

Focus Areas - Section 7



Animal Management



TEMPERGENE

Frances Titterington, Denise Lowe, Francis Lively and Masoud Shirali.

The importance of on farm safety

Key Messages

- Animal temperament will impact farm safety- this can be improved through good management and genetics.
- The interactions between the farmer and the animal are important factors in farm safety and farmers should ensure farm infrastructure facilitates safety.
- There are multiple resources available for Health and Safety advice on your farm - don't depend on one source, ensure you have a good understanding and prioritise Health and Safety on your farm.

Background

During recent years, there have been a significant number of serious accidents including fatalities on Northern Ireland farms. Over a third of farm accidents resulting in fatalities involved livestock, predominantly cattle. Thus, improving livestock farmers' health and safety when working with cattle remains a critical issue for the local agri-food industry. In addition to serious incidents on farm, there are also 'near misses' or accidents which have the potential to cause injury. These are unlikely to be reported but are an important indicator of farm safety and can inform future decisions to improve safety on farm.

Research studies

A survey was designed to capture the number and severity of "near-misses" which may not be recorded in the HSE's statistics, farmers' attitude to animals with poor temperament and farmers' actions to improve their on-farm facilities. AFBI developed the survey in collaboration with key stakeholders from the industry (including AgriSearch, DAERA, CAFRE, HSENI, UFU). All registered cattle farmers in Northern Ireland were informed of the survey via email and three-hundred responded to the survey.

Research findings

Twenty-three percent of respondents reported a near miss in the 12 months leading up to the survey, with animal temperament being reported as a main contributor to the near miss occurrence. Faulty facilities and being rushed to complete farm tasks were other factors which were reported as increasing the chances of a near miss. Farmers get health and safety advice from a range of sources, including the press and media (55% of respondents), websites or blogs (47%) and/ or their CAFRE advisor (37%). Ten percent of respondents did not source health and safety advice at all, and these respondents were less likely to invest in farm infrastructure to improve safety. Farmers who did invest in farm infrastructure were most likely to have invested in cattle crushes, general handling (such as race or pens) and/ or calving facilities to improve on farm safety. Good facilities for calving cows was found to be imperative, with 21% of near misses reported to have happened when working with cows at calving. In addition to safe facilities, genetic selection can improve animal temperament, and in turn safety, with 70% of farmers agreeing that genetics is a main factor in animal aggression. Furthermore, of the farmers who reported a change in cattle aggression, 73% attributed this to genetics.

Potential Impact for Farming for the Future

When working on farm, ensure you leave enough time to complete tasks safely. Safe facilities and animal genetics improve your on-farm safety when working with cattle. It is important at a farm level to maintain a good knowledge of the facilities available and which ones can integrate into your farm system to improve safety. Additionally, selecting less aggressive animals for breeding will improve health and safety on your farm.

This project was funded by DAERA

Management of the suckler calf around weaning

Lauren Chesney, Nigel Scollan, Alan Gordon and Francis Lively

The effect of using nose flaps pre weaning and deferred grazing post weaning on calf performance



Key Messages

- Behaviour of calves weaned via the two-step weaning method suggested that they were less stressed than those abruptly weaned, with no effect on calf performance.
- Deferred grazing delivered similar performance to calves housed on grass silage but with lower production cost.

Background

Weaning is one of the most stressful times in a beef animal's life as it breaks the bond between the cow and calf; as well as removing the milk from the diet of the calf. A two-step weaning, whereby the milk is removed from the calf's diet first, prior to separation from the mother may help to reduce the stress caused to the calf relative to removing both at the one time.

Often at a farm level, the calves are housed at weaning, which creates another stressor as not only are they coming indoors but also changing from a grass to a grass silage diet. The aim of this study was to investigate the effects of two stage weaning and post weaning environment (indoor vs outdoor) on behaviour and performance.

Research studies

A trial involving 48 suckler bred beef calves was conducted in the autumn-winter of 2018-2019. The calves were either weaned using abrupt weaning (AW) or using two-step weaning. The two-step weaning involved putting nose flaps in the calves for 7 days prior to weaning. At weaning calves were either housed on slats (in pens of four) and offered grass silage (early housing) or grazed outside (in groups of twelve)

Table 1: Liveweight of calves postweaning on deferred grazing or indoors until turnout.

Liveweights (LW)	WEANING			ENVIRONMENT	
	Day	2SW (kg)	AW (kg)	Inside (kg)	Outdoors (kg)
Initial LW	0	239	236	-	-
Nose Flap insertion date	4	235	234	-	-
Weaning and early housing date	11	229	227	228	228
Late housing date	97	292	301	300	293
Turnout	133	333	343	339	338

2SW two-step weaning; AW abrupt weaning; LW live-weight; NF nose flaps



on deferred autumn grass (late housing). All calves received 2kg of concentrate post weaning. The outdoor calves were grazed in 0.3 - 0.5ha paddocks with average entry heights and exit heights of 7.2cm and 4.3cm. All calves were weaned on the 29th October 2018. Calves on deferred grazing were housed on 23 January 2019 (late housing) and all calves were turned out again 28 February 2019. Calf behaviour and live weight were monitored.

Research findings

Two step weaned calves spent more time lying, less time walking and preliminary observations suggested more settled behaviours relative to those that were abruptly weaned, which may indicate that they were less stressed. There was no difference in performance between the two groups. Calves grazed outdoors on autumn/ winter grass had a similar performance (0.7 kg/ day) to those housed and offered average quality grass silage (65 D value). This indicated that growing cattle such as weanlings could be used to extend the grazing season and reduce the requirement for silage.

One of the challenges with deferred grazing is the weather and ground conditions. This study was completed in the autumn/winter of a very dry year, so soils were not waterlogged and was a slightly drier than normal winter. Therefore, further research would need to be undertaken to understand how calves would perform in a wetter year. Also, the effects on the swards were not measured in this study.

Potential Impact for Farming for the Future

The use two stage weaning has the potential to reduce negative behaviour at weaning without impacting on calf performance. Outwintering calves on deferred grazing had no impact on calf performance and saved 60p a day compared to housing.

This project was funded by DAERA

Assessing the suitability of robotic dairy systems in Northern Ireland

Elizabeth Magowan



Key messages

- Due to labour and the strive to improve the 'work life balance' of farming, there is a growing interest in robotic milking systems in Northern Ireland (NI).
- However they are largely used in confined indoor systems and key performance indicators to optimise animal performance within them is largely unknown.
- It is also known that grazing systems often optimise the margin over feed costs in dairying farming and therefore being able to adopt robotics on the grazing platform is a key goal.

Background

Despite the recent uptake of robotic milking systems within NI, little independent information is currently available on the management of these systems.

Unlike standard milking machine replacements, conversion to robotics requires a paradigm shift in both cow behaviour and farmer management; the identification and use of new metrics and practices to aid cow management; and advancements in on-farm and supporting industry skill sets. Failure to fully achieve this marked change of practice is believed to be resulting in suboptimal physical and economic performance of some robotic milking systems within NI.

In addition, integration of robotic milking equipment in NI has largely been in conjunction with predominantly housed systems. This is thought to be due to challenges in maintaining cow traffic, milking frequency and hence milk production with robotically milked cows at pasture. Improvements in milk output from grass offers the potential to increase the economic and environmental sustainability of NI dairy farming through reductions in feed costs, phosphorus surpluses and ammonia emissions, alongside addressing societal concerns towards the lack of access for cows to pasture.

Hence, identifying strategies which would assist farmers in creating efficient grazing management practices for robotically milked cows is essential if this technique is to prevail in NI dairy systems.

Research

Motivated by these observations, a DAERA funded project aimed to develop optimal robotic systems tailored to NI conditions and assess its economic performance against conventional alternatives.

The first half of on-farm trials focussed on housed systems and discovered that, for robotic milking systems in NI to be economically competitive: (i) high-yielding cows may be offered supplemental feed outside of the robot without concern for reduced milking visits, (ii) cow personality traits that play a crucial role in adaptation to automatic milking systems must be recognised, and (iii) interventions to create equal opportunities for all cows to be milked, for example introduction of a priority lane for the socially less dominant, must be implemented.

The second half of the trials compared fully housed systems with partial grazing systems, in order to evaluate the possibility of reversing the trend of robotic milking being almost exclusively associated within indoor production systems. This study compared the performance of a carefully designed partially grazing automated dairy system with a fully housed counterpart measuring both animal performance and profitability.

Forty-eight (48) spring-calving cows were allocated to either the treatment group (partial grazing) or the control group, with the former given access to two-way grazing for 16 hours a day and a night-time total mixed ration fed to the individual yield.

The results indicated that the control group consumed 7.5 kg DM/cow/day more feed and produced ~4.6 kg/cow/day more of milk at a comparable quality. However, the margin over feed costs was greater for the treatment group (£5.91 vs £5.65/cow/day), which equated to an increase of £26/cow over a 100-day grazing period. These results demonstrate that partial grazing is a promising strategy to improve the profitability of automated dairy systems, while meeting societal expectations for higher animal welfare.

Potential for Farming in the Future

Robotic milking can reduce labour costs in the long run but represents a very different system where animal behaviour is an additional key consideration to optimise outputs. Overall robotic milking systems can be effectively adopted on grazing platforms, as long as the platform is in close proximity to the housed robot and there is an investment in training required to optimise outputs.