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Growth of dairy heifers on alternative forages and the effects of heifer live weight on reproductive parameters at first breeding.

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ABSTRACT

Abstract

Dairy heifers in industry at present are frequently falling short of the recommended liveweight targets. Rearing of dairy heifers is expensive and involves a two-year non-productive period after which, if she becomes pregnant, income can be received from milk production. Milk yield in first and second lactation is affected by a heifer's live weight prior to calving and therefore meeting liveweight targets is critical for subsequent milk production. Those heifers that fail to become pregnant are of considerably lower value than those that become pregnant. To maximise the chance for heifers to become pregnant, heifers need to have completed a number of oestrus cycles prior to the planned start of mating. Mating of heifers during the third oestrus cycle compared with the first oestrus cycle after reaching puberty, provides an increased probability of the heifer becoming pregnant.

This thesis contains two experiments. The aim of the first experiment was to measure the effects on average daily gain, wither height, girth and crown-to-rump length, of feeding 6-month-old dairy heifers on alternative feeds, over the summer period when pasture quality and availability is limiting. Sixty 6-month-old Friesian-Jersey crossbred heifers were assigned to 1 of 3 treatments (pasture (P), conserved forages (C) or Lucerne (L), with all treatments receiving supplementary meal). Heifers were weighed at 0, 3 and 6 weeks of treatment period, and wither height, girth and crown-to-rump length were measured at the start and end of the experiment. L heifers had a greater ($P<0.05$) average daily gain (1.22 ± 0.03 kg/day) than P heifers (0.57 ± 0.03 kg/day), and C heifers were intermediate (0.78 ± 0.03 kg/day).

The aim of the second experiment was to determine the effect that live weight, percentage of individual liveweight target achieved and achieving individual liveweight target at 6, 9, 12 and 15 months of age had on 5 reproductive parameters: reaching puberty by 12 & 15 months of age; becoming pregnant during a 7 week mating period; becoming pregnant in the first 3 weeks of mating; and becoming pregnant in the first 6 weeks of mating. Heifer live weights were recorded approximately every month. Scanning of the heifers' ovaries at 12 and 15 months of age was completed to determine whether each heifer had reached puberty by the respective age. Natural mating was completed over a seven-week period, and age of the fetus was estimated at pregnancy scanning was to determine in which cycle the heifer became pregnant. There was no

effect on the pregnancy parameters measured as a result of live weight, reaching live weight target and the percentage of liveweight target achieved. Heifers that were heavier at 6, 9 and 12 months of age had an increased likelihood of reaching puberty by 12 months of age. Increased average daily gain was achieved from heifers grazing Lucerne, with supplementary meal also fed, although these increased average daily gains had limited benefit on reproductive performance of the heifers at first breeding.

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LIST OF ABREVIATIONS

Acid Detergent Fibre content …… ADF%

Ash content …….. Ash%

Average Daily Gain …….. ADG

Body Condition Score …… BSC

Breeding Values …….. BV

Conserved Forages …….. C

Corpus Luteum ……. CL

Crude Protein …… CP

Day ……. D

Dry Matter ……... DM

Dry Matter Intake ……... DMI

Faecal Egg Count ……... FEC

In Vivo Dry Matter Digestibility ……... *In vivo* DMD%

In Vivo Digestibility of Organic Matter in Dry Matter …….. *In vivo* DOMD%

In Vivo Organic Matter Digestibility …… *In vivo* OMD%

Kilogram …… kg

Lucerne …… L

Metabolisable Energy …….. ME

Nitrogen …….. N

Neutral Detergent Fibre content ……. NDF%

Pasture ……. P

Planned Start of Calving ……. PSC