Cows tell the real story on critical points of feed management

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Littion management is the latest topic to come under the scrutiny of the European Board of Bovine Experts (EBBE) with Italian member Dr Paola Amodeo, of the Regional Breeders Association of Lombardy, giving a presentation to the Board's recent meeting in Manchester, England.

An independent advisory body comprising top specialists in all fields of modern dairy cow management, the EBBE aims to develop guidelines based on the very latest scientific knowledge.

Dr Irmgard Immig, of DSM, said: "We want to arrive at realistic recommendations applying to all relevant challenges faced day-by-day in dairy cow feeding and production."

According to Dr Amodeo, in order to maximise dairy income it is necessary to identify the risk areas in feed management and apply a continuous checking system to control and limit the occurrence of undesired events.

Table I includes examples of the type of measurable, proactive parameters Dr Amodeo favours, allowing problems to be quickly identified and addressed.

She applies this approach to homegrown and purchased feeds,



rationing, cow comfort, herd health and profitability, citing feed management as one of the main critical points for control of the whole productive process in a dairy herd.

But while it is essential to monitor and measure, she warns managers not to get so tied up in the data that they forget to look closely at the cows.

"Numbers are great but they are no substitute for observing the herd and particularly looking at individual cows. If we use averages we will detect problems too late. For instance, if we use the number or percentage of culled cows to measure efficiency, the problem is already well established and it is too late to avoid losing cows. It is better to use proactive parameters, such as disease incidence, fresh cow yield, daily dry matter intake, feed conversion index and so on, in order to regularly answer the question, are we getting worse now, or better?"

Transition

Dr Amodeo's main experience is with dairy herds in Italy's Po Valley, where cows average 9,000 litres and are housed year-round on diets based on corn (maize) grain and silage. "Most of the problems occur during transition when immune system depression means cows can easily get diseases including metritis and early mastitis, in the first 20 days post-calving."

With the issue identified, the cause can be found and a solution introduced. This may be dietary: for instance feeding with DSM's Vitamin Rovimix E and Vitamin Rovimix D helps stimulate immune function with trials showing a decrease in mastitis and somatic cell counts; environmental: better cubicles leading to cleaner udders or less time standing; or management: removing stress by grouping by age and stage of lactation.

Feed quality

"Is your feed quality under control?" asks Dr Amodeo. With purchased feeds it should be straightforward to ensure they are to specification, both through visual inspection and double sampling at delivery, ready for possible contradictory analysis. But it is also important to keep track of feed storage, including a record of frequency and mode of store cleaning and an updated inventory of feed stocks detailing location, delivery and use dates for each feed. *Continued on page 13*

 Table 1. Measurable parameters for identification of problems in fresh

 cows (5-40) days in milk.

Measurable parameter	Target range
Cows yielding over 45 litres per day (%)	More than 20% of the group
Cows yielding less than 23 litres per day (%)	Less than 5% of the group
Cows with milk protein higher than fat (%)	Less than 30% of the group
Cows with milk fat above 5% (%)	Less than 5% - ketosis risk (acetonaemia)
Cows with milk fat below 3% (%)	Less than 10% - acidosis risk
Daily dry matter intake (measure over 5 days)	20-24kg (monitor changes according to DIM)

Table 2. Some of the factors to consider when setting herd feed requirements.

Main factor	Sub-factors
Age, weight and breed	Herd composition by lactation number
Group management	Days in milk, lactation number
Climate	Temperature and humidity
Animal activity	Flat and sloped distance walked, hours housed
Production level	Yield and solids content
Herd physiological status	Condition score, locomotion score
Herd hygiene status	Legs and feet, udders, somatic cell count
Cow comfort	Time standing and lying, water availability, feed bunk space

Continued from page 11

For home produced feeds, mainly forage and corn, regularly monitor bunkers and silos both visually and through chemical analysis so you know what is going into the ration.

Both purchased and homegrown feeds should be checked for moulds, mycotoxins and other undesirable substances and where there are concerns, the supplier should be able to look at alternative uses such as feeding to beef cattle, in the case of aflatoxin presence for example, rather than dairy. To minimise contamination risks. Dr Amodeo advises that if you are producing your own corn or grains, but they are sent to a communal drier, try and make sure that you get your own corn back rather than a mix from several farms supplying the same drier.

Rationing and delivery

Feed management is now a dynamic system of complex interactions between animals, feed and environment and it is important to set the requirements for all the items involved (Table 2).

"We can know the feed requirements very well and as we know the analysis of the feeds it is straightforward to calculate the ration. But we have to be sure the calculated diet is actually delivered, covering the needs of macro-nutrients and even of minerals and vitamins. The importance of this is often underestimated.



"The sequence of loading the mixer wagon must be correct. Beginning with the vitamins and minerals, corn and meals, then the hay and finally the silage at the end, will give a better, more even mix, provided the ration is also mixed for sufficient time."

Dr Amodeo also highlights the importance of equipment maintenance with mixers cleaned regularly to avoid build-up of moulds and toxins, knives sharpened to ensure hay is chopped to the right length (5-8cm) and that weigh scales are checked and calibrated regularly.

"Workers must have training and be made to be responsible for their work," says Dr Amodeo who believes monitoring and sharing of results can help motivation and increase worker interest and pride in doing a good job.



Fig. 1. Feed costs as a share of total production costs.

She advises using a standard Penn State Particle Size Separator, which comprises three boxes with different size sieves, to grade the particle size fraction contents of the mixed feed delivered to the feed bunk, then comparing the results to the expected TMR and to the remainders when the bunker is cleared. If the relative percentages of the fractions are not the same for all three then the ration may not be properly mixed in the wagon and the cows may be selectively eating certain ingredients. Less than half of the ration should fall to the sieve base. with over 40% trapped by the middle sieve and 8-15% by the top sieve.

Maximising intake

Deducting the weight of leftovers from weigh scale records of the fed ration allows the real dry mater intake to be calculated and action to be taken if this is below requirements. Either by adjusting the ration, changing the environment such as giving cows more trough space, extending their access time to the feedbunk (at least eight hours) or encouraging more cow activity by feeding or pushing up feed more often. Dr Amodeo suggests 'pushing up' six times per day.

"Always leave cows with fresh feed available. If milking finishes at six, the feed needs to be there when the cows return to their pens and this can be difficult if it is the same people milking and feeding. Time and sequence of delivery to the groups should be constant and farmers should check for uniformity of delivery along the whole length of the feedbunk, in order to avoid the last third being empty because too much was fed out at the beginning." After one to two hours of exiting the milking parlour to a fresh TMR, 55-65% of the cows should be lying in their stalls chewing the cud. But how much time do they spend lying down and how many are standing in front of the cubicles without lying because of a poor stall design?

"Lameness is the most serious health issue involved with feed efficiency as lame cows just do not go to eat often enough. Using locomotion scores to monitor the herd will help to identify problems early and part of the solution may be feeding with Vitamin Rovimix Biotin which has a positive influence on hooves and on claw health and really works to reduce lameness."

Conclusions

Feed, including crop growing costs for dairy cows and their replacements, adds up to more than 58% of the total costs of milk production. So it is important to check at every stage what you buy, store, mix, and deliver so you know the quality and content of what is brought to the mouth of the animal (Fig. 1).

As well as ensuring the right level of nutrients, energy and vitamins (A,D,E, Beta-Carotene) of the ration are matched to the requirements of the herd, it is essential to monitor regularly that the calculated ration is what is actually delivered and that cows have every opportunity to achieve the expected daily dry matter intake levels.

Ensure every process is controlled and monitored, analysis should be proactive and detect trends and if something is wrong, make changes. Things will not get better if you keep doing the same thing.

"Even the best feeding management will not work if you do not have cow comfort so we must always look for what the cows are



telling us. How is the body condition; is the coat rough, smooth or shiny; are they tranquil or lively; are the eyes sunken or the ears down; do they run to the feed bunk when the mixer-wagon arrives; is there undigested fibre or corn grains in the faeces?"

As well as identifying when things are wrong, Dr Amodeo says the herd also confirms when things are right and lets us know the value of any changes, providing we choose measurable parameters, define what we are looking for and what we expect.

"Sometimes we might not be convinced about a ration but if the cows are doing well, then don't touch it. Whenever you do make a change, check the outcome by seeing what happens to the animals. Cows always tell the truth."



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