

CONSULTANT'S DIGEST

Return Cows to Positive Energy Balance Sooner!

The critical element in how well cows fare after calving is energy balance. This in turn has several key components, namely length and extent of negative energy balance, dry matter intake (DMI), and body condition status.

Although the return to positive energy balance after calving varies considerably, the main factor in when this occurs is not milk production level, as many believe. In fact, researchers³ found that the time required to reach positive energy balance is independent of milk yield. Rather, the most important factor is net energy of lactation (NE_L) intake, which is the product of DMI x energy density of the diet.

Since it is difficult to increase DMI in early lactation, the component to alter is energy, as long as it does not reduce DMI. When calcium soaps of fatty acids (CSFA) are used to increase energy density, intake is reduced, which results in more time to reach positive energy balance as seen in

Figure 1 for first-calf heifers and in **Figure 2** for older cows. The differences in intake between the Energy Booster 100® (EB-100) and the CSFA ration are based on NRC 2001,⁷ which established that a 1% inclusion of CSFA reduced DMI by 2.5%. This difference translates into heifers and cows fed an EB-100 ration achieving positive energy balance 30 days sooner than when fed CSFA.

Loss of body condition and the corresponding rising non-esterified fatty acid (NEFA) levels are further evidence of CSFA's negative effect on energy balance. The best physiological indicator of energy balance is plasma NEFA levels. The more body condition mobilized, the greater the NEFA level. NEFA levels have been shown to increase as dietary CSFA levels increase,² to be greater in mid-lactation first-calf heifers averaging 80 pounds daily milk production when fed CSFA vs. EB-100,⁶ and to be greater in mid-lactation older cows averaging 93 pounds daily milk production when fed CSFA vs. EB-100.⁴

So how does lower NE_L intake due to decreased DMI affect productivity? Using NRC 2001 NE_L values to calculate the effect of energy intake loss on milk yield, inclusion of CSFA translates to reduced milk yield of 5 to 8.5 lb per day, which totals 1,100 lb over the first 140 DIM. If the reduced energy intake is instead converted into body weight loss, the range of daily loss ranges from about 0.75 to 1.33 lb, or a total of 176 lb over the first 140 DIM. In reality, some combination of both milk and body weight loss likely will occur. This energy deficit also negatively impacts reproduction because energy balance during the first 3 to 4 weeks postpartum is correlated with interval to first postpartum ovulation.^{1,5}

Figure 1.

Heifers Fed Energy Booster 100 Reach Positive Energy Status 30+ Days Sooner Than Those Fed Calcium Soaps

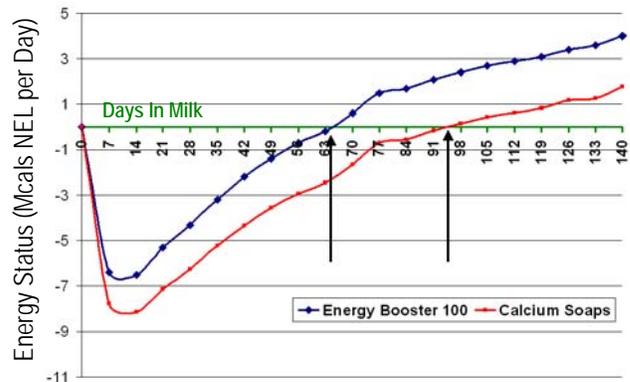
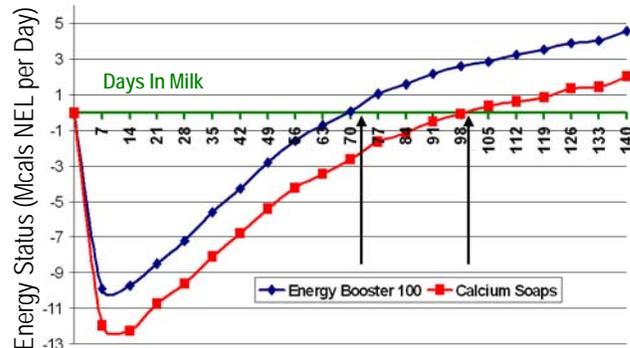


Figure 2.

Cows Fed Energy Booster 100 Reach Positive Energy Status 30+ Days Sooner Than Those Fed Calcium Soaps



Fat Fast Facts

- The key factors in achieving positive energy balance are dietary energy density and DMI, which determine NE_L intake.
- First-calf heifers and cows reach positive energy balance 30 days sooner when fed Energy Booster 100 vs. CSFA.
- Feeding Energy Booster 100 as your fat supplement minimizes the multiple adverse effects of negative energy balance and maximizes energy intake.

¹Beam and Butler, 1998. ²Choi and Palmquist, 1996. ³Grummer and Rastani, 2003.

⁴Harvatine and Allen, 2005. ⁵Lucy et al., 1991. ⁶Relling and Reynolds, 2007. ⁷NRC, 2001.

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