

### **Biological tests as monitoring tools for Transition Cow programs**

Years ago dry cows were often in a remote place on a dairy because they were not considered to contribute directly toward milk revenues. However, recent research has changed this perception and today's producers realize how important an effective dry cow and early post partum feeding program can be on subsequent lactation performance. Transition cow programs specifically target management of animals three weeks before calving ("close ups"), and three weeks after calving ("post partum").

Feeding the transition group presents some notable challenges. During the close up dry period, feed intake decreases despite increasing energy demands due to the fetus. Grummer (1999) reports an approximate 30% reduction in feed intake during the transition period with most of it occurring during the final week. Factors affecting feed intake are poorly understood and maintaining dry matter intake during this period should be a priority. Obviously providing adequate bunk space and good cow comfort as well as avoiding overcrowding are management practices that will help minimize reductions in dry matter intake.

Poor dry matter intake (which results in decreased energy balance) during the transition period can lead to metabolic problems that will lead to a decrease in reproductive performance later in lactation. Thus, it is apparent that monitoring the transition program is important from a reproductive standpoint and should be considered when confronted with poor reproductive performance in a herd. Monitoring the transition program should include attention to disease incidence rates, the environment, evaluation of the cows (such as body condition), nutritional evaluations and biological testing.

There are several biological tests that can be used to monitor the transition program, two of which will be described here. It is important to realize that a biological test in itself should not make a diagnosis, but they can very useful in supporting clinical findings.

#### **Non-Esterified Fatty Acid (NEFA)**

Cows in negative energy balance as a result of decreased dry matter intake or inadequate energy density, will mobilize body fat. These tri-glycerides (body fats) enter the blood stream as NEFA. Because body fat mobilization is the only major source of NEFA, it makes sense that it can be used as an indicator of energy balance. From a reproduc-

tive standpoint why is this important? Cameron and coworkers (1998) have shown that elevated levels of NEFA increased the risk of displaced abomasums and Kaneene and coworkers (1997) have shown elevated NEFA levels increase the risk of ketosis and fatty livers. Others have found similar results (Gerloff et al, 1986; Grummer, 1993). All of these conditions will have a negative effect on reproduction. Often reproductive problems are noted first without establishing the relationship to a contributing factor.

#### **Beta-hydroxy butyric acid (BHBA)**

BHBA is a useful test for detection of sub-clinical ketosis and it can be useful in monitoring the transition cow program. However, it is possible for the transition cow program to be adequate and still have a sub-clinical ketosis problem as indicated by high BHBA's. In this scenario one would find normal NEFA's and elevated BHBA's, thus the necessity for running tests in conjunction. Sub-clinical ketosis has been shown to decrease milk production (Dohoo & Martin, 1984) as well as increase services to conception (Wenninger & Distil, 1994) and increase the risk of cystic ovaries (Gustafsson & Emanuelson, 1996). Thus, herds experiencing sub-clinical ketosis will eventually experience reproductive problems and decreased pregnancy levels.

#### **Reference List**

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