Do weaning age and post-weaning growth rate have an effect on replacement heifers achieving target weight?

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Summary

- At 12 weeks, 12 week weaned calves were heavier than eight week weaned calves as a result of the additional milk replacer consumed.
- Data from year one of the study showed some compensatory growth when heifers were turned out for their second season at grass.

Introduction

Replacement heifers represent the future potential of the dairy herd. However, the cost of rearing a replacement heifer is high at €1,545; in addition calf rearing is one of the most labour-intensive tasks on a dairy farm so can also incur extra costs associated with additional labour. Weaning calves at an earlier age (e.g. 8-weeks) compared to delayed weaning (e.g. 12-weeks) and feeding a higher quantity of concentrate post-weaning could help overcome the demand for additional labour and contribute to reducing costs associated with rearing a replacement heifer. However, to ensure heifers realise their potential in the lactating herd they need to achieve target weights at specified time points in the first two years of life (Table 1).

Table 1. Bodyweight (Kg) targets for heifers at six months, breeding and pre-calving (HF = Holstein–Friesian, JE= Jersey)

	HF	JE	HF*JE
3 month old	115	80	100
10 month old	250	175	215
Pre-breeding	330	240	295
Pre-calving	550	405	490

Study

In spring 2018 a three-year study commenced at Teagasc Moorepark to investigate the effect of weaning calves at either eight or 12 weeks of age. At birth, 98 heifer calves were divided into four treatment groups making sure they were equal for breed, birth weight, and birth date. The four treatments were i) weaned at eight weeks and offered a high level of concentrate post-weaning; ii) weaned at eight weeks and offered a low level of concentrate post-weaning iii) weaned at 12 weeks and offered a high level of concentrate post-weaning and iv) weaned at 12 weeks and offered a low level of concentrate post-weaning. It was expected that when weaned at 12-weeks of age calves would be heavier than those weaned at eight weeks, but the experiment aimed to investigate if weaning earlier (e.g. 8-weeks) and offering greater concentrate in the post-weaning period would result in similar weights at key time-points, such as at breeding.

Colostrum and transition milk management were the same for all calves; within an hour of birth heifers were fed three litres of good quality colostrum. Heifers were then fed six litres/heifer/day of transition milk for three days in an individual pen. Heifers were grouped

from three days and fed 26% crude protein milk replacer at a rate of six litres/heifer/day using an automatic feeder (reconstitution rate 15%) until they were gradually weaned (over a week) off milk replacer at eight or 12 weeks old. *Ad-libitum* water, concentrate and straw were offered from three days old.

After weaning, heifers were managed in groups of 50. Heifers had full time access to pasture and were supplemented with 2.5 or 1.5 kg concentrate/heifer/day depending on their post-weaning feeding rate (high and low concentrate, respectively). Heifers in both the high and low post-weaning growth rate groups were fed a common diet of silage and concentrates over winter. At turnout in March, heifers previously on high and low concentrate were grazed to 4.5 cm and 3.5 cm post-grazing sward heights, respectively. Heifers were weighed twice a month until housing and once a month thereafter.

In the pre-weaning period, eight and 12 week weaned calves consumed 50.4 kg/calf and 75.6 kg/calf of milk replacer, respectively. Weight gain was not different between weaning groups up to week eight as calves were fed identical diets. From week 8–12, 12 week weaned calves gained on average 0.79 kg/day and eight week weaned calves gained on average 0.62 kg/day. As a result there was a 6.1 (± 1.81) kg weight difference between the eight and 12 week weaned calves at 12 weeks. This 6.1 kg weight difference remained until turnout in early February. However, by breeding at 15 months, 12 week weaned calves were only 3.2 kg heavier than eight week weaned calves (Figure 1).

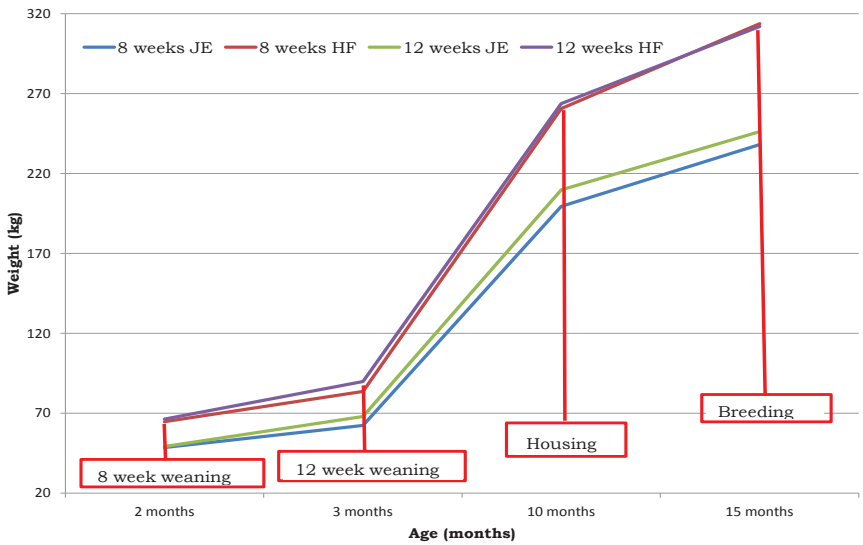

Figure 1. *Liveweight across weaning and breed groups*

Conclusions

At 12 weeks the eight and 12 week weaned calves were on average 72.4 and 78.5 kg, respectively. The weight difference between the eight and 12 week weaning groups had reduced to 3.2 kg by breeding at 15 months. However, this is only data from the first year of the experiment and data from the next two years needs to be collected and analysed before definite conclusions can be drawn.

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