

## ENERGY INTAKE DURING THE DRY PERIOD AND ENERGY BALANCE IN DAIRY COWS AROUND CALVING

Arie Klop, Gerwin A.L. Meijer, Theo A.M. Kruip. DLO-Institute for Animal Science and Health (ID-DLO), PO Box 65, 8200 AB Lelystad, The Netherlands

The objectives of this study were: 1) to assess the effects of overfeeding during the dry period on subsequent milk yield and composition, and 2) to evaluate current recommendations for energy requirements of dry cows. Two groups of 16 multiparous dairy cows received a high- or low-energy diet during the dry period (starting 8 weeks before calving). During lactation, both groups received the same high-energy diet. The high-energy diet consisted of 20% grass silage, 35% maize silage and 45% concentrates and was fed *ad libitum*. The low-energy diet comprised of 14 kg DM consisting of 30% grass silage, 10% maize silage, and 60% straw. During the dry period, feed intake and body mass (BM) were assessed. During lactation, milk production and composition were also measured. Energy balance was calculated as the difference of measured intake and recommended requirements.

During the dry period, energy intake was 49 MJ/d for cows in the control group and 119 MJ/d for cows in the overfed group ( $P < 0.001$ ). BM increased 18 kg for the control group vs. 80 kg for the overfed group ( $P < 0.001$ ). Assuming an increase of 45 kg in foetal tissues and fluid, cows in the control group lost BM. During week 1 to 5 of lactation, energy intake was higher in the control group (162 vs. 141 MJ/d,  $P < 0.01$ ). The control group tended to produce more milk and more milk protein, whereas the overfed cows produced more milk fat (1.9 vs. 1.7 kg/d,  $P = 0.05$ ) and had a significantly higher fat content in milk (5.0 vs. 4.2 %,  $P < 0.001$ ). This was paralleled by a significant decrease in BM in the overfed group (-37 kg,  $P < 0.001$ ). Ten weeks after parturition, differences in feed intake and milk production between the groups disappeared slowly. The period of calculated negative energy balance lasted twice as long for the overfed group (9.4 vs. 4.8 weeks,  $P < 0.001$ ).

Firstly, we conclude that overfeeding during the dry period leads to reduced milk yield with unfavourable composition (low protein, high fat) and a longer period of negative energy balance. Secondly, the current recommendations for energy requirements for dry cows seem too low.