainly runs a flock of <sup>3</sup>/<sub>4</sub> X Texel ewes and some Texel X Suffolk ewes. Texels are used because they are very quick to suckle, have excellent worm resistance, which reduces his labour and dosing costs. The hardiness of the lambs allows Edward to turn out the ewes and lambs much quicker. He usually does these four to five days after birth and the survival rate of the Texel X lambs outside this year was 100 per cent.





### **Flock Management**

Edward is in the Bord Bia Quality Assurance Scheme. In 2012 the flock started lambing in three divisions-on February 15, continued on to March 1 and finally on March 22. To ensure a compact lambing Edward uses the ram effect on the ewes, which results in 95 per cent of the flock lambing within a 17-day period within each division.

Ewes are housed prior to lambing and receive minimal meal feeding as the Texel X ewes have an excellent feed conversion rate. When the ewes have lambed they are put to the fields within four to five days.

Edward docks the tails of the single lambs and those from troublesome ewes shorter than the tails of twins or triplets so the less productive progeny are not retained for breeding. He has been using this practice for the past twenty years, and this policy has been very effective in building up a profitable and trouble free flock.

### Lamb Sales

In 2012, Edward has his first draw of lambs ready for sale in early May to Kepak where his lambs are noted for consistently high quality and E and U grades. With the heavier lambs he also supplies a local butcher who pays Edward a premium price for his lean carcasses.

Texel's are renowned for their excellent muscling and their strong breed trait not go over fat at high weights. Edward believes that no lamb tastes so well as a Texel and keeps four lambs for his own home.

When Edward buys Texel rams, he has two options. First is his local Texel Sheep Society Sales, which are held in Tullow, Kilkenny and Enniscorthy. The second option is to visit a local pedigree breeder to buy his rams privately. He finds the new LambPlus figures very useful when selecting a ram because it gives him the information on maternal traits, production and lambing.

This successful breeder also checks the ram for shape, muscling, length and correctness. So, for success in lamb production it is essential for any sheep farmer to have the combination of performance data and the recognised character traits so one can know how the progeny will perform on the ground when buying rams.

# Accurate feeding delivers higher profits

While concentrates are an effective feed source, they are not cheap and so in order to keep down costs, each cow needs to be fed individually based on her analysed needs. Now, imagine a system that could do this for you

In meeting the demands of the progressive dairy farmer, Dairymaster designed an in-parlour feeding system that does just that. The Dairymaster Feed-Rite feeders give you the power to feed your cows according to the cow's individual needs. They are a very precise and convenient way to feed cows in the parlour, according to the company. Harry Turtle, from Bangor in Co. Down said: "I'm now

getting 5L per cow more with no extra feed since I began individually feeding my cows to yield with the Dairymaster system. This system is invaluable to me."

Alan Dorian, who is the farm manager for Tom Kelly's dairy farm in Drogheda Co. Louth, is just one of the many people who truly value the capabilities of the feeding system. "The system has allowed us to get the best output of milk from an optimum level of meal by feeding to yield. You have enough to be concentrating on in the parlour without worrying about what each cow should be getting so it's definitely a big help in that sense."

In-parlour feeding offers tremendous advantages to the

dairy farmer as it has been proven to increase cow flow, reduce milking time and cater for the individual nutrition requirements of cows.

Dairymaster FeedRite in Parlour Feeders are easy to install and operate and are virtually maintenance free. Systems can be installed to support multiple feed types. The system can also feed according to milk yield, group (e.g. lame cows/high yielding), body weight and days in milk. The management program can be tailored to your own individual production system so to achieve maximum efficiency.

One of the most interesting features of the Dairymaster automated feed system is that appetiser feeding may be utilised. As each cow enters the parlour a small amount of feed is dispensed into her stall which encourages fast loading. When the unit is being attached the remainder of her allocated feed is dispensed, this usually results in a more contented cow when the cluster is attached. Scientific trials have also shown higher levels of oxytocin are present when cows are fed during milking. So, if you want your cows to perform - feed them right.





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\* Meta analysis of over 60 independent assessments



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