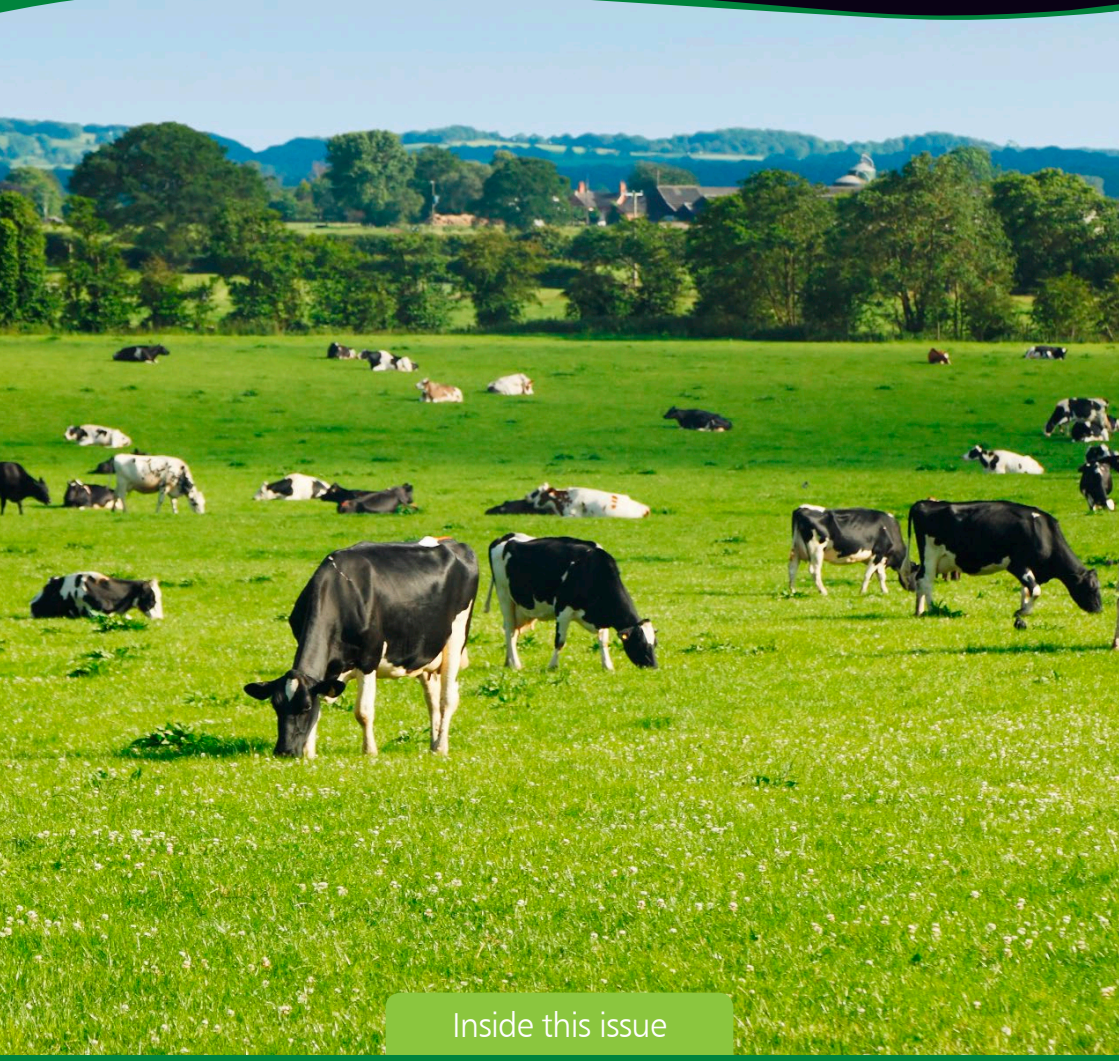
NWF AGRICULTURE

Dairy Bulletin

Edition 1



Inside this issue

Grazing Management:
Decisions that get results

When dairy cows are grazing, there are three key fundamental areas of focus, regardless of system type.

1. **Maximising** cost-effective animal performance i.e. maintain or improve milk yields whilst reducing feed rates.
2. **Achieve** high animal health status.
3. **Maintain** optimum milk constituents.

Management and nutritional activities whilst grazing can get complicated, but we must ensure that those actions taken will actively focus on at least one of the above. So where should we start?

Grass Quality

Simply, the more fibre (length or stem) you have, the lower the energy will be, the same principle as with silage. Ensure that the grass residual (level of grass post grazing) is low and clean to allow for a healthy re-growth. Entry cover is key to achieving this.

The grass plant itself will only have 3 fully viable leaves, a fourth will grow but the first will die away and lie in the base of the sward. Therefore, once the sward has 3 fully emerged leaves, or is at 2800 kg DM/Ha (typically 12-15cm high) it's time to graze.

A Good Entry Cover

A Good Residual

Leaving it longer than this will reduce a cow's ability to achieve a healthy residual, which in turn will reduce pasture qualities.

Dry Matter Intake

Intake is key, turning cows onto slightly higher grass covers can increase intake per bite and therefore total grass intake, particularly in higher yielding cows. This may come at a cost of a clean residual so consider topping or quickly going over the field with youngstock to allow for a clean grass re-growth.

Grass dry matter and daylight length are often overlooked when considering intake potential. Consider a 12kg DMI of grass to be typical (14kg DMI is possible), at 22% dry matter this equates to a fresh weight intake of 55.5kg which is achievable. However, after rain if dry matter drops to 17%, cows need to achieve intakes of 70.5kg fresh weight, alongside a buffer this intake becomes difficult to achieve. Similar can be said for daylight hours. Cows graze very little to not at all through night-time hours, therefore ensure grazing is budgeted to take this into account.

Buffering/Supplementing

Consider cows average and peak DMI to be typically 3% and 3.5% of bodyweight respectively (can be 4% for very high yielding cows). Assume an average DMI of a 675kg cow is 20kg and a grazing DMI of 12kg this leaves 8kg DM to be achieved through a buffer diet, made up of some additional silage and concentrates.

The timing of this buffer is important. Cows will achieve their highest intake period prior to sunset therefore, feeding the buffer after afternoon milking will reduce grass intakes in the afternoon/evening. Ideally, bring cows in for their buffer before afternoon milking to maximise pasture intake.

Managing milk constituents at grass

Broadly speaking, managing constituents nutritionally can be split into two parts; to maintain milk protein, energy balance and supply is key, and for milk fat rumen health supported with quality fibre sources is important.

To maintain milk protein, starchy glucogenic feeds are preferred such as maize, wheat and barley. However, the rate of breakdown of these feeds can vary dramatically, which increases the risk of ruminal acidosis. Ultra-Starch W, like maize, can help to increase starch whilst reducing the risk of acidosis.

Milk fat is more difficult to control at grass and considerations must cover two areas: rumen health and fibre content.

Firstly, rumen health. Maintaining a higher pH range is critical, pasture diets are generally high in overall fibre, however, this fibre often passes through the rumen very fast. This limits the amount of fibre utilised and can drop rumen pH, putting cows at risk of acidosis and a drop in milk fats. Consider using structural fibre or dryer silages to buffer and aim to slow down rumen passage rate. Rumen buffers and probiotics will lift the rumen pH and aid fibre digesting bacteria.

Secondly, and more difficult to control is oil levels. Whilst oil is a valuable energy source, in excess it can inhibit rumen microbes and reduce milk fats. A higher rumen pH can reduce this impact but reducing levels of high oil feeds can also mitigate the effect, such as including fibres like soya hulls and sugar beet pulp. Distillers grains and palm kernel can be high in oil and should be fed at lower levels.

All Things Forage

Achieving high quality forage requires careful consideration to ensure cows can make full use of the available nutrients.

Type and management of the crop including fertiliser strategy and crop maturity, are key aspects as this will determine the energy, protein, fibre and sugars of the silage. Understanding the process of preserving forage is crucial not only to preserve the nutrients but also for animal health.

Preservation of forage

Sugar consuming bacteria pickle the crop to a stable acid pH, by producing volatile fatty acids (VFAs). The longer this process takes, the more sugars are used (dry matter and nutrient losses) and the more protein is broken down (increased ammonia nitrogen production). Some natural bacteria in the forage is beneficial, but many are negative to lactic acid fermentation, which is where an appropriate silage inoculant can be very effective.

In wetter conditions at a higher pH, Clostridial bacteria thrive and can have a large effect on increasing nutrient losses and reducing palatability. Achieving a dryer crop reduces Clostridia lifespan (Clostridia struggle to survive at above 35% dry matter) as does a rapid drop in pH.

Very dry crops do not require such a low pH and have little effect from Clostridia bacteria. However, they tend to be higher in yeast levels, which when subjected to oxygen produce mould and toxins, which can have severe impacts on animal health and productivity. Effective rolling and sealing is essential in this scenario, in addition to an inoculant that can help improve aerobic stability.

In very wet crops, effluent production can increase nutrient and dry matter losses. Management of cutting and wilting of the crop will help reduce this and concentrate the sugar levels.

NWF Agriculture offers forage and silage analysis at our head office laboratory in Cheshire.

KEY POINTS

- More mature crops will be higher yield but lower quality.
- Ideally aim for a quick wilt, but dry matter is critical to quality, preservation and feedout.
- Aim for at least 28%, but ideally 30-32% dry matter.
- Clamp quickly, roll and seal effectively.

Don't Forget

Use NWF Silage Additives to help achieve a front-end fermentation with a rapid pH drop in wetter crops and improve aerobic stability on drier crops.

How important is maize to a ration?

Any feed fed must first meet the need of the animal and the business. A three cut grass silage system would typically cost between £30-£35/T fresh weight of grass silage making it a cost-effective feed. Whereas maize silage typically costs between £40-£45/T, so, is this extra cost worthwhile considering in a year when both forage types will yield a similar amount of dry matter?

Firstly, from the cow's perspective, nutritional trends have rightfully shifted to reducing dietary protein and driving more rumen microbial activity through increases in feeding starch. In reality, you feed both, but broadly speaking you can feed a glucogenic diet, which is based on energy from starch, or a ketogenic/lipogenic diet which is energy based on fat/oil. Van Kengsel et al, 2007, showed that feeding a glucogenic based diet could get cows back into positive energy balance sooner post-calving which could in turn can improve fertility.

The challenge then is to feed higher levels of starch whilst maintaining rumen health, which comes down to the speed in which starch degrades in the rumen. Wheat, barley and biscuit meal all degrade quickly, limiting the amount that can safely be fed. Ultra Starch-W has been protected, causing a slower release (similarly to maize starch), which is where value can be gained. Where maize starch is fed as a forage, this will help to maintain a healthy rumen.

Secondly, from a business perspective, does feeding maize silage pay? At up to £10/T more expensive than grass silage, maize silage can be an additional 14 pence per head per day (when fed at 50:50 with grass silage). This additional cost only remains until improvements are seen. Several trials have shown that feeding multiple forages will increase forage dry matter intake, which itself can increase milk yield from forage and reduce purchased feeds costs. The same trials (Fitzgereld et al, 1998: Browne et al, 1995) showed positive responses in milk yield and milk proteins, ranging from 1 litre per head per day to as much as 4.6 litres per head per day. Achieving these sorts of milk yield responses could financially return £0.27-£1.24 per head per day and ensure feeding maize silage alongside grass silage can have performance and financial benefits to your farm business.

The above responses were achieved using maize silage from 50:50 grass silage and maize silage to 33:67 grass silage to maize silage. Trials have been performed at 100% maize silage however these have shown mixed results as rumen health can become challenged, and costs to supplement protein become very expensive.

Overall, feeding dual forages can be beneficial to dairy farms, whilst the above focusses on maize silage, similar points can be noted when using whole crop albeit with lower responses; due to the lower energy and starch levels in whole crop compared to maize silage.

Importance of Reseeding

By Roger Bacon, Barenbrug Regional Sales Manager

The effects of floods and heavy rainfall during the autumn and winter of 2019 are now showing in some grass fields. One inch of water over an acre is the equivalent to 100 tonnes in weight.

This can lead to compaction, poor soil health, poor fertility and a loss of production between 10 to 20%. Compaction reduces movement of air and water through the soil, which causes poor fertiliser uptake, more nutrient leaching, and reduced soil biological function. Compacted soils are also colder and therefore take longer to warm up leading to delayed germination and root development, fewer growing days, reduced grazing opportunities and lower silage yields.

Now is the perfect time to walk the grassland and assess what is going on. Identify poor performing and damaged fields. Use the Barenbrug Good Grass Guide (a simple grass condition scoring tool), to help make decisions to improve poor swards and maximise productivity from highly performing fields it also has space for field records and it's free.

The average cost of a full reseed is around £650 per hectare, but the potential production from increasing average productivity by even 20% more than covers the cost. Reseeding, when done properly and with attention to detail will provide a huge return on investment. Future proofing your forage by investing in a reseed is the only way to improve productivity and resilience to adverse weather patterns. Production from grassland will be even more important over the coming months.

Get in touch for an NWF Grass Seed Brochure & Sward Stick

Don't forget to take soil samples to check soil pH, P & K indices and correct any deficiencies.

Minerals at Grass

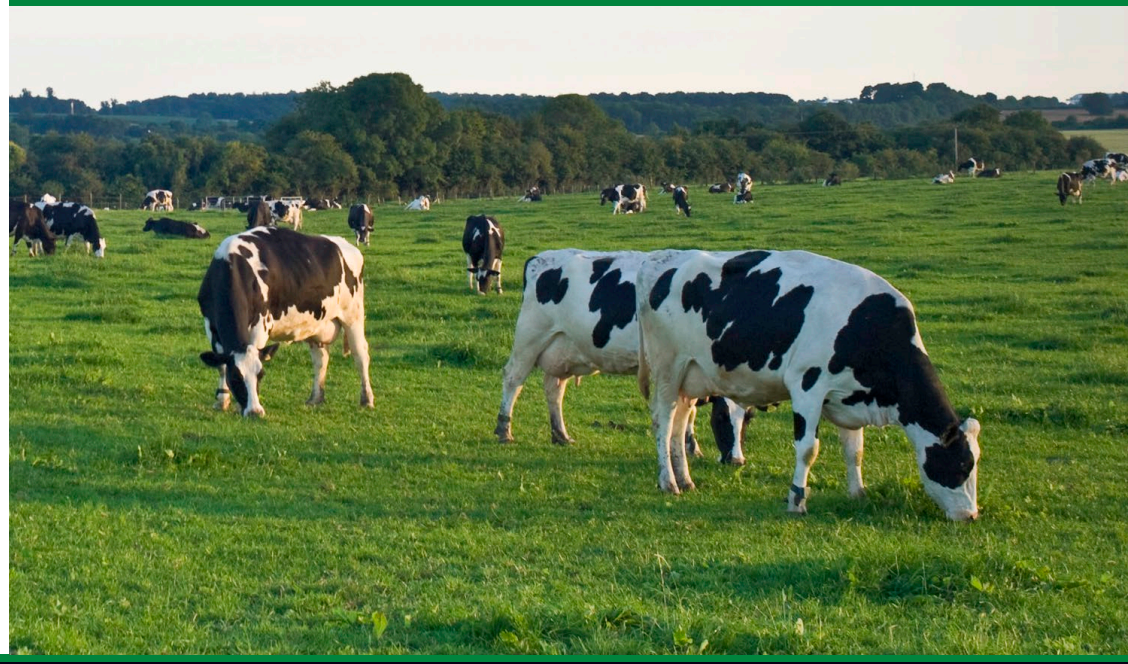
Levels of mineral leaching will be higher than expected resulting in poorer soil mineralisation due to the wet winter and flooding that we have witnessed this year. At the same time damage to the soil structure will reduce the ability of the roots to absorb nutrients from the soil. Combined, this may lead to lower minerals levels at grazing.

Due to the soiling caused by flooding, grass may have increased levels of heavy metals which are antagonists to the favourable metals.

Minerals and vitamins are involved in all the core functions of the body including metabolism, enzyme function, nutrient utilisation, reproduction and cellular repair. A deficiency or toxic level of any mineral will potentially compromise several metabolic functions and reduce performance from grazing.

Pay close attention to mineral nutrition at grazing, deficiencies may not be as adequately rectified due to a desire to increase production from forage. Mineral levels should be balanced based on the mineral requirements of the herd, and if buffering rates have dropped through the summer, mineral supplementation may need to be increased to continue to meet requirements. However, farmers must not blanket increase, particularly in cases of high compound feed rates, as this may increase the risk of over feeding certain minerals.

Ask your local NWF Sales Specialist for a copy of our Mineral Leaflet with information on the powdered UltraMin range, or the Mineral Bucket range.



Heat Stress this Season

Temperature and humidity both play a role in thermal stress. Using the Temperature Humidity Index (THI) enables you to determine the level of summer stress. The Thermo Neutral Zone for dairy cows is 5-20°C, stress symptoms begin at a THI of 68; temperature of 24° and a relative humidity of 20%.

With the UK average humidity over 70%, the heat stress threshold is reached at temperatures as low as 22°C.

Impact on yield

Daily exposure to a THI of 68-71 could result in 1.1kg/cow/day less milk and at THI 72-79 you can expect 2.7kg cow/day less milk (Dussert and Piron, 2012). This is a result of the impaired rumen balance, the fall in rumen pH and the increased risk of acidosis. The table below highlights the impact heat stress can have on milk alone, based on a milk price of 26ppl:

Month	THI 68-71		THI 72-79	
	Per cow	300 cow unit	Per cow	300 cow unit
Per month	£8.58	£2,574.00	£21.06	£6,318.00
3-month period	£25.74	£7,722.00	£63.18	£18,954.00

Impact on metabolic requirement

Heat stress causes the animal to increase heat dispersion by increasing subcutaneous blood flow, panting and drooling. This increases maintenance energy needs by an estimated 20%, meaning that part of the cow's production energy will be diverted to thermal regulation.

Most of the heat production in dairy cows is due to rumen fermentation. The cow will reduce her DMI by 10-30% and be selective to what she eats; less forage, as roughages increase rumen activity and therefore heat.

Impact on fertility

Heat stress can decrease reproduction performance in three ways:

1. Oestrus intensity reduces, heat detection becomes more difficult (Gwazdauskas et al., 1981; Wolfenson et al., 1988).
2. Fertility is reduced:
   - A 10-20% drop in conception rates.
   - Pregnancy loss at maximum THI over 69 (Garcia-Ispoerto et al., 2006).
3. Early embryo survival is compromised:
   - Embryos are more likely to develop slowly and abnormally (Putney et al., 1989).
   - Increased oocyte cell death further reducing opportunities for pregnancy success (Zeron et al., 2001; Al-Katanani et al., 2002)
   - Heat stress is detrimental to the follicle that encloses the oocyte cell and can lead to more small and medium sized follicles and reduced dominance (Hansen, 2013).

NWF Solutions

NWF offer a range of solutions to meet different heat stress situations:

Bypass Feeds

Elements to reduce the level of fermentation in the rumen:
Ultra Starch W (for glucogenic energy)
Ultra Pro-R and Ultra Soy (for bypass protein)

Supplements

NWF Opti Rumen:
A blend of spices and essential oils, to stimulate saliva as a buffer and improve rumen efficiency utilising excess protein. This helps to drop milk urea levels and maintain milk constituents in summer.

NWF Ultra Buff:
A blend of buffering salts including Acid Buf and NWF Opti Rumen.

Farm Paks

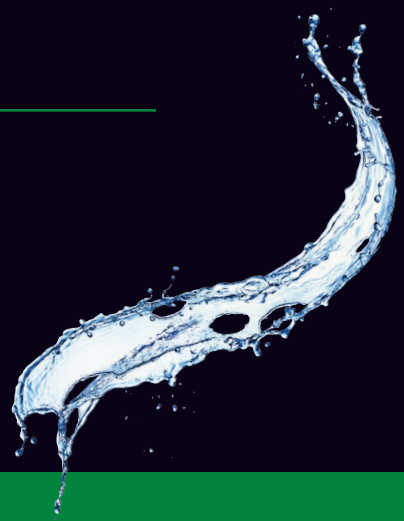
NWF Stable Rumen:
Supplies Yea-Sacc and a blend of buffering salts to help increase rumen pH.

NWF Heat Stress:
A comprehensive pak which includes Opti Rumen, and Betaine; helping during hyperosmotic stress which occurs during heat stress.

1. Ensure water is always clean, fresh and readily accessible.
2. Install fans and/or sprinklers in the cow shed.
3. Supply a larger quantity of feed in the evening when it is cooler, forage digestion creates a higher internal heat.
4. Make available a shaded area.
5. Adjust and supplement the diet through buffers, bypass feeds, supplements and farm paks.

TechMix

The NWF TechMix product range helps redefine hydration and gut health to keep your herd drinking, eating and producing.



The range includes two products for adult cattle; Fresh Cow YMCP & Rumen Yeast Caps and two for calves; Calf Renova & BlueLite Replenish.

Fresh Cow YMCP

Fresh Cow YMCP is the total fresh cow solution that provides rehydration and nutrients essential to maintain optimum peak yield while also helping to maintain health. The post calving drench provides more than just calcium, magnesium and electrolytes, with Pro and Pre biotics to activate the rumen, helping with recovery and ease the transition into lactation.

Rumen Yeast Caps

When cows are off feed, helping them to return to normal intake levels quickly is a top priority. Rumen Yeast Caps are a source of yeast and vitamins in an easy-to-use bolus form to be used at off-feed events. These boluses help to maintain or restore digestive health by supplying high levels of quality yeast in one simple dose.

"The yeast caps are much easier to administer than other conventional powder & drench type products, enabling us to treat off-feed quickly and effectively"
AJ England & Sons, Dunscar Farm

Calf Renova

Pre-weaning nutrition and management can impact the metabolism of a calf to determine their life-time productivity. Management of stress events, health, and nutritional challenges in the early months of a calf's life can result in significant long-term benefits (Bach & Ahedo 2008). Calf Renova is an easy-to-use bolus containing a source of natural ingredients. The bolus includes a botanical extract, naturally occurring microorganisms and yeast fermentation products, providing intestinal support through beneficial bacteria and plant extracts as an effective stimulant for a functioning hind gut.

BlueLight Replenish[M]

Calf dehydration continues to be a major health problem in young calves. BlueLite® Replenish is a highly palatable liquid, buffered calf electrolyte formulated for the severely dehydrated calf, giving calves the best chance to recover.

Cow SIGNALS® Master Trainers

Happy Cows, Happy Farmers, Happy Planet

How many times do you wish your cows could talk, so they can tell you what they think about their environment and diet? Indicating how you can improve their performance.

Cow Signals is the concept of reading cow behaviour to identify areas for improvement in their surroundings or routine. This concept enables dairy farmers to more closely meet their cows' needs leading to increased production and lower costs. Cow Signals revolves around the cow signals diamond focussing on the six freedoms of the cow: feed, water, light, air, rest and space.

Patricia Goldie, one of NWF's Cow Signals Master Trainers knows first-hand the benefits farmers can get from completing a cow signals audit on their farm.

Patricia explains the importance of feed, one of the pillars making up the cow signals diamond. "*Healthy cows eat 10-12 times a day for 30-45 minutes, totalling an eating time of 6 hours. We need to make sure that cows always have access to fresh feed*".

NWF can provide guidelines on feed barrier measurements to ensure cows can reach the feed easily. "*More space will lead to a higher feed intake, large Holsteins should have 75cm of feed space per cow,*" says Patricia.

When feed space is short, increasing push ups to up to 10 times per day will really benefit the heifers, quiet or lame cows in the herd. With the most important push up being 45 minutes to 1 hour after feed out once the dominant cows have had their fill.

Patricia's customer, Emma Vance, who has a robot herd in Dumfries and Galloway increased the number of pushups they provide to one per hour. Emma said, "*The change has been brilliant, cows dry matter intake from forage increased and milk yield followed with the biggest difference seen in the heifers*".

For further information on Cow Signals and to arrange an audit, workshop or presentation please call 0800 756 2787 or email nbteam@nwfagriculture.co.uk

"Let your cows live happily and twice as long"
Veterinarian & Founder of Cow signals Joep Driessen

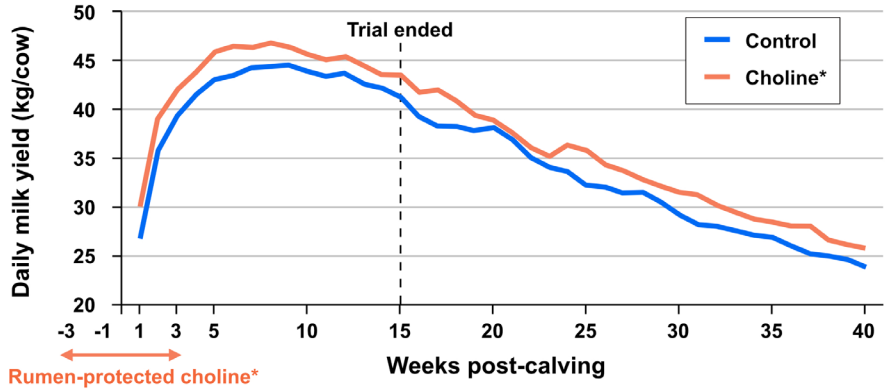
Protected Choline's role in Transition management

ReaShure®

Using the latest research, NWF Drytime Nuts contain key ingredients to focus attention on specific areas that can yield maximum returns. One of the ingredients is Reashure, a proven form of choline chloride, encapsulated to protect it from rumen breakdown and deliver it to the small intestine.

NWF Head of Technical, Adam Clay and NWF Technical Manager, Abbi England attended a Study Tour in the US at the beginning of the year.

Alongside attending the Florida Ruminant Nutrition Symposium, they toured North Florida Holsteins and the University of Florida. Whilst at a roundtable discussion on dietary mineral formulation for transition cows, Dr.Santos, one of the key researchers at the university shared some of the university's latest research on Reashure which is in the final stages of being published.



* Fed as 60 g/cow/day of ReaShure

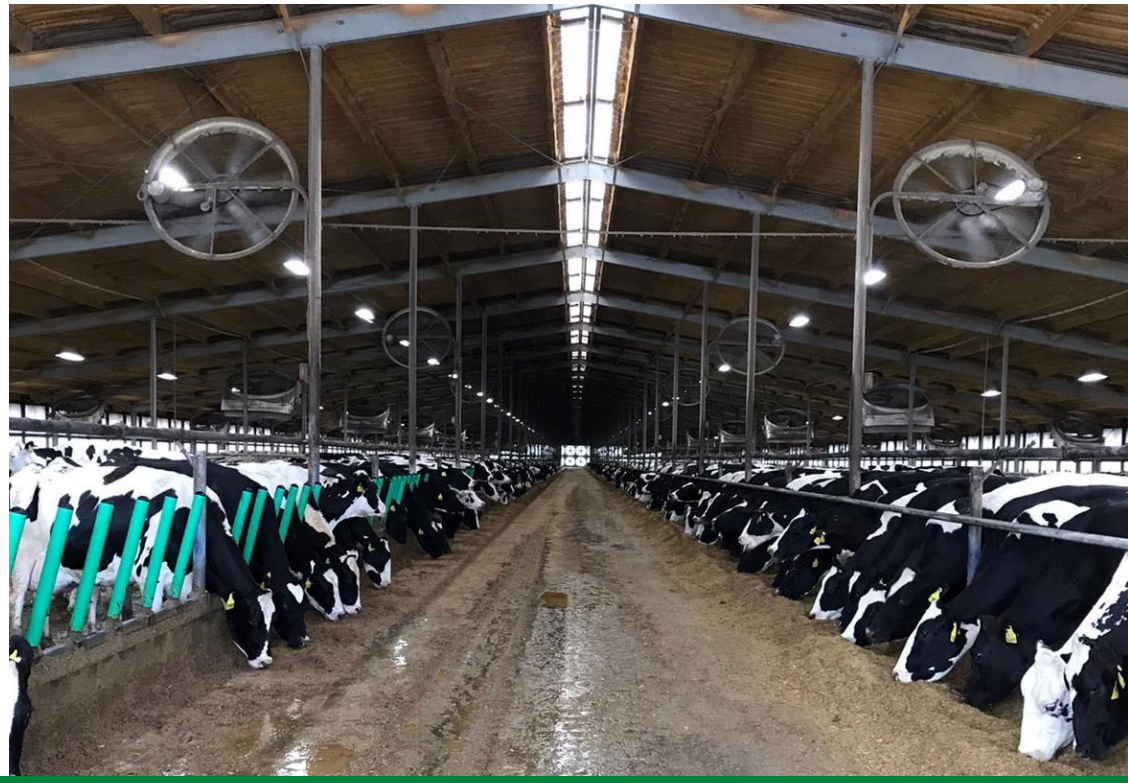
Why is choline important?

Choline has a number of activities in the cow, a key one being fat transportation. Early lactation cows will always lose weight which puts pressure on the liver, choline can aid the transportation of fats away from the liver, improving liver function and fat usage.

So what are the benefits?

- **Improve fat metabolism**; Fat that is lost in early lactation can clog up in the liver, choline is essential for fat transport out of the liver.
- **Support milk production**; Fat removed from the liver by choline can be transported to the mammary gland and used for milk or milk fat.
- **Reduce metabolic disorders**; A healthy functioning liver supports improvements in clinical and sub clinical disorders such as ketosis.

To hear more about NWF Dry Cow products, speak to your local NWF Sales Specialist, or call 0800 756 2787.



Insight from 2020 Florida Nutrition Symposium

Earlier this year NWF Head of Technical, Adam Clay and Technical Manager, Abbi England were invited to the 2020 Florida Nutrition Symposium. It was a great opportunity to learn from some of the world's leading researchers and capture insight to share on their return. Here are some of the key points captured.

SPACE

Socialising space and feed space is taken very seriously, with a new type of feed barrier being trialled. All necessary considerations to achieve an average group DMI of over 33kg and a high's group average yield of 56 litres/h/d at 3.6% fat, 3.3% protein in first 120 days of lactation.

BEDDING

Deep bedded sand means 'deep bedded'. Sand was front loaded over the brisket bar to encourage lying time and fluid drainage. The cold sands also helped with temperature regulation and was a key factor in achieving less than 100,000 SCC and less than 10 mastitis cases/100cows/year.

HEAT

Heat stress has to be taken very seriously, when even winter temperatures can reach over 25°C and humidity of over 85%. Fans ran constantly and sprinklers over the feed fence turned on every 30 minutes.

TRIALS

Various trials are carried out requiring specific intakes and body weights to be measured. Not to mention individual yields and milk samples taken for fatty acid profiling. Some very interesting work is being done on the impacts of fatty acid levels on immunity, health and performance.

There was a large focus on transition health during the nutritional symposium, with data presented on dry cows fed choline chloride and its effects on metabolic disease with clear responses on lactation performance. There was even a suggestion that feeding protected fats during the close-up period may yield benefits, although this requires further research. The NWF Technical Team are always looking for new innovations which can benefit British farmers and will be reviewing the conference data closely to determine any potential benefits. Watch this space. NWF Agriculture would like to extend a thank you Trouw Nutrition, University of Florida and North Florida Holsteins for the insightful trip.

Blends: A Flexible Approach

NWF offers a highly flexible approach when supplying blends for your herd or flock.

The NWF Agriculture experienced sales team will focus on what your specific requirements and feeding objectives are, quoting on the formulation you require. Using the NutriOpt rationing programme in conjuction with our forage analysis, NWF can review what home grown forage you plan to use and produce a blend that works for you and your livestock needs.

NWF blends are manufactured across the UK at one of the NWF five dedicated production sites. Delivered direct to farm the blends are competitively priced and nutritionally perform on farm, endorsed continuously by customers.

As the world challenges COVID-19, raw material markets are going through some of the most volatile conditions in living memory. NWF offer the benefit of either purchasing your blend requirements on the 'spot' market, or on a longer contract.

Spot pricing, will reflect more closely the market pricing on the day, and allow you to take advantage of markets if prices are weakened. Contract pricing offers you a lower risk, with raw material prices that peak and trough smoothed out over the given contract.

This summer, we are highly likely to see a major downturn in the availability of brewers' grains. For customers requiring brewers' grains, NWF have formulated a dry Brewer's grains replacer blend, containing high-quality raw materials at a cost-effective price.

Where there is a challenge of low butterfats increasing the risk of price penalties this spring and summer, NWF provides the option of high fibre blends, with the inclusion of C16 rumen protected fat; to help combat low milk butterfats.

We look forward to discussing what we can offer and what best suits your business. Contact your local NWF sales specialist or the NWF Blends team for more details on 01829 262346.

Protected Feeds

Ultra Pro-R

A high-quality vegetable protein which, as a result of precise treatment of rapeseed meal, contains a high level of Digestible Un-degradable Protein (DUP).

Ultra Soy

A high quality vegetable protein which, as a result of precise treatment of extracted soya bean meal, contains a high level of Digestible Undegradable Protein (DUP).

Ultra Starch-W

This product produces a cost effective source of bypass starch based on rolled wheat treated through our unique process which significantly increases the amount of bypass starch.

Out & About

Meet the NWF team out and about this autumn, subject to COVID-19 government guidance. Visit the NWF trade stand for information on the comprehensive range of compounds, blends and associated products and seek expert advice from the sales team who are registered FAR Advisers and Master Cow Signal Trainers:

- **Westmorland Show**
  Thursday 10th September
- **UK Dairy Day**
  Wednesday 16th September
- **The Dairy Show**
  Wednesday 7th October
- **Borderway Agri Expo**
  Friday 30th October
- **AgriScot**
  Wednesday 18th November

FEED ADVISER REGISTER (FAR) – Setting the Standards for Feeding Advice

Did you know that NWF Sales Specialists are registered as FAR Feed Advisers. The Feed Adviser Register (FAR) was established in May 2013 by AIC Services and key UK farm animal feed industry representatives. Its development was a response to Government's need to reduce greenhouse gas emissions from farm livestock. That ambition, together with recognising the professionalism of the industry, led to the Register's creation. There are now over 1,000 registered Feed Advisers throughout the UK.

Find out more online **www.feedadviserregister.org.uk**

FAR
aic agricultural industries confederation
Feed Adviser Register

Enquiries: **0800 756 2787** | Orders: **0800 262397**
E Mail: **nbteam@nwfagriculture.co.uk**

www.nwfagriculture.co.uk