Kite update

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in this issue...

- Arla Pathfinder trip to Denmark
- New additions to the Kite team
- Focus on calf rearing
- Putting genomics into practice

Arla Pathfinder trip to Denmark

By Chloe Cross chloe.cross@kiteconsulting.com

In June of this year Kite took took two Arla Pathfinder groups to Denmark, visiting five farms in three days, plus the new Arla innovation centre. We also spent time getting an insight into the Danish levy board, SEGES.

Each farm provided a different approach to dairying and as they were relevant to UK operations, it was of great interest to the Pathfinders. Danish milk is particularly well balanced in butterfat and protein, an outcome of long-term breeding for milk solids. A vast number of Danish dairies have put robotic milking units on their farms and are very focused on achieving a high milk output per robot i.e. about 900,000kgs per year (whereas UK farmers tend to look at maximising the number of voluntary visits per cow). Interestingly, with feeding being so important, the use of robots doesn't seem to prove any less labour intensive than conventional milking.

In 2013, a particular area of peer reviewed research became popular amongst many dairies across the country. Danish academics had researched the waste of whole grains passing through the cow and found a way to reduce this and maximise the nutritional benefit. By adding up to 6kg of water per cow to the concentrate portion of the diet and soaking for up to 12 hours, they found the feed broke down and became porridge-like before forage was added. Danish academics and farmers have both shown sound evidence of increased intakes, reduced sorting and increased lying time by using this method, as well as a 2-3 litre increase per cow per day. Several of the Pathfinders have taken this new concept of feeding and trialled it on their home farm. We expect to see some results shortly.

The visit to the new Arla innovation centre was also an extremely interesting day, demonstrating to members the large amount of new product development taking place and the thoroughness of the food testing that takes place.

New additions to the Kite team

Ben Hembrow has recently joined the Kite team covering the South West of England. He has experience in both business and strategic planning as well as technical advice, covering nutrition and fertility in particular. Ben has worked in the dairy sector for the past six years in advisory roles and running his home dairy business for the past 18 months. He will now be combining his responsibilities on the family farm with consultancy within Kite.

Andy Gubb has recently returned to dairy consultancy after 17 years, having originally been part of the ADAS dairy team in the South West.

Since then he has had various roles outside the industry before returning to agriculture on the family farm in Devon, converting a beef and sheep enterprise to a 500 cow dairy unit in 2014. He is currently doing part time business consultancy for Kite in the South West

Focus on calf rearing

Mark Perry mark.perry@kiteconsulting.com

Earlier this year, I attended the Phileo Lesaffre Global Ruminant Symposium where Dr. Alex Bach, one of the world's most respected researchers, presented a paper on effective calf rearing. The presentation focused on the objective of producing cheaper but more productive heifers, urging producers to manage youngstock with the same degree of attention given to lactating cows, rather than using 'feelings' to gauge success.

Economics

So, why is calf rearing so important? Rearing heifer replacements is one of the costliest operations on a dairy farm, representing around 17% of the cost of production, making it the highest variable cost after feed. In many herds there is significant room for improvement, the range in costs is typically 1.8 to 2.8 ppl, so there is a huge incentive to raise these calves correctly.

The average age to first calving in the UK is around 28 months. To minimise rearing costs, an average age of 22-24 months should be the target, with heifers weighing 90% of mature bodyweight at first calving. There are many peer reviewed papers highlighting the significant benefits from calving earlier, but effectively it is all about longer lasting cows with higher performance and fewer problems.

"The most crucial stage for achieving earlier calving is from birth to weaning, where excellent feed conversion rates take place. The cost to weaning may be slightly higher, but the cost to calving is less and the benefits of higher performance when milking make this initial cost insignificant."

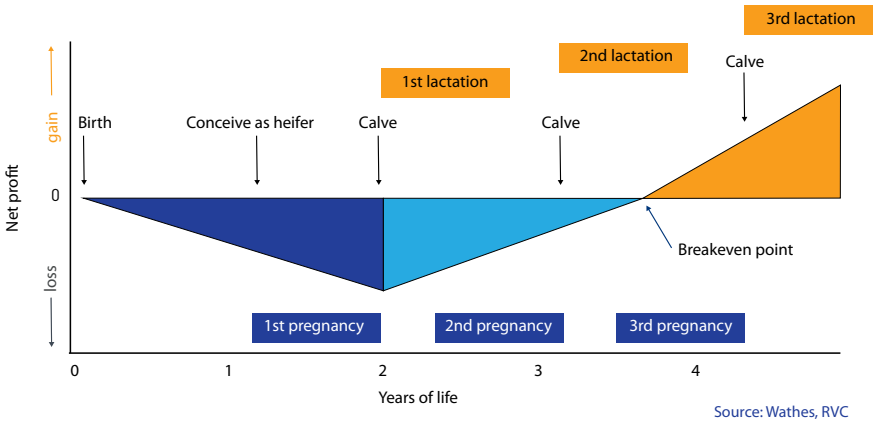
The link between the nutrition of the pre-weaned calf, the age of first calving and the quantity of milk produced in the first lactation is now proven 'beyond all doubt' in Dr Bach's opinion. In fact, the results from a meta-analysis concluded that for each additional 100g/day growth during first two months of life, an extra 225kg of milk was produced in the first lactation.

Interestingly, he also stated that heifers from maiden heifers will perform better than heifers from older cows because the older cows put more nutrients to milk rather than to the calf development.

Furthermore, he explained that calves have a feed efficiency of 50-60% in the first two months which declines to only 10% by the second year. Therefore, the cost of 1kg live weight gain pre-weaning is significantly less than 1kg later in the rearing process. Calves that are fed more milk or milk replacer during this feed efficient phase, to achieve higher weights at weaning, will typically cost £40 per head less to rear.

This graph illustrates how important it is to calve on time, as it is only well into the second lactation that you achieve payback and a return on that heifer.

Lifetime economics of a dairy cow



Source: Wathes, RVC

It's not just the rearing costs that reduce by decreasing age of first calving, the table below shows strong links between earlier calving age and better overall future performance.

Effect of age at calving and future performance

Calving age (months)	22-23	24-25	26-28	32-36
Pre-calving weight (kg)	591	621	625	769
Calving assistance	17%	17%	27%	67%
Cows still alive 5 yrs	86%	62%	41%	33%
Total 5 yr milk yield	25,031	20,395	16,671	8,029
Time in milk during first 5 yrs	48%	42%	38%	18%

RVC 2003-2008

Milk feeding

While feeding more than 4 litres/day milk replacer (MR) is essential to get these rapid growth rates, Dr. Bach warned that feeding rates closer to 8 litres/day may hamper the intake of starter and, if MR is only offered twice daily, it may foster insulin resistance in calves. For best growth rates, and resilient calves, he is suggesting feeding more than twice a day, or considering the use of dried milk powder pellets as part of the feeding regime.

In addition, calves fed high levels of MR tend to struggle during the transition onto solid feed and undo the growth advantage achieved before weaning. Therefore, feeding 6 litres over three feeds containing 150g of powder per litre, is likely to be the optimum approach for the calf in terms of rumen development, solid feed intake and digestion efficiency. Also, contrary to previous thinking, Bach recommended providing *ad libitum* access to chopped straw. This practice has been shown to increase solid feed intake by 23% and also improves the environment in the rumen.

Weaning

It is the starch in the solid feed that stimulates the growth of the rumen papillae and a calf's rumen is not sufficiently developed to allow weaning until at least eight weeks old.

Bach suggests that to achieve a desired Average Daily Gain (ADG) of about 1kg/day at weaning time, calves should not be weaned until they consume at least 1.5-2kg/day of dry feed rather than weaning at a specific age. Ideally, he advised stepping milk volumes down two weeks before weaning, then reducing the number of feeds per day. With a proper nutritional scheme, calves in this transition stage can easily grow about 1.2-1.3kg/day and do it very efficiently. This represents the most profitable development stage that calves or heifers will undergo during their entire growing period.

Grouping

Going against traditional advice, recent trials have shown that grouping calves pre-weaning, rather than keeping them individually penned, improves solid feed intakes. In turn, these higher intakes create more robust, resilient calves that are better able to fight off disease, and are also less stressed when moved into bigger groups. Common sense when grouping will also go a long way – where possible, try to be selective when grouping and don't mix calves that have had pneumonia or scours with those that haven't.

Weaning to breeding

Finally, Dr. Bach suggested that ADG between weaning and breeding should be around 0.9kg/day and rapid growth rates at this stage do not compromise the mammary development as previously believed. However, once the heifer is in calf, rapid ADG during pregnancy has been found to be associated with impaired milk production and therefore should be restricted to around 0.75kg/d.

There is a lot to take in here and not enough room to go into the finer detail of the reasons behind every recommendation detailed above. If you have any queries, please do get in touch with me or, of course, your own consultant, and we will be happy to look at how the above advice fits into your farm protocols.

Putting genomics into practice

David Levick david.levick@kiteconsulting.com

In the last edition of the Kite Update, I introduced the potential benefits of genomically testing Holstein heifer calves. Things are moving quickly, and since that article, I have been working with a number of farmers and discussion groups to actually try out the technology on farm and see what information it brings to the table.

The first interesting thing to note is the link between genomic results and PLI values. PLI is a formula that encompasses a whole range of traits to give a guide to what a certain animal may be worth compared to another. For some it is a very important guide. The Genomic PLI is a far more reliable result than the predicted or 'parent average' PLI. If you look at a whole group of heifers, the average GPLI may not be that different from the calculated PLI of the group. However, genomics is all about understanding the individuals and correctively mating to iron out the problems.

The individual GPLI can vary massively and gives you reliable information to allow you to correct the weaknesses in your heifers before they breed those problems into the next generation. Together with NMR, we have built a Kite report that works with the NMR Genetracker data to identify groups of cows that are either at the top or the bottom of the pile in terms of the traits you require in your herd. What you then do with this data is what makes the real difference.

For example, we can identify the criteria that are ideal for each farm's optimum herd performance and profitability. We've then been able to accurately pull out the bottom heifers that just aren't going to achieve these goals. We can then work with the semen supplier to see if they can be mated with bulls that can correct these problems . For those predicted to perform the worst, we have looked at the number of followers coming through and made decisions on whether to sell, or keep in the herd but calve down to beef. Everyone is different and will have different goals. If you are expanding you will probably keep all the heifers and may be considering using sexed semen to provide this solution. If you have the option to select which heifers to keep, then this makes the choice very easy. Either way, genomic testing will give you much more information which will directly affect the return from those heifers over their lifetime.

Another option to consider if you have some really super heifers in the pipeline, is embryo transfer. By flushing a heifer, you may get several embryos which you can implant into those with a lower genomic forecast. The costs involved are soon outweighed by the benefit these superior animals' offspring bring to the farm, whether it be yield, constituents, health traits or longevity.

The key thing for us at Kite is to ensure that investing in genomic testing will provide a return on investment to your business and we are currently working on a programme to identify when it is appropriate to use this technology, and what we can expect it to yield.

To make the most of this technology, you do need to have the right people in your team. There is a huge amount of data to unravel and it needs a properly integrated computer progamme to get the most benefit for you. Some companies already have this facility and others are no doubt rapidly developing it. Ask your semen company if they have expertise in this area, and use your consultant to help you interpret the data that is easily downloaded from Genetracker.

This gives us a real opportunity to rapidly advance the genetics within your herd. It has been tried and tested in other countries delivering huge benefits.

Where cost is the prohibitive factor in pursuing this, do think about the impact of missing an opportunity to affect the next generation… it takes a minute to insert a straw of semen, and getting it right at this stage allows for years of benefits.

Kite Consulting would like to take this opportunity to wish you all a very Merry Christmas and Happy New Year.

For enquiries regarding the information in this newsletter please contact:
Kite Consulting | The Dairy Lodge | Dunston Business Village | Dunston | Staffordshire | ST18 9AB
Tel: 01902 851007 | Fax: 01902 851058 | Email: enquiries@kiteconsulting.com