FUTUREDAIRY information sheet

Feeding concentrates

flat rate vs individual rate

by Yani Garcia

More milk from same level of concentrates

FutureDairy researchers have found that it is possible to achieve more milk production from the same amount of total concentrate fed each day by allocating feed individually compared with fixed rate feeding.

This is good news for dairy farmers with computerised feeding systems as they can increase milk solid production at no extra cost, especially during periods of limited pasture and silage availability.

Research

The study was conducted under conditions of restricted access to pasture and maize silage, which commonly occurs on Australian dairy farms.

It was conducted at the Elizabeth Macarthur Agricultural Institute at Camden, NSW.

It compared two groups of cows which received the same total dry matter (DM) on offer each day.

All cows in the fixed rate group received the same amount of concentrates, based on the average requirements of the herd (about 5kg pellets/cow/day).

Cows in the individual rate group were fed different amounts of concentrates, based on each individual cow's requirements.

The amount fed was 2-7kg DM/cow/day, with an average of 5kg DM/cow/day.

Cows in both groups grazed lucerne, during the morning and were supplemented with different levels of maize silage to top up all cows to the same level of total daily dry matter offered.

Results

The milk yield of the cows that received concentrates based on individual cow requirements was 9% higher than the cows fed a fixed rate.

Individually fed cows produced 3% more milk and 7% more milk solids. There was no difference in milk protein yield.

The increase in production is significant, and has practical implications for dairy farmers.

When feed intake is not limited, milk production drives intake. That is the higher producing cows eat more. However, when feed is restricted, the reverse is true – milk production will be determined by total amount of feed that each cow eats.

Cows in early lactation, particularly those with higher genetic potential for milk production tend

to compensate for the reduced intake by using more body reserves.

Practical implications

This has implications for dairy farms where silage is fed for a limited time after the morning milking, and then moved to a paddock with restricted higher pasture availability.

The high yielding cows have little change of eating more to compensate for their higher requirements.

FutureDairy's results suggest a better approach would be to feed concentrates based on individual requirements and also ensure that cows have access to at least one other feed with less restrictions – either pasture or silage.

This will give the higher producing cows the opportunity to eat more.

For more information

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FutureDairy's results are good news for dairy farmers with computerised feeding systems as they can produce more milk at no extra cost.

About FutureDairy

FutureDairy aims to help Australia's dairy farmers manage the challenges they are likely to face during the next 20 years. The challenges are expected to be related to the availability and cost of land, water and labour; and the associated lifestyle issues.

Our activities are structured around two priority areas – Precision farming (including automatic milking and innovations) and Feedbase (forages and feeding). These are the areas where there are opportunities to address the challenges related to water, land and labour resources.

For Precision Farming we are investigating technologies with potential to improve farm productivity, efficiency, labour management or lifestyle. FutureDairy is pioneering the development of pasture-based farming systems that use robotic milking for larger herds. Our research is conducted at Australia's first automatic milking system (AMS) research farm, at the Elizabeth Macarthur Agricultural Institute at Camden. Since mid-2009 we will be testing a new concept automatic milking system designed specifically for Australian conditions, while continuing to further develop the farming system around the milk harvesting equipment.

Our Feedbase goal is to develop sustainable dairying systems for the future, with the intensification of home-grown feed to enable more efficient use of land, water and grain. Our trials are being conducted at the University of Sydney's Corstorphine dairy farm and Mayfarm. The investigation is complemented with modelling and component field research in areas of forage production and utilisation.

We are investigating a complementary forage system (CFS) that involves triple cropping on 35% of the farm area and growing pasture on the remaining 65%. Our target is to produce more than 25t DM/ha/y rover the whole farm area, in a sustainable way. The three crops include:

- a bulk crop (eg maize);
- a legume for nitrogen fixation (eg clover); and
- a forage to provide a pest/disease break and to improve soil aeration (eg a brassica).

FutureDairy is now in its second phase. During the first phase, we used existing technology for automatic milking to test the feasibility of robotic milking in a pasture based system. The promising results paved the way for testing a new prototype AAMS with a larger herd during phase 2.

In the first phase, our Feedbase studies tested the feasibility of a complementary forage rotation grown on a small area, both under research and commercial conditions. Phase 1 combined technical research with social research and extension research. During phase 2 we are drawing upon that learning experience to improve our linkages with major extension groups.

Contact us

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