FUTUREDAIRY information sheet

Crops to alter milk composition

by Yani Garcia and Douglas Mackintosh

Dairy farmers may be able to use high yielding crops to manipulate milk composition, according to FutureDairy research.

The trial involved lactating dairy cows grazing Persian clover or forage rape (brassica). There was no difference between the two crops in total milk yield. However cows grazing forage rape produced milk with a higher protein content than those grazing Persian clover. In contrast, cows grazing Persian clover produced milk with a higher milk fat content than those grazing forage rape.

The effects on milk composition were probably due to forage rape having a lower fibre content and higher energy than Persian clover. Energy intake is the main driver of milk protein content so the higher the energy concentration in the feed, the higher the content of protein in the milk.

From previous research it is known that both forage rape and Persian clover are high yielding crops, providing quality feed during the autumn, when quality pasture is typically in short supply.

FutureDairy's results suggest that dairy farmers with pasture-based systems can choose the forage crop that best suits their needs.

With forage rape, higher yields are expected in early autumn and possibly an increase in milk protein content, according to these results. Persian clover will be a better fit where the feed deficit occurs in late winter and early spring.

This has been the experience of some farmers involved in FutureDairy's Hunter Valley on-farm trials.

Two of the farmers grew forage rape to fill the feed gap in early winter. Compared with the previous year, their annual results show increases in total milk solids per cow, milk solids per kg of body weight and an increase in overall annual milk protein production. Although other factors may have contributed to these results, it is clear that forage rape played an important role in these farms.

For more information

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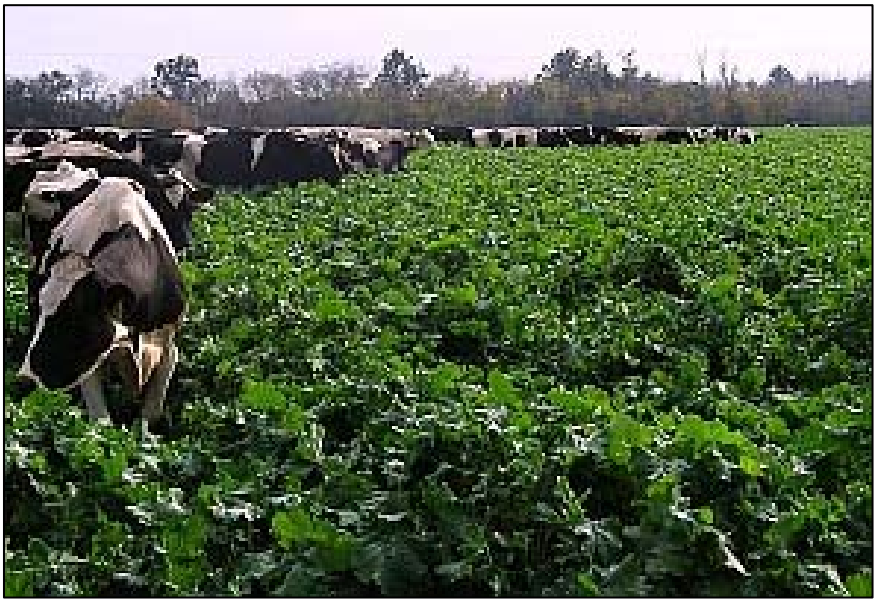
FutureDairy research has found that cows grazing brassica, or forage rape, produce milk with higher protein content than cows grazing Persian clover.



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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 have been 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/yr over 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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