

PRE-CALVING LIVE WEIGHT OF DAIRY HEIFERS IN RELATION TO BODY MEASUREMENTS

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Studies on the growth of dairy heifers indicate that heavier heifers at first calving produce more milk per day of life than lighter heifers (Hoffman and Funk 1992). It has been suggested that dairy heifers calve at 85% of mature live weight, including the conceptus (Moss 1993). To help USA commercial dairy farmers to grow and manage their heifers better, various measurements of skeletal development have been used as predictors of live weight (Hoffman 1997). We examined relationships with Australian Holstein-Friesian heifers at first calving.

To investigate the relationship between dairy heifer skeletal development and pre-calving live weight, data from an experiment designed to investigate the effect of age and live weight at first calving on dairy heifer lifetime performance (Dobos *et al.* 1995) were analysed using principal components regression. Pre-calving live weight (kg) was taken within seven days before calving. Measurements of body length (B, cm), wither height (W, cm), hip width (H, cm) and pin width (P, cm) were taken within seven days after calving. The total number of heifers measured was 119. Table 1 shows the linear relationship between heifer body measurements and pre-calving live weight.

Table 1. Relationships between live weight (kg) and body measurements (cm)

Measurement	Equation	R ²	P
Body length	96.4 + 3.5 B	0.26	***
Wither height	-605 + 8.7 W	0.37	***
Hip width	-215 + 14.8 H	0.53	***
Pin width	268 + 14.8 P	0.24	***
All	-587 + 0.90 B + 3.7 W + 9.9 H + 0.9 P	0.59	***

*** = P<0.001

Results from this study indicate that a reliable model for estimating Australian Holstein-Friesian pre-calving dairy heifer live weight can be developed from body measurements. Individual body measurements are reasonable predictors, but the best model incorporates B, W, H and P (R² = 0.59).

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