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EFFECTS OF UNDERFEEDING IN EARLY LACTATION  
ON THE YIELD AND COMPOSITION OF MILK PRODUCED  
BY HIGH AND LOW BREEDING INDEX COWS

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ABSTRACT

A grazing trial was carried out to examine the interactive effects of underfeeding in early lactation and cow breeding index on milk yield and composition.

From the fifth week of lactation, 16 high and 16 low breeding index cows were fed at a restricted or ad libitum feeding level. Digestible organic matter intakes were estimated directly using the herbage cutting technique and indirectly using the chromic oxide technique. Intake was reduced due to underfeeding by approximately 45 %. In comparison to cows on the ad libitum feeding level, underfed cows showed reductions in milk, milkfat and milk protein yields, milk protein concentration, long chain fatty acid concentration in the milkfat and liveweight gain. Milkfat concentration, short chain fatty acid concentration in the milkfat and loss in body condition were increased.

Following the return of all cows to a generous feeding level, previously underfed cows produced lower daily yields of milk, milkfat and milk protein for three to five weeks and gained more liveweight and condition over mid-lactation. The residual effect of underfeeding on milkfat production was 1.0 times the immediate effect. There appeared to be no effects of previous underfeeding on milk composition, concentrations of short chain or long chain fatty acids in the milkfat or digestible organic matter intake.

Cow breeding index interacted with the effects of underfeeding in that high versus low breeding index cows showed (a) a smaller residual effect of underfeeding on milkfat production (0.8 versus 2.0 times the immediate effects, respectively) and (b) a greater immediate reduction in milk protein concentration due to underfeeding.

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