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# Sulphur - is it limiting your grassland output?



By Paul Macer [paul.macer@kiteconsulting.com](mailto:paul.macer@kiteconsulting.com)

**Over the last decade or so, ensuring plants receive enough sulphur has become more of an issue for farmers. This is because levels of atmospheric deposition have steadily fallen, with more than 60% of the UK now receiving less than 12kg S/ha/year of this essential plant nutrient. Levels of sulphur are key for determining the quality of forage as it forms a crucial role in amino acid and protein synthesis in the plant and is necessary for chlorophyll formation. Also, additional sulphur can improve nitrogen uptake efficiency if it is limiting, which in turn will increase yield. The greatest responses are seen in cutting leys, but experimental work has shown that there is also a benefit from supplementing grazing leys.**

The first major sign of deficiency is a yellowing of leaves and reduced yield. Unlike nitrogen, the yellowing occurs on the youngest leaves when sulphur is short. If you suspect a deficiency then doing a plant tissue test is the way forward. You need to look at both the absolute amount of sulphur in the results (aim for a minimum of 0.25%) and also the N:S ratio (if above 13:1 then you are short).

Plants can only take up sulphur in the form of sulphate and, like nitrate, this is highly soluble and can easily be leached from the soil. It is therefore preferable to apply "little and often" to get the best response and avoid autumn applications as these are unlikely to be of any use. Lighter soils and areas of high rainfall will also see higher leaching rates.

Organic manures do contain some sulphur, but in FYM this is only 15% available. The availability from slurry is greater, but will still not meet crop requirements on their own. With thoughts now turning to next year's nutrient requirements, there are numerous fertilisers available with added sulphur and these should be part of your forage nutrient planning.



# Much to learn from Minneapolis



By David Keiley and Vicky Hicks [david.keiley@kiteconsulting.com](mailto:david.keiley@kiteconsulting.com) | [victoria.hicks@kiteconsulting.com](mailto:victoria.hicks@kiteconsulting.com)

**David Keiley and Vicky Hicks recently visited Minneapolis, courtesy of Zinpro, for a week of farm visits and dairy lectures. Topics covered during the week ranged from inflammation to transition cow health, feeder wagon maintenance to heat stress and foot health. Here are a few snippets from their trip:**

### Leaky Gut Syndrome – Prof. Lance Baumgard

Researchers at Iowa State University are focussing their attentions on 'leaky gut syndrome', which has been found to be a common attribute in animals suffering from heat stress and ketosis.

While the main job of the intestine is to absorb nutrients, it also acts as a barrier to prevent foreign substances, such as toxins and parasites, from entering the body. However, during periods of heat stress and ketosis, a certain endotoxin that disrupts metabolic processes increases the intestine's permeability and allows some of these 'baddies' to enter the body and cause an inflammatory response. The consequence of which is a shift in the use of glucose towards the immune system and therefore away from milk production.

When infusing ketones and non-esterified fatty acids (NEFAs), the negative outcomes associated with ketosis are not seen, therefore ketones and NEFAs are a consequence but not the problem. Cows that are milking well, look well and eat well should not be treated even if they have high ketones, according to Prof. Baumgard, because ketosis is a reflection of the underlying insult on the gut.

Prof. Baumgard said that more research needs to be done in the areas of maintaining gut integrity through feeding strategies as 70% of the immune system resides in the intestines.

### Footbaths – Dr. Arturo Gomez

Footbathing cows is for preventing infectious foot disorders and not treating them, was the message from Dr. Arturo Gomez of Zinpro.

Effective footbath design and management is key to ensuring the effectiveness of a farm's prevention strategy. These include:

- Each foot should get 3 dunks in the footbath
- Minimum depth of 10cm
- Size of a footbath should be between 300 -370cm long by 50-60cm wide
- Don't go below pH 3
- Don't forget the dry cows and heifers

Copper Sulphate has the most peer backed reviews supporting its use in footbaths and it's recommended to use it at a maximum concentration of 5% alongside an acidifier, such as Sodium Bisulphate, to bring the pH down. Formalin is another alternative, recommended at no greater than 3% but should not be used in cold weather, as it becomes deactivated at lower temperatures, and not in conjunction with copper sulphate.

Monitor the footbath's pH during use to see when the solution needs changing, probably somewhere between 150 to 300 cow passes.

### Walking Surfaces – Dr. Nigel Cook

White line disease is not caused by poor walking surfaces alone but the combination of poor flooring and poor handling, according to Dr. Nigel Cook from Wisconsin University.

Dr. Cook advised that the ideal concrete grooving is a groove that's 1.9cm wide, 1.3cm deep at spaces of 8.25cm to the middle of each groove. The hoof must have sufficient contact with the surface to ensure even weight distribution.

Cows in sand bedded cubicle yards will get softer horn and soles due to increased abrasion from sand on walking surfaces, akin to walking on sand paper, so will be more at risk from bruising on poor walking surfaces.

### Mixer wagon performance – Dr. Jeff Weyers

"When was the last time you looked inside your mixer wagon?" asks Dr. Jeff Weyers from Zinpro. With a significant



proportion of farm bills going through the mixer wagon, it's a piece of kit that cannot be ignored when it comes to performance and efficiency.

The baffles are one of the most commonly misused features on a mixer wagon; they should only be notched in a hole when mixing tough straw or round bales. Never use the last hole as this is purely for transport purposes.

Regularly check the number and condition of knives and kicker plates, and the length of the auger as auger metal can shrink by 8 inches with wear.

Dr. Weyers also advocated the use of a spreader bar for adding liquid feeds to the TMR to ensure even distribution, plus a minimum of 3 to 5 minutes mix time at the end of loading.

### Cool cow facts

- The gut wall is only 1 cell thick - unlike the rumen wall at 18 cells thick
- Cows will drink 12% of their daily water intake after milking
- Calves will build a wall in their lung to block off any bacterial infection they can't clear up
- An activated immune system requires 1070g of glucose in a 12-hour period, which is the equivalent of 1.3kg of lean tissue

# Tips for the pre-weaning stage

By David Levick [david.levick@kiteconsulting.com](mailto:david.levick@kiteconsulting.com)



**Recently, we had a client meeting with Sandra Godden when she was over in the UK. A vet associated with the University of Minneapolis, she has recently undertaken a great deal of research in calf rearing. Sandra's work is focused on getting calves performing significantly better to reach their true potential, both in terms of growth rates and overall health status, and ultimately in milk production. Although it's a subject we cover regularly with clients, I wanted to highlight some points she made, that build on current best practice.**

The pre-weaning stage is critical to future performance, so spending money on the right quantity and quality of feed at this stage will pay dividends down the line. The aim is to double birth weight by 8 weeks, and there are a lot of benefits for stretching weaning up to 10 weeks to maintain outstanding growth rates and utilising the incredible feed efficiency we have at that time. We are aiming for calves to be gaining 1kg/day by 8 weeks. Measuring this by random checks on groups of calves is essential. Weighbands are pretty accurate with this age group.

Very short dry periods dramatically reduce colostrum quality. We know that twins almost always calve two weeks early, so if you know a cow is carrying twins, make sure you dry her off at least two weeks earlier than usual to compensate for this, as it's

especially important that vulnerable twins get the best start possible.

Harvest colostrum soon after calving, as quality is greatly reduced after six hours. Sandra recommends tubing a black and white calf with four litres as soon as possible to get the critical immunoglobulins into the calf before they deteriorate. Using a teat will result in probably only 2-2.5 litres being taken, and it will take longer and is likely to leave the calf short of immunoglobulins. Don't worry if they are still full at the next feed and don't want to drink, it's this first large feed that is key.

Colostrum left hanging around will contain bacteria such as salmonella, e-coli and possibly mastitis pathogens that multiply about every twenty minutes. Best practice is to pasteurise colostrum at 60 degrees for 60 minutes to kill many of these challenging bacteria. Small background infections leave the calf wide open to picking up crypto. If not pasteurising, ensure all equipment such as buckets and tubes (even when calving at 2am) are very clean, and get surplus colostrum into a fridge in a clean container as soon as possible. Don't forget the water either. The water should be changed each feed and bucket cleanliness is just as important as with the milk bucket.

Feed colostrum for 3-4 days if possible. While a lot of the antibodies and immunoglobulins are only useful

in the first feed, the milk from the cow in the following days still contains 24% milk solids, so twice the normal feed value of milk powder, as well as a range of complex sugars and proteins that are hugely beneficial to the calf and the development of its immune system. This can provide a significantly improved start in life.

Challenge yourself to get calves drinking 1kg milk powder/day as soon as possible. Most bag instructions suggest building up over a couple of weeks. Sandra is keen to speed this up and get there as quickly as possible. Her work in the US showed absolutely no problems in doing this.

While normal recommendations keep powder concentrate reasonably high (150g powder in a litre of water), beware risking going over this concentration which can cause nutritional scours. Unless you know the powder is being meticulously measured out by the same person every day, Sandra recommends erring on the side of caution and feeding 125-135g of powder in a litre, giving you leeway for staff that might be heavy handed with the powder.

Sandra was keen that farms should have a zero tolerance policy on bacterial scours, believing that the presence of them, even on some calves, suggests an underlying problem in management or the environment. However, beware, the feed rates of powder we are talking about above are always going to result in fairly soft yellow stools, which are fine. Sandra suggests looking at the calf from the front rather than the back. If she is bright, alert, ears up and no signs of discomfort then she is fine.

Calf growth rates and management have a huge impact on the future performance of the cow. Getting it right in the first 10 weeks leads to a better immune system, faster growth rates, earlier serving dates and calving in under 24 months, but ultimately a far more efficient, better performing cow with a longer life expectancy. A great investment for every farm!

FOCUS ON TIPS FOR THE PRE-WEANING STAGE

# The Prince's Farm Resilience Programme



**In the last 12 months, Kite has been involved with supporting and delivering workshops for the Prince's Countryside Fund. Following great success with "The Dairy Initiative", which ran from 2011 – 2015, the charity then launched "The Prince's Farm Resilience Programme."**

The Prince's Farm Resilience Programme targets farmers who occupy fairly remote or isolated areas of the country, to offer consultation and to share best practice for those who may not have discussion groups or advisory services close by.

The Kite team have delivered and facilitated one of the five workshops, to encourage farmers within beef, lamb, dairy and arable businesses to share technical knowledge and best practice across several topic areas such as health, fertility, grass management, housing, ventilation, youngstock and many more. Farmers have been equipped with information and practical know-how to improve efficiency and profitability of their businesses. By highlighting the areas which have large hidden costs associated to them (poor health, poor fertility and poor ventilation), we are able to target those easy but detrimental areas

which contribute to the foundation of any successful farming business.

Across 15 locations in the country, with over 20 farming businesses at each meeting, Kite has received excellent feedback from all of the farmers, regarding the delivery and content of each meeting. Farmers have found the workshops a great practical help and have really begun to analyse their business from a different perspective.

**The programme will continue to run for the next four years. If you would like to find out more, or know somebody who might be interested, please contact Madeleine Fitzgerald on +44 (0)20 7566 8797.**



**PROGRESSIVE  
DAIRY OPERATORS  
CONFERENCE**

## Kite Progressive Dairy Operators Conference

With a wide range of topics from nutrition and genetics to antibiotic use and the development of a resilient mindset, the recent Kite Progressive Dairy Operators Conference offered plenty of food for thought for those looking to build a sound dairy farming business for the future.

With a high percentage of delegates under the age of 40, two of the speakers focused on how developing people skills and building relationships, as well as how you make sure you establish a resilient culture within the business, will ensure future success. We will feedback more detail on some of the topics covered during the conference in future Kite Updates.



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