Milk Matters

SUPPORTING SUSTAINABLE FARMING

INSIDE THIS ISSUE

ISSUE 60 - FEBRUARY 2018

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Happy New Year and welcome to the January edition of

MILK MATTERS

DAIRYGOLD'S DAIRY ADVISORY BULLETIN

Dear Milk Matters reader,

It's February, calving is upon us. In 6 weeks' time, on average, you'll all have 60-75% of your cows calved.

This month's **Nutrition Matters**, focuses on the importance of early lactation feeding to your breeding season. Moving from a 60% 6 week calving rate to 90% could generate €25,000 for a 100 cow herd. While your herd's fertility performance is controlled by a number of factors we concentrate on energy intake and maintaining BCS after calving.

Your farms ability to grow grass this spring and your ability to manage it will have a major impact on your performance and profitability. In this month's edition of **Grass Matters**, John Mahers focus on how to grow as much grass as possible this spring.

This month we also have an update from Teagasc's Heavy Soils programme. 30% of the countries milk is produced on "heavy soils". The heavy soils programme is looking at improving soil fertility, grass production and utilisation on this ground and there are lessons for everyone from it.

Also, Doreen Corridan looks at how we maximise productivity, reduce disease issues and labour spend on sick animals on your farm by looking after the calving cow and the new born calf.

Yours Sincerely,

Liam Stack

Liam Stack M.Agr.Sc

RUMINANT TECHNICAL MANAGER,
DAIRYGOLD AGRIBUSINESS

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MILK MATTERS

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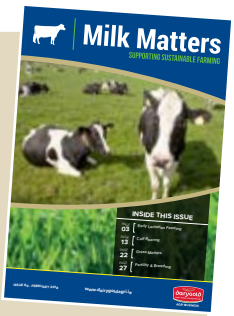


EARLY LACTATION NUTRITION

By LIAM STACK, M.Agr.Sc, Ruminant Technical Manager

Early Lactation Nutrition:

Feeding regimes for freshly calved cows have one ultimate goal: Getting your cows back in calf.

To achieve this we need to:

- Feed enough energy to limit BCS loss in early lactation
- Supply the cow with adequate minerals
- Feed a diet with a balanced protein profile

However fertility performance is not all nutrition related. For good fertility performance we need:

- An optimum breeding management programme
- A feeding programme appropriate for your cow
- A good herd health status
- An AI programme that breeds for fertility

Early Lactation Nutrition Challenges:

1. Do you know the energy requirement of your cows?

This is a function of milk yield, the higher the yield the higher the UFL requirement.

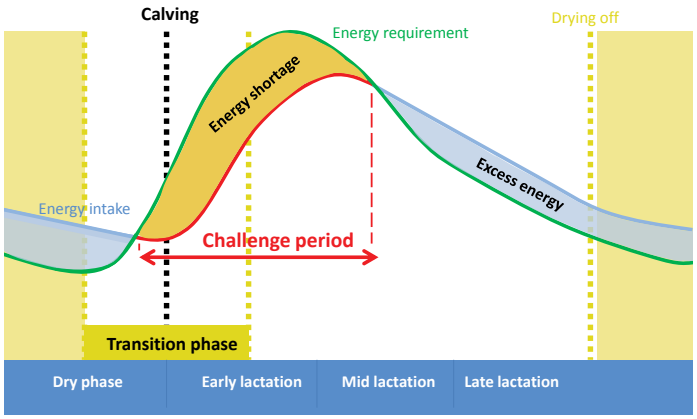
Milk Yield (kg)	Daily UFL required
20	15
25	17
30	19
35	21

KEY POINT: It is not uncommon to be feeding the highest energy feeds and through low intakes to still have a low overall energy intake.

2. Energy intake:

Energy intake is a product of the UFL of the diet and the intake potential of the diet. You need to maximise both to achieve a high overall energy intake.

In early lactation when our cow's intake potential is at its lowest point we especially need to prioritize the feeding of the highest UFL feeds.



What is the Intake Potential of our Forages?

Grass Silage:

The intake potential of our grass silages is influenced by

a. The DMD:

Grass silage of 65 DMD can have an intake potential of 8-10kg DM

Grass Silage of 75 DMD can have an intake potential of 10-12kg DM

b. The Dry Matter: Wetter silages have a lower intake potential.

c. The preservation (pH, lactic acid %, Ammonia N). Poorly preserved silages have a lower intake potential.

Concentrate required to sustain differing levels of milk production will vary depending on forage quality

	Yield				
	23ltrs	25 ltrs	28 ltrs	33 ltrs	37 ltrs
	5 gals	5.5 gal	6 gals	7 gals	8 gals
Silage DMD					
60	9kg	10kg	11kg		
65	7.5kg	8.5kg	9.5kg	11kg	
70	6kg	7kg	8kg	9.5kg	11kg
75	5kg	6kg	7kg	8kg	10kg

Due to the lower intake potential add 1kg for poorly preserved, wet silages.

Grass Silage, Maize Silage or Wholecrop Combinations:

Two forage diets have a higher intake potential than grass silage only diets. These diets typically have forage intake potentials of c.12-14kgDM but can be higher if the silage quality is very good. 2 kgDM extra forage intake will support 3-4 kg of extra milk or will reduce the level of concentrates needed at differing milk levels

Feed recommendations for Good Quality Maize Silage for 28 kg (6ltrs)	
25% Maize Silage : 75% Grass Silage	7.5 kg Dairy Balancer Gold 25%
50% Maize Silage : 50% Grass Silage	6.5 kg Dairy Balancer Gold 29%
75% Maize Silage : 25% Grass Silage	5.5 kg Dairy Balancer Gold 33%

+/- 1kg for every 2 kgs of milk

Grazed Grass:

Intakes of grazed grass can be as high as 17kg DM, if the grass allocation, grazing conditions and grassland management allow it.

The intakes of grass are dependent on:

a. Kgs allocated
b. Ground condition
c. Grass quality (DMD). This has a big effect during the main grazing season
d. Dry Matter

However, in the spring while you are using your spring rotation planner, your cows grass intake will be dependent on allowance.

Concentrates required, out buy day in by night:

	Milk Yield (kg)				
	18	22	26	30	34
6kg DM grass + 6kg 64 DMD silage	4	6	8	10	12
6kg DM grass + 6kg 64 DMD silage	3.5	5.5	7.5	9.5	11.5
6kg DM grass + 6kg 64 DMD silage	3	5	7	9	11

Ref: Adapted from F mulligan, UCD

Concentrates required Grass full time:

	Milk Yield (kg)				
	18	22	24	38	32
12 kg Dm Grass	2	4	5	6.5	8.5
14 kg Dm Grass	1.5*	1.5	2.5	4.5	6.5
16 kg Dm Grass	1.5*	1.5*	1.5*	2.5	4
17 kg Dm Grass	1.5*	1.5*	1.5*	1	3

*grass alone does not meet a cows daily requirement for calcium, phosphorus, magnesium, zinc, iodine and selenium. Even though a cow's energy demand might not require concentrates, feeding 1.5kg of concentrates at grass is the cheapest and most effective method of supplying these minerals. See below section on minerals.

Spring Nutrition Plan for a cow peaking at 25 kg or 2.5 kg Milk solids

	Length of the period (weeks)	Concentrates (kg/day)	Total Concentrates for the period (kg)
68 DMD silage	3	8	168kg
Out by day, In by night	3	6	126kg
Grazing full time (13-14kg grass DM)	8	2.5	140kg
Total			434kg
Cost c/ltr (spring nutrition plan)*			2.3c/ltr

*Assumes a concentrate cost of €290/T and 5500kg annual production

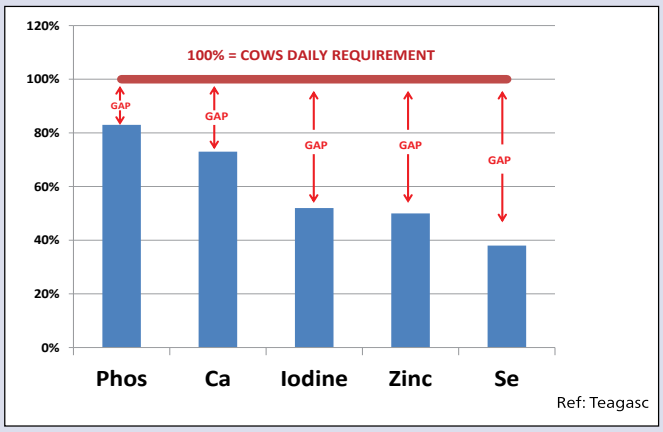
For a nutrition plan for higher yielding spring calving cows please read ***"Lyons UCD, Managing a High Producing Spring Calving Dairy Herd"*** on page 9.

Ultimately if we get this energy intake wrong, the cow will lose too much BCS in the 1st 8 weeks after calving, resulting in poorer herd fertility performance.

Mineral Nutrition:

On both silage and grass diets cows need mineral supplementation.

Grass alone as a mineral source for daily cows



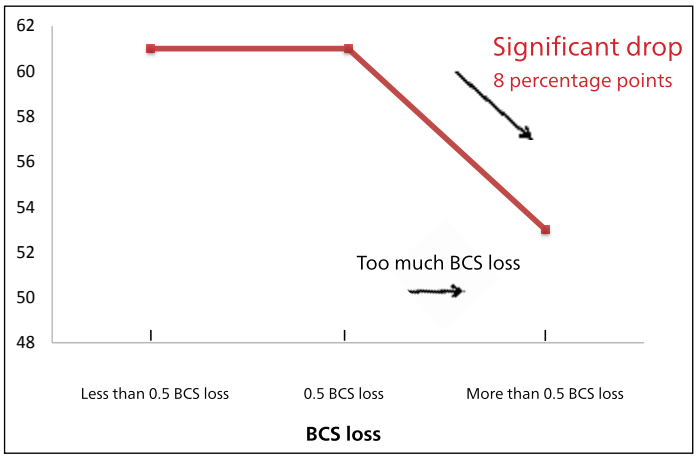
Dietary deficiencies of copper, selenium and iodine are linked to:

- poor fertility,
- cystic ovaries,
- anoestrous,
- irregular or supressed oestrus
- and early embryonic death

Be-wary of feeds with low mineral inclusions.
Mineral and vitamin are expensive to include in compound feed. With the dramatic price increase in vitamins pre-Christmas, due to a plant fire in Germany and China trying to control smog levels, this has never been more evident. The increase in vitamins levels has the potential to increase feed costs by 5-7€ per T. However you will only incur this extra cost if you include the minerals and vitamins in the first place.

KEY POINT: We need to fill these gaps. Concentrates at grass is the cheapest and most effective method of supplying these minerals.

Relationship between body condition loss post calving and 6 week in calf rate (for cows with a precalving condition score of > 3). Teagasc trial 1999.



Our nutritional team at Dairygold quality feeds know the importance of the mineral nutrition of your cows to yearly performance. We include our minerals and vitamins pro-rata with our feeding or cal mag rates. This means that our vitamin and mineral inclusion are in sync with our feeding levels i.e. if you feed one of our feeds at our prescribed level all your cows vitamin and mineral requirements are being fully met.

However, through investigation we have discovered that others players in the market have vitamin and mineral inclusions out of sync with their recommended feeding levels i.e. if you feed their feedings at the prescribed levels, your cows magnesium requirements will be met but your cows daily allocation of trace elements and vitamins will be low.

These feeds can contain as low as 25-50% of the Copper, Zinc, Iodine, Se and Vitamin A, D and E contained in our feeds.

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POSTCALVER GOLD

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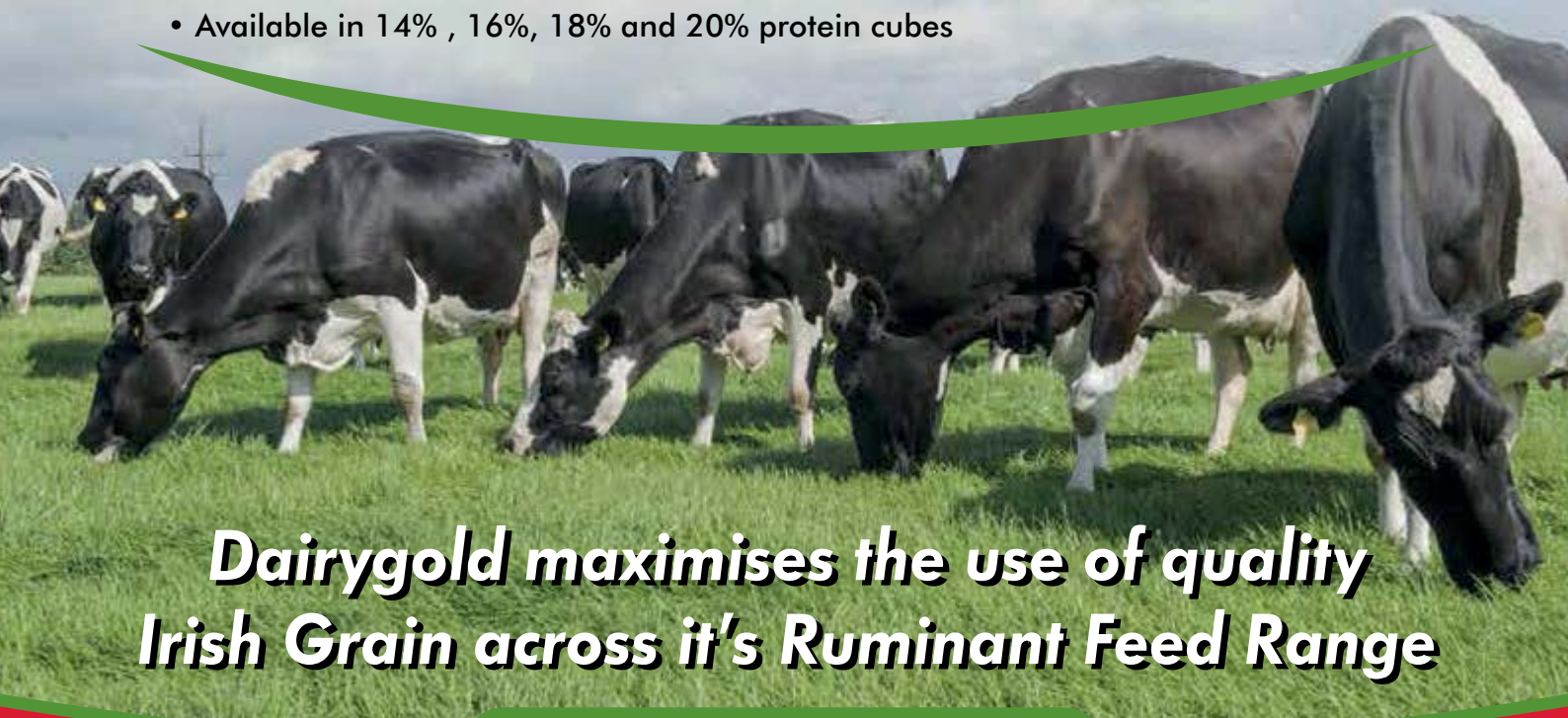
- High energy feed containing Category One ingredients with Maize as the No. One ingredient
- Contains high levels of Phosphorus and Magnesium
- Contains BIOPLEX® Zinc, Copper and Manganese and SEL-PLEX® organic selenium from Alltech® to support the immune system and improve fertility parameters
- Contains high levels of Vitamin E
- Contains high levels of Vitamin D to prevent milk fever post calving
- Contains YEA-SACC® live yeast to improve digestibility, feed efficiency, increase production and improve fertility performance
- High quality source of energy and protein
- Available in 14% , 16%, 18% and 20% protein cubes



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1. **Native grains**
   - Maximum inclusions in all our rations

2. **High energy**
   - high levels of bypass starch coming from maize meal and a blend of high energy digestible fibre resulting in good rumen function
   - maximum milk yield and protein %.

3. **Only good quality protein used**
   - high levels of PDI
   - good protein efficiency
   - maximum yield and protein %.

4. **YEA-SACC Inclusion**
   - to aid rumen function and efficiency
   - lower levels of digestive upset
   - higher milk volume
   - better fertility performance

5. **Agolin**
   - limit energy lost as methane
   - help the cow utilise all her dietary protein
   - resulting in increased milk yield
   - less body condition score loss
   - improved fertility performance

6. **Bioplex Copper, Bioplex Zinc and Selplex & elevated levels of Vitamin E**
   - better fertility performance
   - lower SCC and mastitis
   - reduced lameness
   - improved immune function

7. **Biotin**
   - prevent lameness
   - increase milk yield.

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- And through Lombardstown Mill Customer Service at 022-47275

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Lyons UCD

Managing a High Producing Spring Calving Dairy Herd

2017 PERFORMANCE

The Background

The main aim of the Systems Research Herd at UCD Lyons Farm is to evaluate the feasibility (including profitability) of a higher input/output grazing system within a limited land holding scenario. The focus is on maximising milk solids output from the existing land holding which involves high output from individual cows and high stocking rates on the MP. This will occur most efficiently through maximising the use of grazed grass/home grown forage in the system and the strategic use of supplementation thereafter. Such a system might facilitate the successful expansion of the farm business without the need to buy or rent extra land, to buy stock, to acquire extra labour or to provide extra cow facilities. For the study purpose, stocking rate and concentrate inputs are fixed. For more details on the Systems Research Herd visit **http://www.ucd.ie/agfood/welcomemessage/systemsresearchherd/.**

Herd Targets:

	Targets
Stocking Rate (milking platform)	**3.4 LU per ha**
Stocking Rate (whole farm)	**2.4 LU per ha**
Milk Yield per cow	**7500-8000kg**
Milk Solids per cow	**625kg**
6 week incalf rate	**75%**
Concentrates (kg/cow/year)	**1500kg**
% diet as grazed grass	**51%**
% diet as grazed grass and silage	**75%**

The Cow:

Cows at lyons are high EBI cows with a stronger weighting for yield than your typical spring calving cow. As of September 2017, the herds overall herd EBI compared strongly with the top 1% of herds nationally at €127 and the national average at €77.

EBI	Milk	Fert	Calv	Beef	Maint	Health	Mgt
124	40.36	47.58	37.74	-8.89	5.19	0.77	1.25

The System:

Ireland competitive advantage is in our ability to grow grass and feed our cows cheaply and greenly. Even though, cows within the UCD system are being asked to produce a big volume of milk, grass is the corner stone of the system. The goal of this project, as every dairy farmers goal should be, is to maximise grass quantity and quality, producing as much milk as possible from forage. Within a higher yielding system or if you are farming on more marginal type land, managing grass also provides you with excellent quality round bales for feeding in early spring when silage quality is most important.

In 2017, UCD grew 14T DM of grass per hectare utilising 12.2 T per hectare. Silage quality pit 2018 is: 81% DMD, 35% DM, 0.90 UFL (12.2 UFL), 16.6% CP. 2018 silage was cut on the 10th of May 2017 and is of is exceptional quality. Silage quality at Lyons is typically mid seventy's DMD. The average silage quality gone through our laboratory in lombardstown to date is 68DMD. In energy terms our average silage will need and extra 2-3kgs of concentrates compared to the UCD silage for the same level of production.

Grass growth was achieved by using the best grassland management practices:

- The farm was walked every Monday
- A spring and autumn rotation planner were used
- A grass wedge was created weekly
- Baled silage was used to manage surpluses/deficits
- Paddocks were topped when necessary. However minimal topping was required.

Managing grass and maximising silage quality has allowed UCD to produce 4400kg of milk from forage in 2017.

Concentrate feeding plan (2018):

The diet of the cows is determined by the numbers of days cows are in milk.

Days in Milk	0-20	20-60	60-120	120-180	180-240	240-270	270-305	306-365 (dry)	Total Annual DMI
Milk yield	31	34	32	27	22	19	15	-	7500kgs
Silage DM	12	0	0	0	0	5.5	10	11	1.5 (t DM)
Grass DM	0	13.5	14.5	14.5	14	5.5	0	-	3.2 (t DM)
Concentrate	8	8	6	3.5	4	4	3	-	1.5 (t Fresh)

At Lyons cows are calved to grass where possible. Only cows that calve in January or during poor February weather are cows on silage only diets. Most of the herd have 5 days in and then out to grass.

This plan feeds 960kg of concentrates in the 1st 120 days after calving. Prioritising concentrate feeding when a cows energy demand is at its highest.

2016 and 2017 performance:

Parameter	2016 Actual	2017 Provisional
Number of Cows bred	58	59
Average lactation days	301	305
Yield/cow (305d)	7441	7548
Milk solids/cow (305d)	592	602
Yield/cow (actual)	7407	7466
Milk solids/cow (actual)	588	595
Milk solids/ha MP (305d)	1953	2,023
Milk solids/ha Whole Farm (305d)	1291	1,428
Submission Rate %	91	90
First Service Conception Rate %	43	50
6-week Pregnancy Rate %	59	54
Empty Rate %	9 (12 weeks)	15 (13 weeks)

2018 and beyond:

Dr. Karina Pierce, UCD

The success of this project is going to be driven by the herd meeting its production targets while maintaining fertility. UCD are well on the way to delivering on production but fertility performance is not where it needs to be. At our "Dairy Day 2018" held on the 12th of January in Corrin Event Centre, Dr Karina Pierce of UCD was unsure of the exact reasoning's behind the fertility performance but stated that "the herds fertility performance was good except for a couple of weeks in early to late march when conception rates dropped to c.25%.....It is very hard to meet the energy requirements of high yielding cows in early lactation and that despite the high EBI of the herd in UCD that possibly greater attention will need to be given to the fertility sub index within the EBI of the herd.....Further research is required to understand the issue fully."

Within milk matters, we acknowledge the importance of this research as a potential avenue for expansion for some of our readers and we look forward to the continue updates provided by UCD throughout the year.

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- Fully balanced for macro minerals, vitamins and trace elements
- Contains YEA-SACC® to enhance digestibility and improve feed conversion efficiency
- Nustart – which contains:
  - Essential oils which stimulate appetite and kill bad bacteria
  - Prebiotics and probiotics to promote a healthy gut
  - Contains antioxidants to support the growing calf's immune system
  - Functional fibres to promote rumen development

This promotes healthy rumen development and has been proven to increase intake

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KEY PRINCIPLES OF CALF REARING

By LIAM STACK, M.Agr.Sc, Ruminant Technical Manager

First 24 hours critical for calf health

Colostrum

According to Animal Health Ireland, 35% of calves that die in the first year of life do so because of inadequate Colostrum absorption!

Colostrum is the first milk your cows produce after they calve. Your new-born calves are born without immunity to disease, and colostrum contains high levels of antibodies which build immunity in your calves as well as being a very nutritious feed.

Later milkings contain much lower levels of these antibodies and your calves' ability to absorb antibodies decreases dramatically within hours of birth and is virtually zero after 24 hours.

Fresh colostrum from the dam is the preferred option in the majority of cases and pooling of colostrum is not recommended due to the risk of spreading disease on your farm e.g. Johne's disease.

COLOSTRUM FEEDING CAN BE SUMMARISED BY THE AHI 1,2,3 RECOMMENDATION:

1. Use colostrum from the first milking for the first feed.

2. Give colostrum within two hours from the calf's birth.

3. Give at least three litres.

KEY POINT: Colostrum has the potential to save over 1 in 3 calves that die on your farm in their first year of life. Follow the AHI 1-2-3 recommendation to save these calves.

What is the best way to get colostrum into your calves?

It is recommended that dairy calves are separated from their mothers and either bottle fed or stomach tubed colostrum. It is important to remember however, that stomach tubing is only recommended for the first colostrum feed, as repeated stomach tubing can cause digestive upsets.

KEY POINT: It is recommended you use a stomach tube for the first feed to ensure colostrum is received.

Early Nutrition - Rumen Development

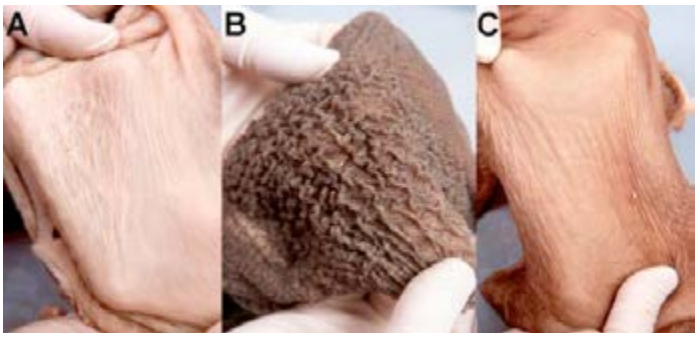
Early calf nutrition is focused on developing the calf's immature rumen, taking the calf from digesting milk to digesting concentrates and forage.

The development of the rumen is dependent on the chemical end-products of bacterial fermentation from concentrates. Most important is butyric acid which comes from starch digestion.

For this fermentation to take place the bacteria need water. Milk does not act as a water source.

For rumen development it's critical that the calf is fed a palatable concentrates made from cooked; flaked starchy raw materials; a roughage source and clean water. Allow calves access to fresh concentrates, water and straw from day 3.

Rumen papillae development in 6 week old calves fed 3 different Diets



A. Milk Only *B. Milk and concentrates* *C. Milk and hay*

KEY POINT:
Milk and concentrates drives rumen development

Straw NOT Hay.

Calves should be fed straw as opposed to hay. High intakes of hay can decrease concentrate intake, limiting butyric acid production, and lead to the calves developing "hay/pot bellies". The level of straw required will depend on the physical structure of the concentrate, with finely ground rations needing more.

Hay is not recommended for calves.

Successful rearing of your calves requires proper colostrum management (see previous pages) and unrestricted access to:

- Clean water (in addition to milk/milk replacer fed)
- Fresh, palatable starter concentrate (preferably coarse)
- Straw

Allow access to fresh water, straw and Prime Elite Krispi Kaf from day 3

Whole Milk vs Milk Replacer

Milk replacer offers several advantages over whole milk as a feeding strategy for your calves:

Economics:

	Cost/Bag (€)	Cost (c/ltr)	Cost to wean (€)
Milk Replacer	43-48	27-30	90-101
Whole Milk		32-36	108-121

Costs assume 6 ltrs of CMR at 12.5% solids for 56 days vs 6 ltrs of whole milk for 6 days

Earlier Weaning:

- Whey milk proteins stimulate earlier concentrate feed intake.
- Calves reach a daily concentrate feed intake suitable for weaning earlier.

Better Performance / Less Scour:

- Consistent Milk replacer composition reduces the risk of nutritional scour. Cows milk butterfat and protein % change between morning and evening milking.
- Digesterom, blend of essential oils boost the calf immunity to scours and increases LWG.
- Acidification in milk replacer improves digestion and reduces scour.
- Gardion Plant extract (alliin) - Helps reduce colonisation by pathogenic bacteria.
- Elevated vitamin E and Selenium - promote the calf's natural defences (immunity) with improved antioxidant levels, helping it to fight disease.

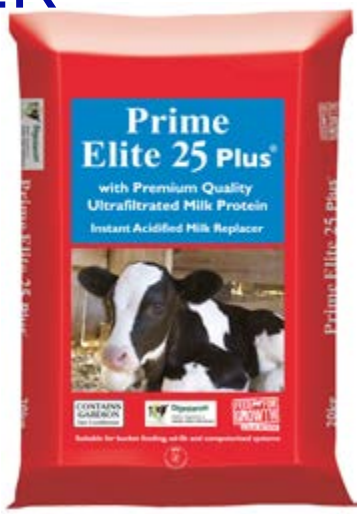
Reduces Johnes Disease risk:

- Reduce Johnes Disease transfer risk from feeding cow's milk to heifers.

Labour Saving: Earlier weaning is facilitated.

CALF MILK REPLACER SPECIALIST

By REBECCA O'SULLIVAN, B.Ag.Sc



Imunopro, forms the base of Dairygolds **Prime Elite 23** and **Prime Elite 25 Plus** Milk Replacers. As highly nutritious bioactive complex is a result of Volac's unique ultrafiltration process.

When compared with milk, skim and whey, Imunopro:

- Has significantly higher levels of key proteins/amino acids such as lysine.

Amino acids drive calf growth and within amino acids lysine is of most importance. Trials have shown calf LWG of 250g when receiving 8g/day lysine, to over 900g in calves receiving 17g/day lysine.

Feeding Prime Elite 25% Plus at 750grms supplies 17.0grms of lysine daily.

- Has three times the level of IgG, a vital immunoglobulin for early life immune development.
- Has elevated levels of lactoferrins which play a critical role in the reduction of scour in calves.
- Has a high level of phospholipids and sphingolipids, fats which support calf gut development and have anti-bacterial properties
- Has elevated levels of the complex sugars called oligosaccharides. Oligosaccharides are milks natural pre-biotics and they have an important role in the development of a healthy population of bacteria in the newborn gut.

The careful balancing of fats, sugars and proteins is done in a liquid blend, which ensures that when the product is dried it has a superior mixing qualities at low temperatures and that it supports high levels of growth.

Please contact me on 086-7938420 or on email at rosullivan@dairygold.ie with any queries.

Prime Elite 25 Plus® promotes less calf scours and higher growth rate through:

1. Acidification by Citric Acid

Acidifications helps to maintain optimum gut conditions encouraging beneficial gut bacteria and discouraging the pathogens that cause scours and limit performance.

2. Gardion®

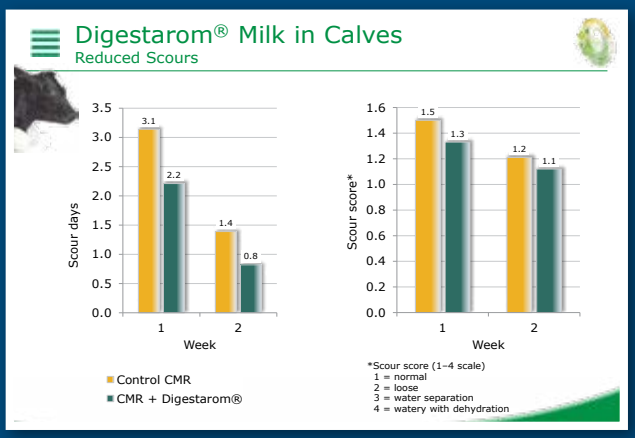
A garlic extract (Allin) helps to reduce the colonisation of pathogenic bacteria in the gut. Pathogenic bacteria cause scours and limit performance.

3. Digesterom

Digestarom® is a blend of essential oils coming from differing plants, principally caraway seeds, liquorice, oak bark and vanilla.

These oils have been shown in independent research trials and on-farm to:

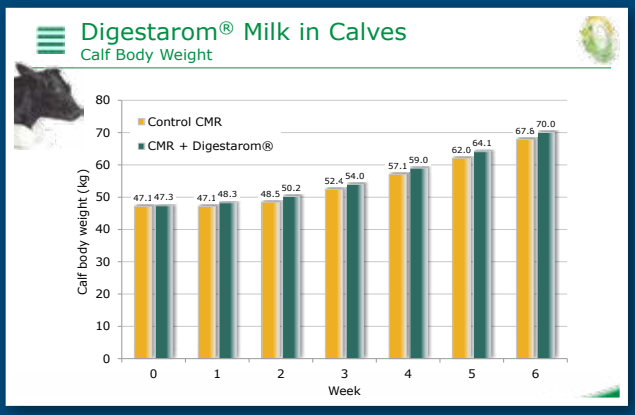
1. have antimicrobial and anti-inflammatory effects, decreasing scouring with calves and decreasing the numbers of days, it takes a calf to recover from a scour.

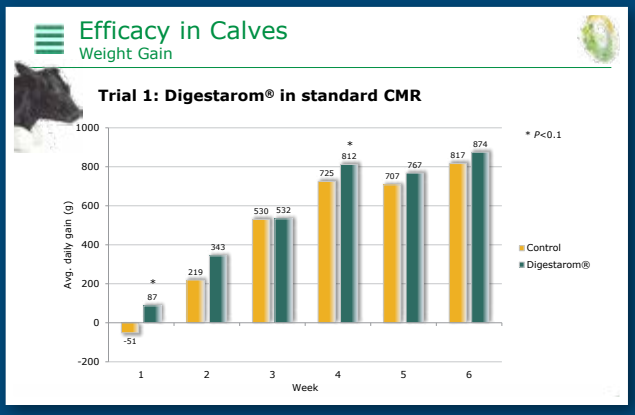


2. Increase nutrient digestibility by increase gastric secretions and increased micro villi growth

3. Increase CMR and starter calf intake, through increase palatability due to the vanilla extract

4. Increase pre-weaning calf LWG and weight at weaning





Calf Milk Replacer Mixing Rates and Feeding Table

By LIAM STACK, M.Agr.Sc, Ruminant Technical Manager

A pre-weaned calf needs 380grms of milk replacer for maintenance alone. Only the balance of the milk replacer fed on top of this will drive growth. If you're feeding 600grms of milk replacer daily there is 220grms of milk replacer available for growth. If you're feeding 750grms of milk replacer daily there is 370grms available for the growth. The more calf milk replacer available for growth, the more growth you get.

Twice a day feeding:

No. of Calves	Prime Elite 25 Plus & Prime Elite 23 (Kg)	Water (ltrs)	Final mix (ltrs)	Solution %
1	0.375	2.625	3	12.5%
2	0.75	5.25	6	12.5%
3	1	8	9	12.5%
4	1.50	10.5	12	12.5%
5	2	13	15	12.5%
6	2.25	15.75	18	12.5%
7	2.6	18.4	21	12.5%
8	3	21	24	12.5%
9	3.4	23.6	27	12.5%
10	3.75	26.25	30	12.5%
15	5.6	39.4	45	12.5%
20	7.5	52.5	60	12.5%
25	9.4	65.6	75	12.5%
30	11.25	78.75	90	12.5%
35	13	92	105	12.5%
40	15	105	120	12.5%
45	17	118	135	12.5%
50	18.75	131.25	150	12.5%
75	28	197	225	12.5%
100	37.50	262.50	300	12.5%

Once a day feeding:

Calves can be fed once a day (OAD) with Dairygolds Prime 23% or Prime Elite 25 Plus from 4 weeks of age.

No. of Calves	Prime Elite 25 Plus & Prime Elite 23 (Kg)	Water (ltrs)	Final mix (ltrs)	Solution %
1	0.750	3	3.75	20.0%
5	3.75	15	18.75	20.0%
10	7.50	30	37.5	20.0%
15	11.25	45	56.25	20.0%
20	15.00	60	75	20.0%
30	22.50	90	112.5	20.0%
40	30.00	120	150	20.0%
50	37.50	150	187.5	20.0%
100	75.00	300	375	20.0%

DEVELOPING YOUR FERTILISER PLAN

By LIAM STACK, M.Agr.Sc, Ruminant Technical Manager

Before you get to picking differing fertilisers for differing fields you need:

1. up to date soil analysis for every field
2. to apply lime as required as a priority
3. to know the phosphorus (P) and potassium (K) index of each field. The target is index 3 for both.
4. to target slurry to fields that need it most (P/K Index 1 or 2 and/or silage fields)

Lime:

KEY POINT: The efficiency that NPK applied is utilised by grass is greatly reduced where soil pH is low.

The value of slurry:

1000 gallons (7% DM) of slurry is equal to a bag of 5-5-30 to the acre. Growing 15T of grazed grass requires 40u/acre of K, whereas 1 cut of silage requires 100u/acre of K. Slurry should be priorities to low index fields or to silage ground.

P and K requirements for 15T of grass.

As a cow grazes grass she removes P and K from the ground as grass. However, the cow does not retain all this P and K. She passes back about 40% of the P and 10% of the K she has removed back in her dung and urine onto the paddock as she grazes.

P and K (units per acre) required for grazed grass at high stocking rates after P Fixation & K Leaching are factored in:

Soil Index	P units/acre	K units/acre
3	24	40
2	28	65
1	36	90

Be-wary of paddocks with bales removed.

Unlike a cow grazing when P and K are removed as silage they are not returned until slurry is spread back on that ground. Hence why, the nutrient requirement for silage is greater than that required for grazing.

KEY POINT: As a general rule of thumb, 1000 gallons of slurry is required to replace 4 round bales.

What nutrients to apply and when?

Ground needs nitrogen (N), P, K and sulphur (S) in differing ratios to meet the requirements of grass. For example, Sulphur is an important nutrient because it allows the plant to convert fertiliser nitrogen into plant protein. For every 10-12 units of N applied 1 unit of S is needed for this system to work at its optimum.

Nitrogen (for stocking rates 171-210 (2-2.5 lu/ha)):

The response to nitrogen is good in the spring, average spring nitrogen response = 10kg DM per 1 kg N applied. Nitrogen efficiency of slurry is also at its highest in the spring.

- Spread 60-70 units of N per acre by 1st of april. Within your 1st and 2nd rounds you should be looking at applying 2500 gals of slurry to 30% of your farm per round.
- Spread 90-100 units of N per acre by 1st May.

At higher stocking rates 100 units may be required by early April with 130-140 units needed by early May.

- Apply c.30-40 units of N per acre per month (c.20-30 units of N per acre per rotation) throughout the grazing season.
- Apply c.40 units of N per acre in August to build grass.

Phosphorus:

Apply 50-75% of your P requirements in the spring with the remainder in the summer.

Soil Index	Maintenance (units/acre)	Build up (units/acre)	P units/acre (grazing)
3	20	0	20
2	20	24*	44
1	20	40*	60

*P build up levels are based on the new NAP action plan approved in Brussels on the 4th of December 2017. These rates are for stocking rates of greater than 130kgN/ha and will probably require users to complete a P building department regulated program.

If taking 1 cut of silage add 16 units P per acre, If taking 2 cuts add 28 units of P per acre to grazing requirements. This extra P can be balanced by slurry if available. 3000 gals slurry = 15 units of P.

At our recent Dairy Day, held in Corrin Event Centre on the 12th of January, Dr. Stan Lalor of Grassland Agro discussed the competition between the minerals in the soil that lock up fertilizer P and the plant. Stan stated that “soils contain iron and aluminum that acts like a magnet for fertilizer P, locking it up. The lower the soil pH the stronger this magnet is.” In 2018, Grassland agro have brought 2 new P fertilisers, Top Phos 23 and Physlag 27, to the market designed to overcome this lockup.

As explained by Stan, Physlag 27 or P 27 for short is specifically designed for low pH soils. The P is released from the granule slowly giving the plant a greater ability to compete with the magnetic effect of the iron and aluminum.

Top Phos 23 is a new and unique chemical form of P to the market. It is water soluble and highly available in cold weather, making it ideal for early spring application. The form of P within the granule is unique, blocking the iron and aluminum binding effect. Top Phos 23 also contains sulphur, which can also help to balance the N applied in the spring.

Potassium:

Apply maintenance rates during the growing season + build up rates in August/September.

If taking 1 cut of silage add 100 units K per acre, If taking 2 cuts add 180 units of k per acre. Again this extra P can be balanced by slurry if available. 3000 gals slurry = 90 units of K.

Sulphur:

Apply 16-20 units per acre. Sulphur is best applied little and often, from the spring onwards. Apply 3-5 units of S per round

Soil Index	Maintenance (units/acre)	Build up (units/acre)	P units/acre (grazing)
3	40	0	40
2	40	25	65
1	40	50	90

Spring Fertiliser Action Plan

Once ground conditions allow and soil temperatures are above 5c:

- Spread slurry on light covers
- Spread Urea (0.25-0.5 bags per acre)
- Spread P as Top Phos/10-10-20/18-6-12

Example Programs:

Index 3				
	Spring	Summer	Autumn	Total
N	100	80	70	250
P	14	3	3	20
K	28	6	6	40
S	8	6	6	20

Fertiliser Plan			
Spring	Summer	Autumn	Total
1.5 bags urea	4 bags Greengrow Pasture Boost	1.5 bags Koch KAN	250
1 bag Greengrow Pasture Boost			20
1 bag Top Phos 23			30
			24

*1000 gals of slurry in the spring will add 5units N, 5 units P and 30 units K

The baseline program above will maintain index 3 soils. Simple adjustments to this on specific fields could include:

- Low P fields. Get extra P out early on low P fields. Apply extra Top Phos or use 10-10-20 instead of urea
- Low K fields: Apply extra K in the Autumn. Slurry, Muriate of Potash, or an NK compound
- For paddocks cut for bales, spread 1000 gals of slurry for every 4 bales.

Please contact your Area sales Manager or inside sales to discuss your fertilizer requirements for the coming season.

GRASS MATTERS

By JOHN MAHER, Dairy Specialist, Teagasc Moorepark

Grazing Delayed is Grazing Denied!!!

Despite the weather challenges that appear at this time of year, we must try our level best to get cows out grazing simply because it is good for cows, good for the farmer and good for the grass plant. Every day cows are at grass will increase profit, reduce costs and enable the farm to grow more grass.

Each additional day of grazing in February for the average Dairygold supplier increases farm profit by €100 per day, through improved milk constituents and lower feed costs.

This figure does not include any benefits to pasture production or utilisation. Well controlled grazing management during the springtime will set up the farm for excellent milk production from grazed grass for the remainder of the year.

Before we describe the plan for early spring grazing, let's be clear about what is achievable:

The ideal average farm cover (AFC) of 900 kgDM/ha on February 1st allows a farm operating at a milking platform stocking rate of 2.5 to 2.9LU/ha to turn freshly calved cows (4 days after calving) out full-time to a predominantly grass diet even where the 6-week calving rate is in excess of 80%. The 2nd rotation will begin on about April 6th. There will be a requirement of about 300kg meal/cow during the first rotation.

And, yes we need reasonable weather to do so.

It is clear that many famers can turn out cows fulltime to grass soon after calving, however there is often a reluctance to do this which is a mistake from a grass production perspective. Starting to graze slowly and speeding up in March will generally not allow enough recovery time to have enough grass available at the start of the second round in early April. So let's try to follow the spring rotation planner and reach the 30% grazed by March 1st.

Using the Spring Rotation Planner

The spring rotation planner is an excellent tool to help farmers plan spring grazing every day, every week, every month. It is designed to take the guess work out of grazing management. The planner relies on the principle of grazing a set area each day.

Table 1 shows the proportion of the farm to be grazed by three key dates in the early grazing season.

Table 1: Spring grazing targets when grazing from early February

Date	% of total farm area grazed
1st February	Start grazing
1st March	30% grazed
17th March	65% grazed
5th April	Begin rotation 2

**These targets need to be adjusted by 1 to 2 weeks (later) for heavier/later farms*

The spring rotation planner aims to:

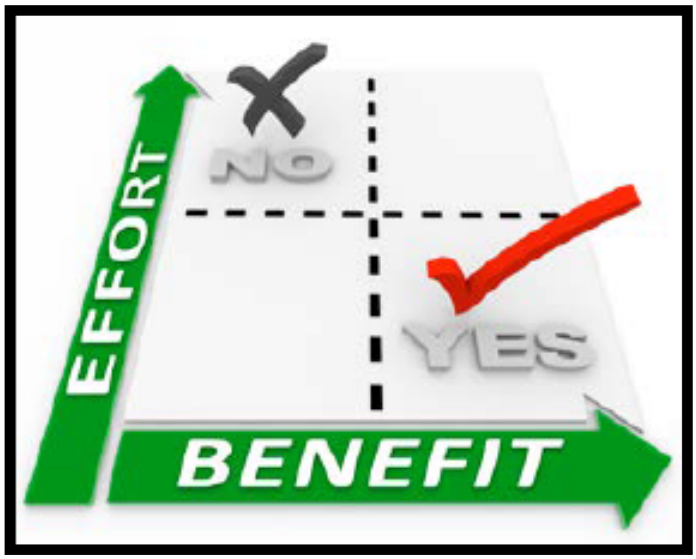
- Simplify spring grass management
- Include grass in the diet of the lactating cows every day during Feb & March
- Maximise farm grass growth
- Avoid uncertainty in relation to grass availability
- Finish the 1st rotation in early April
- Set up the farm for production of high quality grass for the following rotations.

The Target:

Graze 30% of the farm by March 1st

Cows need to be turned out to grass as early as possible in February. The aim is to graze about 1% of the farm every day during this month. Many farmers struggle to reach this target so grazing the paddocks with the lowest cover of grass should be targeted.

BREAKFAST FOR GRASS: Early Nitrogen Fertiliser Application



We all need a bite sometime in the morning to get us going, grass is similar. For Grass though, an application of UREA (23 units/acre) is the choice breakfast. As the month of January has come wet and cold (with low soil temperatures), grass needs a welcome boost. Most farmers are now carrying more cows and caving quicker so there are a lot of mouths to feed. It's time to generate more high quality feed on the farm.

BRUNCH or LUNCH for GRASS

The next target will be to apply about 40 units of N/acre (BRUNCH) in early March to further boost grass growth if weather conditions allow. This will enable the start of the second rotation to begin in early April. If soil fertility is poor on the farm (which is most farms) and weather conditions are favourable, then many framers should consider 1.5 to 2 bags of 18:6:12/acre (LUNCH). If weather conditions are riskier, then Urea can be used to boost grass growth. Slurry application can also be targeted at the grazed paddocks.

Utilising grass during difficult grazing conditions

In spring, ground conditions and weather conditions can prove difficult and thereby reduce opportunities for grazing. However it is important that the farmer is enthusiastic about increasing the level of grass in the diet of the cow. So management strategies coupled with good grazing infrastructure can further increase the number of grazings achieved in early spring. The technique of on/off grazing management developed by Emer Kennedy at Moorepark has a vital role to play on all dairy farms. This is an approach whereby cows graze for a limited period (2-3 hours) after each milking. The aim of on/off grazing is to strike the balance between feeding cows adequately while at grass and minimising the levels of pasture damage.

However, having cows with an enthusiastic appetite for grass is also critically important to the success of this strategy as the cows need to go about the task of grazing and nothing else. Cows tend to do most damage to swards when they are not grazing intensively. The aim behind the concept of on/off grazing is to take advantage of the cows own natural instinct to graze after each milking when given access to grass.

During difficult weather conditions:

- avoid highly vulnerable paddocks (graze these during drier weather).
- avoid long narrow paddock/strip layouts.
- avoid paddocks with poor grazing infrastructure (lack of roadways, poor access)

- avoid paddocks with very high covers of grass.
- use a back fence after each grazing so animals can't return to grazed ground. Soils are at their most vulnerable immediately after grazing when the sward is open.
- graze paddocks with low covers, so if they are not grazed well- subsequent sward quality will not be as poor.
- do accept an increased grazing residual height if necessary to avoid soil damage.

Be Prepared for the Rainy Day – It will come!!!
Approach: On/Off grazing: 2-3 hrs & back fence

1. Milk cows at 7am & feed 2 kg meal
2. Cows out to grass @ 10-11 am in the RIGHT paddock & strip graze
3. Cows return to shed @ 1-2pm (no silage)
4. Milk cows at 3-4 pm & 2 kg of meal
5. Cows out to grass @ 4-5 pm in the RIGHT paddock & strip graze
6. Cows return to shed @ 6-8pm
7. Cows have access to silage until 1-2am

DAIRY FARMING ON DIFFICULT / HEAVY LAND

Heavy Soils

By JOHN MAHER, Ger Courtney & James O'Loughlin

Heavy Soils Programme, Teagasc – Summary of performance to date.

About 30% of milk produced in Ireland originates from farms where the soils can be classified as heavy. Heavy soils add complexities to the milk production system that are aggravated by inclement weather conditions, similar to those experienced in 2009 and 2012. To ensure a robust sustainable system of milk production on heavy soils, excellent herd fertility, optimum soil fertility, and capacity to build silage reserves are essential. Teagasc launched a heavy soils programme in 2011, and has a number of demonstration dairy farms located in Macroom, Kiskeam, Castleisland, Listowel, Athea, Rossmore and Doonbeg.

All the farms have installed a drainage programme on some of the water paddocks.

Farm Performance

A marked increase in costs in 2012 (high rainfall year) was caused by reduced grass production, and poor milk price is reflected in the 2016 data.

Table 1: Heavy Soils Programme Farm Physical Performance 2011-2017

Herd Size	Herd Size	Stocking Rate (LU/Ha)		6 Week Calving (%)	Milk solids/ha (kg)	Grass grown (TDM/Ha)	Net Margin	
		Farm	Milking Platform				€/Ha	c/litre
2011	77	1.70	2.12	72	850	10	1512	15.3
2012	85	1.71	2.27	68	869	6.8	1067	10.7
2013	83	1.69	2.24	76	940	8.9	1494	14.6
2014	85	1.85	2.3	74	935	11	1727	16.7
2015	95	1.81	2.45	74	1091	11.3	1228	11.2
2016	101	1.83	2.58	79	1132	11.4	995	9.9
2017	105	2.06	2.77	84	1275	11.7	2073	18.4

Grazing Blueprint

Key actions to maximise grass utilization:

- Build high quality silage reserve (+2-3 tonnes Silage/cow).
- Compact calving is essential as grazing season is shorter.
- Have a flexible approach to grazing.
- Introduce high quality silage when grazing conditions deteriorate.

Excellent grazing infrastructure with spur roads for paddock access is vital.

Table 2: Grazing Year - Key Benchmarks

AUTUMN	SPRING	SUMMER
Start building cover 10th Aug	Mean Calv. Date - 1st Mar.	Whole Milking block - cows only
Peak cover - 1,000 kg DM/ha	Graze 40% - 17th Mar. & 100% - 10th Apr.	18 - 21 day rotation
Start Closing Late Sept	On-off grazing	180 - 200 Kg DM Cover/Cow
80% + closed - 31st Oct	1st Apr. - 60 units N/acre (2 splits)	Make 2½ bales/cow on Milking platform
Closing cover - 650 kg DM/ha	1st May - 100 units N/acre	Measure grass every 5 days

Increased productivity on heavy soils requires continued focus on soil fertility. The Heavy Soils Programme farms have improved soil pH and grass production through greater lime application. The capacity to grow adequate quantities of grass in a three year cycle is dependent on high utilisation of productive ryegrass and the provision of adequate silage reserves (at least 2.5 tons Silage/cow). Stocking rates must be matched to the grass growth and the grass utilisation capacity of the farm. It is vital to establish a good grazing infrastructure and to have a flexible approach to grazing challenges at different times of the year.

FERTILITY & BREEDING

By DOREEN CORRIDAN, MVB MRCVS PhD, Munster Cattle Breeding

BOOSTING IMMUNITY AND REDUCING THE DISEASE CHALLENGE

February is an exceptionally busy yet important month that will affect performance throughout 2018.

Susceptible animals, that is animals not previously exposed to issues on the farm, are increased in February due to the newborn calves and the incalf heifers joining the main herd for the first time- these groups need attention.

In February, the immune system of the herd is at its lowest point because;

- A cow's immune system is compromised just before calving and for up to 6 weeks post calving. This is compounded by lack of space, lack of lying area, barrier space and nutrition.
- Contact time between animals is increased as they are indoors.

To maximise productivity, reduce disease issues and reduce labour spend on sick animals we need to focus on:

KEY POINT: In February we have an increased number of susceptible animals, reduced immunity and increased contact time.

COWS

We need to Improve Immunity, reduce stress and ensure adequate intakes by:

- *Vaccination*
- *Reducing Parasites Burden- Liver fluke or worms*
- *Feeding Mineral supplementation especially Vitamin E and Se*
- *Avoid low Calcium post calving*
- *Calving BCS 3.0 to 3.25*
- *Increasing intakes last 2 weeks prior to calving*
- *Increasing intakes post calving*
- *Reducing SCC*

Vaccination - Boosts immunity and reduces the challenge.

Vaccination boosts the cow's immunity and allows her to increase her antibodies to be able to fight any challenges presented, vaccination also reduces the amount of shedding by carrier animals this reduces the challenge presented to others.

Important vaccinations to do at this time.

- **IBR**

should have been done 1 month prior to calving whether you are on live twice a year or inactivated annually. However, if it was not completed then do it now.

- **Lepto**

can be done anytime as it lasts 12 months ensure you are up to date. Lepto is an Zoonoses- you can contract lepto yourself from cows urine, risk increases as cows go to grass. Ensure a safe place to work for your employees.

- **Salmonella**

vaccine is important if you get salmonella scour in calves.

- **Rota & corona virus vaccine is a must if;**
- If you had rota or corona calf scour last year

- if you have increased numbers this year
- if you are purchasing in females

It will increase the antibodies in the colostrum and in the milk of the vaccinated cows resulting in increased immunity in the calves. If you vaccinate the 1st week of February it will cover the March and early April calvers, which is key.

Reduce Parasites Burden - Liver fluke or worms

Reduced liver function will result in reduced immunity and poorer response to vaccination. If you have not yet dosed for Liver Fluke and you need to, you can do the February/early March calvers with an albendazole at or before calving (3-4 day withdrawal) and the late mid-march onwards calving cows with a triclabendazole (35 days withdrawal).

All grazing animals need to have received a worm dose.

Avoid the use of Zanil within days of calving and after calving as it causes cows to scour and may lead to other issues- milk fevers, E Coli etc. However, if you have a heavy burden of rumen fluke dose at least a week prior to calving.

Mineral supplementation especially Vitamin E and Se

This will reduce issues at calving- retained membranes, metritis, mastitis and reduced vitality in calves. Grass silage only diets pre-calving will lead to mineral deficiencies. Get the silage analysed for minerals by Dairygold - it is never too late. A high percentage of silages I've seen are deficient in Copper, Selenium, Iodine and Zinc. Cows need supplementation 6 weeks prior to calving up to going onto the post calving ration. 120 g supplementation is 12Kgs for 100 cows.

Avoid low Calcium post calving

Low calcium at calving and after calving results in milk fevers, slow calvings, metritis, retained membranes, increased E Coli mastitis, digestive upsets such as ketosis and displaced abomasums. We need to avoid this. If you had any of these issues in 2017 act now and prevent them this year. For cows to absorb calcium after calving from their gut and bones they need adequate magnesium. Cows need 40g/day magnesium. They get this from the dry cow minerals and the silage. Ensure your dry cow mineral is giving 25-30 g/day of magnesium.

A common issue is high K levels in the silage affecting the uptake of Magnesium, if the K level is over 1.8% it is having an effect. High K silages are an issue in the last 10 days before calving. Have you got low K silage for these few days? Your silage mineral analysis will tell you this.

Increasing magnesium supplementation as in putting sweetened Cal Mag on the silage in the last 10 days before calving will overcome some of the issues.

Getting your vet to blood sample a number of cows 24-48 hours post calving will tell you very quickly if this is an issue.

BCS

Need to avoid cows calving over 3.25 BCS. Act on the late March and April calvers now to avoid this. Otherwise we are going to lose them from the herd in 2018. Cows that calve in the 1st 6 weeks have the greatest opportunity of being retained in the herd- lets not further the cows calving in the 2nd 3 weeks.

Increased intakes last 2 weeks prior to calving

Prioritise cows in the last 2 weeks prior to calving.

Increase their intakes their demand is increased by 60% compared to a cow in the 6th month of pregnancy. Increase their space allocation and give them a cubicle each.

SCC

Look at last years cell check report- What was your new infection rate and how many heifers calved down high in SCC.

Last 2 weeks critical prior to calving:

- Ensure dry cubicle beds well limed
- Clean cow for calving – clip tails
- Dry feed helps a lot, otherwise if silage is wet need to work harder to dry the beds.
- One cubicle per cow in the last two weeks prior to calving
- Scraper going every 2-3 hours- avoid turning off at night
- Lime as often as necessary
- Avoid overstocking this pen
- Dry calving box

In addition to the above if you are having issues with heifers- train them to the parlour and spray them daily for the last 10 days before calving. This can be done at the feed barrier with a spray can with a long lance.

CALVES

The newborn calf needs;

- Colostrum for immunity and then it needs
- Hygiene
- Dry Bed
- Fresh Air
- No DraughtsWarm 10-15 degrees C for 1st 10 days

Colostrum

Colostrum needs to be of high quality and clean.

Colostrum quality can be tested using a Brixx refractometer or your vet to blood sample a number of young calves for IgG status.

Cows will have poor quality colostrum if nutrition before calving is not optimum or if being fed low protein silage.

Clean Colostrum

- Clean cows before calving- clip tails, clean cubicles, reduce stocking rate.
- Clean calving box.
- Tube calf rather than allowing it to suck.
- Machine milk colostrum rather than hand milk.
- Disinfect utensils- buckets and tubing
- Avoid same utensils being used to give electrolytes to scouring calves
- Stored in a fridge not in the dairy with bacteria multiplying- milk stores at 2-3.5 degrees C for this reason.

Warm the calf house for the 1st 10 – 14 days

- Concrete and metal are cold materials. Line the young calf pens with big bales of straw.
- Have the calf nestling in straw.
- Avoid a wet bed- this reduces the temperature rapidly.
- Avoid excess moisture in the house- Improve drainage, no leaking water troughs or gutters. Care with the positioning of the calf feeder to ensure all urine and washings drained away.
- Eliminate draughts stokboard text screwed into gates with conveyer belting underneath or big bales of straw in position and replaced after cleaning.

Hygiene

- Washed and disinfected calving box and calf house prior to calving.
- Use plenty of straw.
- Look for a break midway through for a thorough clean if possible.
- Keep all utensils clean and washed in soapy hot water - do not forget the calf feeder.
- Foot baths at entrances to calving boxes and calf rearing area- changed weekly.
- Restricted access to both.
- Work all in and all out system in pens and houses as much as possible.
- Snatch young calves from the calving area ASAP
- Fresh air is key to reducing infection.

Animal Health Ireland NOTES

CellCheck AnimalHealthIreland.ie™

Antibiotic residues - make them a thing of the past!

With the increase in milk price towards the end of last year, some farmers may have been tempted to continue producing milk for longer than usual, resulting in shorter dry periods for some cows. The key thing to bear in mind now, is that if these cows were treated with antibiotic dry cow therapy, then the minimum dry period must still have passed before their milk can be included in the bulk tank. Just because the product was fine to use in previous years on cows that had a 7 week dry period, doesn't automatically mean that it's suitable for cows that might only be dry for 6 weeks!

Minimum dry periods and milk withholding times are there to ensure that no antibiotic residue is present, by the time the milk of the freshly-calved cow is included in the bulk tank. Milk contaminated with any residue of antibiotic must **never** enter the bulk tank. Early in the calving season is a particularly risky time for this, as it can be very busy.

How to avoid residue problems in early lactation:

- Pay very close attention to dry off and treatment dates, calving dates and the manufacturer's instructions for the product used.
- If a cow calves before the minimum dry period has passed, then you must continue to keep her milk out of the tank until the minimum dry period plus the milk withholding time have passed.
- Keep colostrum and transition milk from all freshly calved cows out of the bulk tank. At least the first eight milkings should be held out of the tank – whether cows have received dry cow treatment or not.
- If you suspect an error in cow identity, treatment or calving date records, do not put the milk in the tank until the issue is resolved. Consult your milk processor immediately.

Finally, if you suspect any cows have been milked into the tank by mistake notify your milk processor immediately to avoid contaminating a full silo of milk. Contamination of milk with antibiotics is a serious food safety matter and milk processors have stringent penalties if milk supplies are found to be positive for residues.

For more information on reducing the risk of residues in milk, see Management Notes E & F in the *CellCheck Farm Guidelines for Mastitis Control*

CHFC MATTERS

By ALAN BUTTIMER, CHFC Public Relations Officer

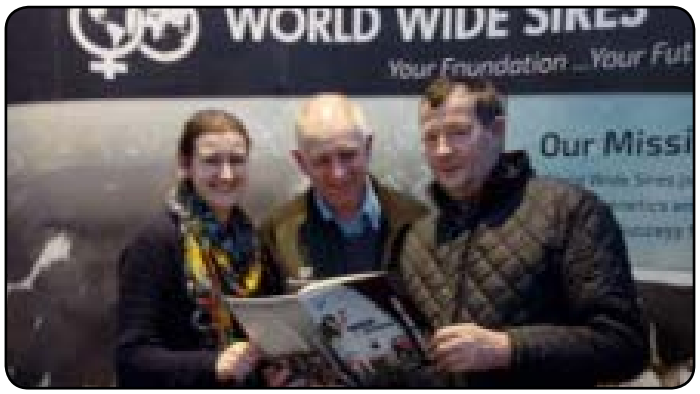
ANNUAL A.I. NIGHT

Cork Holstein Friesian Club held its annual AI night on the 16th of January. The event was well attended and guest speaker on the night was Dr. Margaret Kelleher of ICBF. Dr. Kelleher gave an excellent presentation covering:

- benefits of EBI at farm level,
- managing risk in your breeding program,
- EBI developments for 2018
- and the new COW (cow's own worth) index.

Guest speaker on the night Dr. Margaret Kelleher of ICBF

This was followed with a presentation by the four AI companies present on their spring 2018 bull lineup. The companies in attendance included DOVEA GENETICS, EUROGENE AI, MUNSTER AI and WORLD WIDE SIRES IRELAND. The club would like to thank Dr. Margaret Kelleher and all AI company speakers for their time and for the generous donations of AI straws for the free raffle that was held on the night.



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Golden Valleys, Growing Naturally
AGRI BUSINESS

Spring Management Workshops 2018

JOIN US ON THE DAY TO DISCUSS ANIMAL NUTRITION, CALF REARING, MILK REPLACER FEEDING, ANIMAL HEALTH AND ANIMAL BREEDING

Location	Date
Mogeely	Mon 29th Jan
Mitchelstown	Thurs 1st Feb
Mallow	Fri 2nd Feb
Carrigaline	Mon 5th Feb
Coachford	Tues 6th Feb
Garryspillane	Wed 7th Feb
Clondrohid	Thurs 8th Feb
Rathduff	Fri 9th Feb
Cahir	Mon 12th Feb

Workshops will run from 10am - 1pm

TOPICS COVERED ON THE DAY

TOPIC	SPEAKER
Calf rearing and milk replacer feeding	Dairygold
Early lactation nutrition	Dairygold and Alltech
Animal health programmes for 2018	MSD
Enhancing the genetic potential of your herd	Munster AI

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