

Grain mixes or partial mixed rations?



Improved methods for providing grazing cows with supplements.

KEY MESSAGES

- Providing supplementary feeds to grazing cows as a partial mixed ration (PMR) can lead to greater milk production than feeding equivalent amounts of energy as cereal grain in the dairy and forage in the paddock.
- Providing the main components of the PMR as a formulated grain mix at milking times using existing infrastructure in the dairy can elicit much the same response as a PMR.
- Feeding formulated grain mixes does not require a feed pad or a mixer wagon.

Previous research has demonstrated that carefully considering the form and composition of supplements offered to grazing cows can increase milk production responses compared to the traditional strategy of providing cereal grain in the dairy and conserved forage in the paddock. For example, a PMR containing canola, maize grain, lucerne hay and wheat grain is likely to have milk production benefits over feeding straight wheat in the dairy and lucerne hay in the paddock. Such PMR systems are expensive and complex to manage, usually requiring a feedpad and a mixer wagon, and increased time away from the paddock for the cows while they consume their ration. An experiment was conducted at Agriculture Victoria Ellinbank to measure the effect on milk production of providing wheat grain, maize grain and canola meal as a grain mix in the dairy at milking time using existing feeding infrastructure. If milk production responses were equivalent to those found for a PMR, these findings would be applicable to a much wider proportion of Australian dairy farmers.

WHAT IS A PARTIAL MIXED RATION?

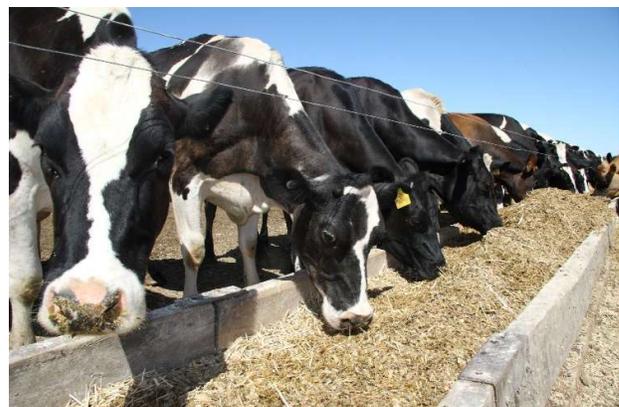
Feeding a PMR is defined as a total mixed ration (TMR) fed to dairy cows in between bouts of grazing, and which therefore makes up only part of the cows' diet (as opposed to an actual TMR, which provides 100% of the diet).

Typically, a PMR comprises approximately 75% grain such as wheat, barley, maize or canola, with the balance made up of forage (for example, pasture silage, legume hay, or maize silage). A PMR is usually, but not always, fed to cows with a mixer wagon on a feed pad, before or after milking and either once or twice a day.

Some farmers have been using PMR systems for many years. However, the vast majority of dairy farmers do not have the infrastructure nor equipment necessary to feed out a PMR.

CAN WE USE A GRAIN MIX INSTEAD?

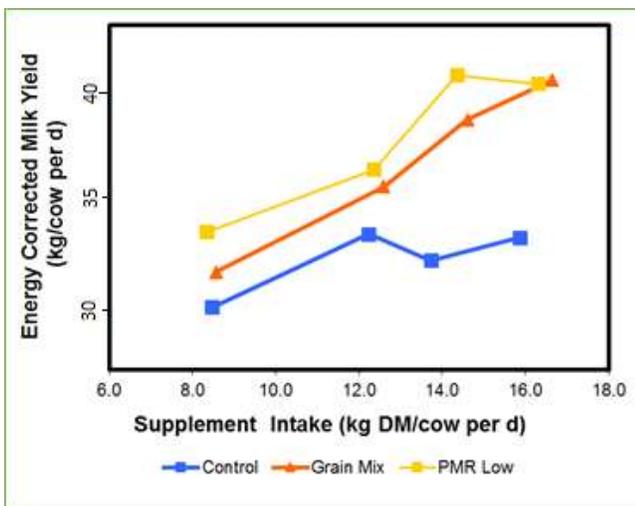
A large experiment was conducted in which increasing amounts of a PMR was fed to groups of grazing dairy cows. Milk production of these cows was compared to that from cows fed exactly the same supplements as a grain mix in the dairy at milking time. The supplements included maize grain, canola meal, wheat grain and lucerne hay (the hay was fed in the paddock for the grain mix group). Control groups of cows received equivalent amounts of energy as wheat grain fed in the dairy and forage offered in the paddock. Milk yield was measured three times per week over a one month experiment.



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RESULTS

Milk production in both the PMR and grain mix groups was higher than for the control cows at all amounts of supplement levels. For the PMR and grain mix cows, milk production increased as the amount of supplement offered increased but, for control cows, milk production plateaued at a supplement intake of approximately 12 kg supplement (concentrate + forage) DM/cow per day. As a consequence, differences in milk yield between the PMR or grain mix cows and the control cows increased as supplement intake increased, reaching a maximum difference of approximately 5 kg energy corrected milk (ECM)/cow per day at a supplement intake of approximately 16 kg supplement DM/cow per day.



There was no statistically significant difference in the yield of ECM between cows offered the PMR and cows offered the grain mix at any amount of supplement offered. Despite this, ECM yield of the grain mix cows was consistently numerically lower than that of the PMR cows until more than 14 kgDM total supplement was fed.

The results show that similar milk production responses to PMR can be obtained by feeding the main dietary components through existing feeding infrastructure in the dairy. In this way, most of the benefit can be obtained without the need to purchase mixer wagons and construct feedpads.

FURTHER INFORMATION

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ACCESSIBILITY

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