DairyNZ Milksmart

Choosing a feeding system

Perhaps in no other area of dairying are the choices and combination of technologies more varied. There is also considerable variation in opinion on the best nutritional program for New Zealand dairy cows. There is no one best system that suits every farm, every farmer, every herd, every environment, and every pay out. Close consultation with an independent reputable nutritional adviser and planner is recommended.

Key features to consider

General

- Covered hoppers reduce contamination from vermin and birds and are easier to clean.
- Individual feed bins, or trough dividers, will limit competition and aggression between cows and help cow spacing and cluster alignment. This can be as effective as a zigzag rump rail.
- Feeders that fill automatically without operator intervention will save time and hassle during milking.
- Feeding controls should be within easy reach of operators in the pit.
- Consider where the silo is going to be positioned in relation to vat and/or the milkroom.
- A concrete pad to allow easy cleaning of spillage, drainable to the effluent system, is a useful addition.
- Precise and reliable measuring of feed allocations can reduce feed costs and wastage.
- Maintenance requirements, robustness and reliability of the equipment.
- The matching of supplementary feeding to production using electronic ID and milk meters can optimise the herd's nutritional management. Check the ability of the system to integrate with production software to manipulate feeding rates.
- Is there an easy method to recalibrate each feeder when using different feed types?
- If in dairy feeding is a significant part of the cows' diet, consider the ability of the system to function manually (in case of breakdown) or using farm-generated emergency power.
- How sensitive the system is to upset by cows' actions or behaviour.

Herringbone

- Feeding systems that prevent cow access to the feed bins during loading and unloading of the herringbone can reduce milking times and make it easier to get cows to exit from the platform.

Rotary

- Smart enough to withhold feed from empty positions and from those cows going around twice.

1.1 Types of systems available

Herringbone

Herringbone feeding systems fall into three broad categories:

- Manual. Feeding vessels have to be manually filled.
- Automatic. Set amount of feed automatically delivered into the feeding vessels.
- Individual, variable rate feeding systems. These are linked to electronic I.D recognition and herd management programmes.

Presentation styles

There are several styles of feeding vessels to choose from:

- simple trough;
- trough with dividers;
- individual feeding vessels (but these can be hard to clean);
- feeders protected from unauthorised eating during loading and unloading of the platform such as in bail gate systems; or
- systems to prevent cows stealing feed from adjacent positions.

Rotary systems

Rotary dairies provide a great opportunity to automate the feeding, effectively removing this task from the work routine.

Types of system available

As the platform rotates a single hopper can be used to fill each trough individually as it passes a fixed point. The feed bins rotate under this delivery point to receive a feed allocation for each cow. This significantly reduces the investment cost of delivering feed to cows on rotary platforms. The sophistication of the controller tends to be the main variable between systems. It is more common for all cows to be fed the same amount, but electronic ID and advanced controllers have made variable feeding rates an option to be considered.

Figure 1. Delivery of feed into troughs from a single hopper.

1.2 Implementation challenges

Any implementation issues should be assessed before an investment in a feeding system is undertaken.

- There can be tendency for farmers to over use the systems once feeding has started in the belief that otherwise cow flow and milking productivity will decline. This can lead to reduced pasture utilisation.
- Higher feeding rates can create problems with cow health.
- Some equipment is not as reliable as it should be. Check that it operates effectively and delivers the correct amount of feed when using different feed types and in different environments and weathers.
- Operator occupational health and safety can be compromised by feed dust.
- Vermin and birds will be an issue. The costs and implementation of control and monitoring methods need to be considered.

Herringbone

- There can be a detrimental effect on cow flow especially when the cows have access to the feed bins during loading and unloading.
- Fighting and aggression can increase when there is no separation between cows. This is common where there is a single trough. Larger cows will eat all their feed and steal from the cow beside them.

Rotary

- Normal platform rotation times of 8-10 minutes are usually adequate to allow cows time to consume up to 5kg during milking. However, a rotation speed dictated by the time required to feed the cows can significantly impact on milk harvesting productivity, or result in over-milking and teat damage if automatic cup removers (ACR) are not installed.
- Because each cow is provided with an individual bail, many of the problems associated with adverse effects on cow flow are eliminated. However, feeding in the bail can affect the ease of unloading because cows try to delay their exit to consume remaining feed.

Figure 2. A feeding system with individual feed bins.