

# Are automatic calf feeders more labour efficient than manual feeders?

**Alison Sinnott, JohnPaul Murphy, Ger Hanrahan, William Fogarty and Emer Kennedy**

*Teagasc, Animal & Grassland Research and Innovation Centre, Moorepark, Fermoy, Co. Cork*

## Summary

- Automatic milk feeders are more labour efficient than manual feeders.
- Weight gain from birth to weaning was similar for automatic milk feeder and manual milk feeder.

## Introduction

As post-quota expansion continues in the Irish dairy industry, more calves are entering the system as replacement heifers. To-date, the Irish dairy industry has faced a severe shortage of people in the workforce and must now search for alternatives, such as automation of different tasks e.g. calf feeding. Increased use of on-farm automation is seen as a labour efficient investment for farmers. Calf rearing is a labour intensive task on dairy farms. If management systems are adapted to use automatic milk feeders, improvements in the labour of calf rearing could be achieved, when compared to manually feeding calves. However, this feeding system cannot compromise calf welfare, health or weight gain in order to maximise the animal's potential in later life.

## Study

In spring 2019 a study commenced at Teagasc Moorepark to investigate the effect of feeding calves using automatic and manual milk feeders on labour, welfare, health and growth rates. At birth, 60 heifer calves were divided into two treatment groups equal for breed, birth weight, and birth date. The two treatments were i) automatic milk feeding systems and ii) manual milk feeding systems.

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 moved to a pen with either an automatic milk feeding system or a manual milk feeding system. There were two pens with automatic feeders and two pens with manual feeders, with 15 calves in each pen. The automatic feeding system used was a Volac Vario Feeder with automatic washing. The manual feeding system consisted of preparing and distributing milk manually using a compartmentalised teat feeder. Each calf was fed 26% crude protein milk replacer at a rate of six litres/heifer/day (reconstitution rate 15%). Automatic calves were given three feeds of 2L spaced evenly throughout the day to prevent calves from over-drinking at one time. Manual calves were given two feeds of 3L/day; morning and evening. Ad-libitum water, concentrate and hay were offered from three days old. Calves were gradually weaned off milk replacer based on weight; 90 kg for Friesian and 85 kg for Jersey crosses.

During the trial, the time involved in food preparation, feeding, cleaning, bedding, health observations, calf care and training calves to their respective feeders were measured three days per week using a stopwatch. Measurements were taken by observing one labour unit completing each task. Calves were health scored twice per week as well as weighed and observed for behaviour weekly.

There were no significant differences between automatic and manual feeders in relation to the average number of days to weaning with calves fed using automatic feeders being weaned at approximately 81 days (11.6 weeks) and calves fed manually being weaned after an average of 79 days (11.3 weeks). There was also no significant difference between the two feeding systems in weaning weight (92.4 kg) or average daily gain (ADG) from birth to weaning (0.74 kg/calf/day).

Significant differences in labour were recorded between automatic and manual feeding systems. A lower labour input was required for calves fed via an automatic feeder 00:53sec/calf/day in comparison to manually fed calves, which had a labour requirement of 02:21sec/calf/day. The average time taken to complete various tasks per day differed between automated and manual feeders, in particular training calves and feeding inspection (Figure 1).



**Figure 1.** Average time/task/day for manual versus automated feeding system

## Conclusions

Automatic calf feeders are more labour efficient than manual calf feeders. There was no difference in weight gain between either systems, however, data from this study in relation to welfare and health needs to be analysed before definite conclusions can be made about automatic calf feeders. A full economic appraisal will also be required as there is a large difference in cost between the two systems.

