LONG AND SHORT TERM EFFECTS OF LIVEWEIGHT CHANGE ON REPRODUCTIVE PERFORMANCE IN A SEASONALLY CALVING, PASTURE-FED DAIRY HERD

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Advances in scale technology has meant that estimates of animal liveweight and liveweight change are becoming more frequently used tools to aid in the management of commercial dairy herds. Changes in body composition and liveweight have been shown to affect animal health, milk yield and composition, and reproductive performance.

This was a prospective cohort study of n = 463 mixed aged dairy cows that calved between 15 July and 24 October 2008 in a university owned dairy herd in Palmerston North in the lower North Island of New Zealand. Individual animal liveweights were recorded twice daily from the date of calving until the date of dry off or removal from the herd (whichever occurred first) using a calibrated electronic walkover weighing system. A Cox proportional hazards regression model was developed to identify factors influencing the daily hazard of conception following the planned start of mating (PSM) date adjusting for the effect of parity, liveweight at calving, and calving to PSM interval as time invariant covariates and daily liveweight measurements as a time varying covariate.

Liveweight at calving, liveweight change in the first 50 days of lactation and liveweight change after mating influenced the time taken for cows to conceive. For 50 kg increases in mean bodyweight recorded during the first week of lactation the daily hazard of conception was decreased by a factor of 0.67 (95% CI 0.64-0.71). Cows that gained weight in the early lactation period had shorter PSM to conception intervals compared with cows that lost or maintained weight: 50 kg increases in liveweight over the first 50 days increased the daily hazard of conception by a factor of 1.70 (95% CI 1.62-1.78). Following the start of the mating period, cows that gained weight in the previous 4 weeks were 1.15 times (95% CI 1.01-1.31) times more likely to conceive each day compared with cows that lost or maintained liveweight.

Our findings are consistent with those that have been reported in the limited number of studies conducted in New Zealand and overseas that have explored the relationship between liveweight change and reproductive performance in pasture fed dairy herds. Our findings better-define the impact of long- and short-term liveweight change on reproductive performance, providing the opportunity to design feeding programs expected to benefit herd fertility.