THE EFFECT OF MILK FEEDING LEVELS ON GROWTH RATES OF HIGH AND LOW BI FRIESIAN BULL CALVES BEFORE AND AFTER WEANING

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ABSTRACT

Eight Friesian bull calves from high breeding index parents (HBI, BI of parents = 134) and eight from low breeding index parents (LBI, BI of parents = 103) were used to estimate the effects of milk intake and BI on calf growth performance, voluntary herbage intake, digestion and nitrogen metabolism.

1. The calves were allocated to one of two levels of milk intake from 3 weeks of age until weaning at about 7.5 weeks of age. The milk was fed twice daily at either 4.5 (LM) or 6.0 (HM) litres/calf/d.

2. Daily intakes of freshly harvested herbage (perennial ryegrass and white clover pasture) offered ad libitum throughout the pre-weaning period and for a further 3 weeks period following weaning, were measured.

3. The calves were then grazed on pasture together in a mob and the liveweight at 21-25 weeks of age was measured.

4. Calf growth rates at various stages were recorded. The HM calves grew significantly ($p<0.05$) faster than LM calves (0.55 v 0.44 Kg/d) in the pre-weaning period. Their growth rate was slower in the 3 weeks following weaning (0.21 v 0.31 Kg/d) but the difference in this period was not significant.

5. The overall growth rate from 3 to 21-25 weeks of age was not significantly different between HM and LM calves (0.52 v 0.53 Kg/d), nor was the calf LW at 21-25 weeks of age (124 v 130 Kg for HM and LM calves respectively).

6. LM calves consumed significantly ($p<0.01$) more herbage organic matter (OM) both before and after weaning (0.18 and 0.33 Kg OM/d pre-weaning and 1.13 and 1.28 Kg OM/d post-weaning for HM and LM calves respectively). Reducing daily milk intake by 1 Kg increased daily herbage OM intake by 0.11 Kg before weaning and by 0.12 Kg after weaning. The difference in herbage intake caused by milk intake level persisted for two weeks following weaning. It was not significantly different in the third week after weaning.

7. It was demonstrated that the LW at the commencement of the experiment (3 weeks of age) was positively correlated with the mean overall growth rate (from 3 to 21-25 weeks). LW at 3 weeks of age was

also positively correlated with the voluntary herbage intake in the third week following weaning, and also digestibility of herbage organic matter in the post-weaning period.

8. By extrapolating the linear relationship between nitrogen retention (NR) and nitrogen intake (NI) per metabolic weight ($Kg^{0.75}$), the estimated nitrogen requirement for maintenance (Nm) was 0.418 g $N/Kg^{0.75}/d$.

9. There were no significant differences in growth rate, herbage voluntary intake, digestibility or nitrogen metabolism between the BI groups, nor any interactions between the BI and levels of milk intake.

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