The “Transition Period,” defined as the 3 weeks pre and the 3 weeks post calving, has long been identified as a key stage in managing the modern dairy cow. Both feeding management and nutritional strategies pre and post calving have implications on dairy cow health, productivity and fertility during the subsequent lactation.

Dr. Jim Drackley, professor of Animal Sciences at the University of Illinois, presented his team’s latest research findings on this subject to delegates at the International Cow Fertility Conference, Westport, Ireland in May 2014.

Entitled ’Pre and post-partum nutritional management to optimise fertility in high-yielding dairy cows in confined TMR systems, Dr. Drackley’s message revolved around 2 clear aims;
1. To minimize health disorders
2. To maximise production and fertility

The control of NEB (negative energy balance) post-partum, particularly the first 10-14 days, was clearly identified as having a negative impact on fertility where it appears to inhibit the timing of 1st ovulation, a return to cyclicity and oocyte quality. If we consider that the end of the voluntary waiting period typically occurs ~50-60 DIM (days in milk), and oocyte development takes some 60-90 days prior to maturation, the effect of both the “far-off” dry cow and the “close-up” transition management on fertility cannot be underestimated.

The “overfeeding” of energy to dry cows, especially in late gestation, was implicated as having a detrimental effect on both postpartum DMI (dry matter intake) and a resulting increase in NEB. Both NEB and reduced post-partum DMI have profound effects on post-partum disease and subsequent fertility.

A statistical analysis of 7 previous studies by Cardoso et al 2013 found that controlling energy intake to requirements before calving resulted in 10 fewer days open when compared to cows allowed to over-consume energy requirements. Fig:1

Researchers also found that irrespective of BCS (body condition score), cows overfed energy requirements respond post calving as if they are in excess BCS (>3.5).
These animals had reduced DMI, increased NEB, elevated blood NEFA (non-esterified fatty acids) and increased liver fat deposits. Another study conducted by Cardoso et al 2011, found animals that were fed a “controlled energy” dry cow diet were;

- 5 X less at risk of a DA (displaced abomasum)
- 2 X less at risk of Ketosis.

Dr. Drackley was keen to stress that the supply of bulky add-lib feeds such as cereal straws, diluting the ration M/D (energy density) was not just about supplying excess straw. It is imperative that the diet is formulated to provide adequate metabolisable protein, minerals and vitamins whilst limiting energy to 9MJ ME/kgDM and a maximum total daily intake of ~100 MJ/day for an adult Holstein cow. The emphasis must be about meeting nutritional requirement whilst satisfying appetite and promoting total DMI to target 2% of B/W as DMI.

**DIET FORMULATION**

According to Dr. Drackley, straw must also be processed correctly to maximise intake whilst limiting the ability of the cow to sort. Simply providing free access straw, as in a feed ring, and a partial TMR (total mixed ration) can lead to variable intakes with some animals consuming too much energy and some too little.

Straw must be chopped to 2-3 inch particles and processing, as with a Rotograin, is considered better than a chop. Fig 2 opposite.

### A SINGLE DRY COW GROUP STRATEGY?

The implementation of a transition group (3 weeks pre-partum) and diet change from low energy to high energy, has been a management strategy for some time. However, on dairies with smaller herd size with fewer expected fresh cows per week, or where close-up transition facilities are substandard, this 2 group system can present day to day management challenges. The limit energy feeding programme may allow the feeding of one base diet through the entire dry period with some advantages for these herds;

1. No social stress on move into close-up pen
2. Reduces risk of animals being left behind in the far-off dry cow pen
3. Reduce the risk of animals not spending enough time in close-up pens (target 21 days)
4. Simplifies base ration formulation

Management of the feed bunk as with any system remains important. Continuing to ensure adequate bunk-space per cow of 30 inches and regular push-ups to drive DMI are just as important as for lactating cows.

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Fig 2: Picture attributed to Rotograin Ltd.

Peter Jackson, Technical Service Advisor, Genus ABS, EMEA. GM Mobile: +44 (0) 7772 227913 www.abstechnicservices.com