

DN NEWSLETTER *issue 51*

In this issue of the DN Newsletter for Farmers, we look at boosting feed efficiency in beef animals along with some simple and practical tips, as it is reported that feed and forage accounts for 60% of the cost of production in any beef herd.

Boosting feed efficiency in beef finishers

In an average year, it is assumed that feed and forage will account for 60% of the cost of production in any beef herd. Due to market conditions however, cereal and protein prices have continued to rise throughout 2022, translating into higher purchased feed costs this winter. So, despite continued strength within the beef market, margins are being squeezed.

For finishers, the aim is to achieve the highest liveweight gain for the least cost, whilst meeting target weights and carcass specifications. Farmers, feed mills and nutritionists have little influence over the cost of raw materials, so to protect margins you should focus on high health, on improving forage utilisation and on maximizing feed efficiency.

The Rumen

Ruminant animals differ from other mammals, possessing a unique and complex digestive system. A key element of this system is the rumen, a large vessel inhabited by a wide variety of microorganisms. Through fermentation, these play a critical role in the decomposition and utilisation of dietary carbohydrates and fibre; and are largely responsible for the supply of energy and protein needed for maintenance and growth.



The microbial community is generally resilient, with the ability to acclimatise to change, however, many keystone species are sensitive. When functioning correctly, volatile fatty acids (VFAs) produced through fermentation are quickly absorbed for use as energy substrates; and any lactic acid is converted by lactate-utilising microbes. Simultaneously, fibre within the diet stimulates rumination, a process that in turn stimulates the production of bicarbonate-containing saliva.

Like any ecosystem, a balance must exist for the symbiotic relationship between cow and microbe to function effectively. Acid production is matched by both acid utilisation and biological buffering, keeping ruminal pH within a tight range around an optimum of approximately 6.3. Where animals are stressed or diet is changed abruptly, however, the subsequent loss of stability negatively impacts the microbes, impairing rumen function and predisposing the animal to acidosis.





It is key here to recognise that the rumen is the engine room of the ruminant and the microbial community the engine. As such, keeping the above in mind, we must manage and ration with microbial function in mind to maintain high levels of feed efficiency within the herd.

Feed efficiency

Feed efficiency is a measure of the output achieved for each unit of input. While important, it is often difficult to gauge on farm, and so poor utilisation represents a significant but hidden limitation on profitability. This prevents even well-bred cattle from achieving their genetic potential, limiting the benefit obtained from the work put into breeding programs. Highlighting the impact of rumen function on profitability, studies have shown that for every unit of dry matter digestibility (DMD) lost, concentrate intake for the same liveweight gain increase by 0.4kg. Similarly, for every five units lost, liveweight gain from an unchanged diet drops by approximately 0.2kg.

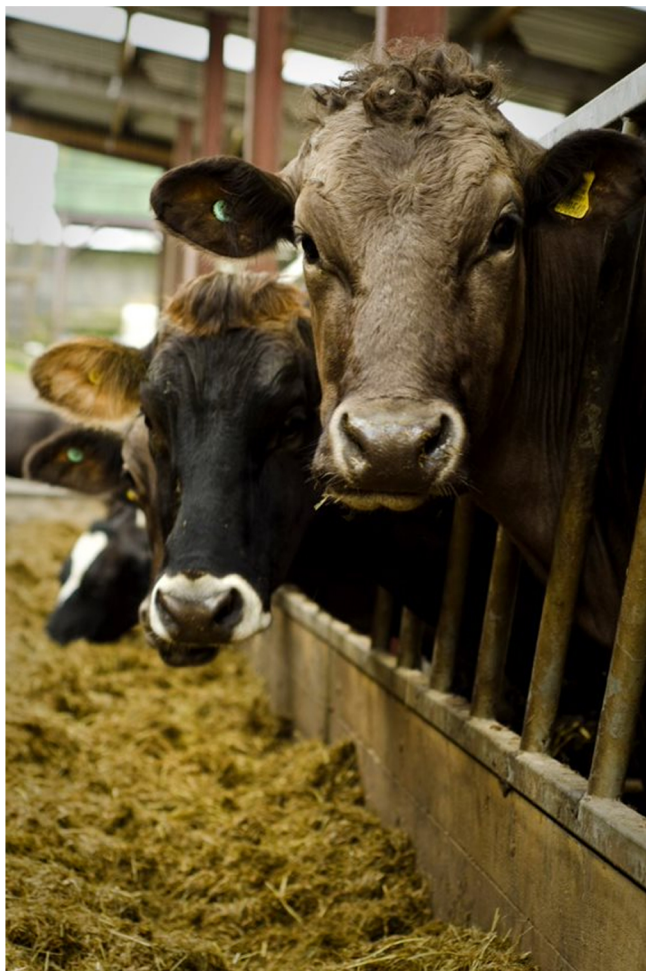


Rumen function

In comparison to growing cattle, finishing cattle have a reduced appetite in relation to their body weight, and so to achieve fast weight gain their ration must have a high energy density. As such, when transitioning into the finishing phase, they move from a grass-based ration onto one high in cereals and/or by-products. Typically, the diets ME content rises from as little as 10.5MJ/kg DM to above 12.2 MJ/kg DM. In achieving this, starch and sugar levels often exceed 33% and NDF levels drop from around 40% to 25%.

This transition is often problematic for several reasons. Firstly, starch and sugars ferment ten times faster than fibre, producing a greater quantity of VFAs. As acid absorption is often outstripped by production, this leads to an accumulation and subsequent reduction in rumen pH. This is further compounded by the decline in biological buffering due to the drop in fibre intake. Diet change and stress simultaneously cause instability; therefore, as the microbial community is sensitive, this impacts rumen function. Where the drop in pH is sufficient, acidosis leads to a drop in feed intake, fibre digestion, and nutrient absorption; the latter resulting from damage to the rumen papillae.





Some simple and practical tips:

1. Change diets gradually over 2-3 weeks to provide the microbes time to adjust. Start at 3kg/h/d of concentrate/cereals and step up by 1kg every 3 days (if cattle are not showing signs of digestive disturbance), until you have reached the desired maximum feeding level.
2. Present mixed rations in a consistent way by calibrating and maintaining wagons, loading ingredients in size order (smallest first) and mixing for the same consistency every time.
3. Ensure that a supply of roughage, in the form of straw or haylage, is available to encourage rumination and chop to between 2-4 inches to avoid sorting.

We now understand that when the rumen and microbial community are optimised, the resultant increase in DMD enables cattle to extract and utilise a greater proportion of the nutrients contained within their feed.

They therefore reach targets quicker, whilst utilising more forage and fewer concentrates, ultimately reducing input costs and increasing profitability.



4. You cannot manage what you do not measure - Analyse samples from the clamp face once a month as knowledge about the quality and nutrient value of your forage enables you to tweak for consistency.

5. Provide sufficient (>65cm/cow) headspace at the feed table, move neck rails high enough to enable reaching and distribute the ration consistently to ensure cattle have constant access.

6. Always ensure there is a clean and palatable supply of water available, as finishing cattle can require as much as 80L/h/d.

7. Ensure that ventilation, lying space and clean/dry bedding is sufficient to provide cattle with a high level of comfort – cattle won't perform if they don't have enough space or are uncomfortable.



8. Monitor health - particularly respiratory disease, parasites and lameness – all of which will impact performance and feed efficiency. Ideally, you should devise and implement an animal health plan with your farm vet.

9. Feed Actisaf® Sc 47 live yeast to optimise the rumen environment and increase the speed of acclimatisation. While minimising losses, Actisaf® also adjusts the microbial profile, promoting highly efficient fibre-digesting and lactate-utilising species. This ensures that more energy is harvested from the diet and that lactic acid is utilised, rather than accumulating and causing acidosis. In addition to health benefits, and as highlighted in the discussion about individual variability above, an improvement in rumen function also leads to increased feed efficiency.

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Summary

To increase profitability, herd management plans must focus on improving feed efficiency and maximising forage intakes. The careful execution of transitions, management of feed, balancing of forage and inclusion of Actisaf® live yeast will be essential to lessen the impact of stressors on rumen function. Whilst it is always essential to remember that to feed the cow, we must feed the microbes; in our current climate this message is particularly important if you wish to protect and drive the profitability of your herd.

Dugdale
Nutrition

