THE EFFECTS OF NUTRITION DURING EARLY REARING ON THE FERTILITY AND FIRST LACTATION PERFORMANCE OF BEEF HEIFERS

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Growth rate to weaning and live weight at first mating are often used for the selection of replacement beef heifers. However, growth rate early in life is negatively related to both mammary gland development and subsequent milk yield in dairy heifers (Swanson 1960). Progress in a study of similar relationships in beef cattle is reported.

Hereford heifers were reared on milk replacer and fed either high (H), medium (M) or low (L) quantities of the same grain/hay ration from two until eight months of age. Between eight and 14 months, intake was restricted for half the H heifers (H/L:0.14 kg/day gain), ***ad lib.*** for half of the L heifers (L/H:0.97 kg/day gain) and moderate (M:0.56 kg/day gain) for all other heifers. This resulted in a range of treatment live weights at eight months of age ("weaning") and 14 months of age (premating) commonly seen under field conditions (Table 1). From 14 to 17 months of age all heifers were fed to gain 0.33 kg/day and mated to one of two Hereford bulls. Subsequently they grazed at pasture as a single group. Milk yield was estimated at 30 days post-partum after separation from the calf for 16 hours and an injection of 20 I.U. oxytocin before machine milking.

TABLE 1 Early growth and first lactation production in Hereford heifers

	Nutrition level (2-8 mths/8-14 mths)				
	H/M	H/L	M/M	L/H	L/M
Heifers/treatment	20	21	21	18	20
Heifer 'weaning' wt. (kg)	235a[+]	235a	185b	163c	163c
Heifer premating wt. (kg)	331a	259d	282c	323b	258d
Calving %	95	85	90	94	75
Dystocia %	5	12	17	24	27
Calf birth wt. (kg)	27.5	27.5	28.5	29.0	30.5
Milk yield (litre/24 hr)	4.1a	4.9b	4.2a	5.9c	6.1c
Weaning %	89	75	65	67	60
240-day calf weaning wt. (kg)	218a	236b	221a	241b	259c

[+]Means in a row with different notations differ significantly ($P < 0.05$)

L/M heifers produced heavier calves at birth (11%), higher early lactation yield (52%) and heavier calves at weaning (19%) than did H/M heifers, but tendedtc have lower calving rates and more dystocia (Table 1). These traits in heifers in cross over treatments were intermediate and related more to nutrition level prior to eight months of age than to premating live weight or to growth between eight and 14 months.

The results indicate that the plane of nutrition required to achieve the high weaning and premating live weights commonly sought in commercial beef heifer replacements for successful mating at 14 months of age can result in significantly reduced milk yield and calf weaning weights in the first lactation.

SWANSON, E.W. (1960). J. Dairy Sci. 43 : 377.

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