

Canola meal

A TOOL TO MAKE THE MOST OF SPRING PASTURE

Wanting to make the most of your available pasture? Wanting to peak your cows higher and take advantage of higher milk prices this spring-summer? Canola meal may be a very useful tool for you.

About canola meal

In recent years, canola meal has become a primary protein supplement for dairy cattle in Australia and globally. Canola meal is produced in oilseed crushing plants, as a co-product of oil production from canola (*Brassica napus* L.), Australia's major oilseed crop.

About 75 per cent of Australian canola meal is produced by a solvent extraction process, and 25 per cent is produced by expeller extraction. Compared to solvent canola meal, expeller canola meal is much higher in oil content (e.g. 9–15 per cent vs 2–4 per cent DM) and therefore ME value (e.g. 13.5 vs 12.2 MJ/kgDM). Care is therefore needed when feeding expeller canola meal with other ingredients containing oil/fat to not reach a total diet fat level that may compromise fibre digestion in the rumen and dry matter intake.

Canola was first grown in Australia in 1969. Since the early 1990s canola production has extended into lower rainfall areas in all states and continues to increase. Genetically modified (GM) canola meal and non-GM canola meal are both available for use in stockfeed in Australia. Dairy processors impose different limits on suppliers regarding inclusion of GM ingredients in milking cow diets. Consult your processor for details.

KEY MESSAGES

There are two types of canola meal – solvent and expeller extracted

Canola meal (solvent-extracted) stimulates dry matter intake and milk responses in grazing milking cows

Feeding canola meal may also be a useful grazing tool to maintain quality of spring pasture

Canola meal is also useful for calves, heifers and springers

If using expeller canola meal, take care that the diet is not too high in fat

Cows fed canola meal eat more and produce more milk

Many research studies around the world have compared milk responses to canola meal vs other dietary protein sources. In 42 out of 49 experiments included in the analysis by Martineau *et al.* (2013), milk yield responses were positive. Feed intake was increased in most (35 out of 49) experiments. Positive milk yield and milk protein responses have been seen when canola meal has replaced dietary protein sources other than soybean meal.

In Australia, positive milk responses to canola meal have been observed on grazing dairy farms over many years. An Australian research study conducted at Ellinbank (Vic) in early lactation cows with restricted pasture allowance found a significant milk response when a proportion of wheat grain fed at higher amounts in a partial mixed ration (PMR) was substituted with solvent extracted canola meal (Auld *et al.*, 2014). Milk fat concentration, milk fat yield and energy-corrected milk yield were greater. Other studies at Ellinbank suggest that milk responses to canola meal are more consistent in early lactation than in late lactation.

How does canola meal work?

This is uncertain, but several mechanisms may contribute to the increases seen in dry matter intake and milk yield:

| Possible mechanism | Comment |
|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Canola meal stimulates cows' dry matter intake | Cows in the Ellinbank study fed canola meal left less mixed ration behind on the feedpad and grazed pasture for 30 minutes longer each day, consuming an extra 1kg DM pasture |
| Canola meal's rumen degradable protein (RDP) stimulates microbial protein synthesis in the rumen | Canola meal's amino acid profile is very similar to that of milk |
| Canola meal provides the cow with essential amino acids that are limiting in the diet | While supplying less rumen undegradable protein (RUP) than some other protein sources, canola meal contains relatively high concentrations of essential amino acids: lysine, methionine, histidine |
| Canola meal increases buffering capacity in the rumen | Cows in the Ellinbank study fed canola meal had a rumen pH of less than 6.0 for fewer hours per day than cows fed diets not including canola meal |
| Substitution of some wheat grain with canola meal reduces diet's starch concentration and starch digestion in rumen | Less inhibition of appetite in early lactation cows due to propionate flow to liver (as per hepatic oxidation theory) |

Using canola meal as a grazing tool

Feeding canola meal may also be a useful grazing tool, stimulating cows to graze the sward harder, thereby helping you to achieve the target post-grazing residual of 4–6cm (ryegrass) and maintain control of pasture quality. (Refer to the Feed Planning fact sheet: *Making the most of spring pasture*).

Canola meal is also useful for calves, heifers and springers

Canola meal is a useful protein supplement in calf and heifer diets to meet daily protein requirements. Canola meal is also useful as a protein source in transition cow diets to help minimise negative protein balance which occurs in the first few weeks after calving.

How much canola meal should you feed?

There are no hard and fast rules. However, the best milk responses in research studies occurred when it replaced a portion of starch based concentrate (barley/wheat) at moderate/high levels of concentrate intake. More than 1.5kg DM canola meal per cow per day seems likely to be required to get a substantial milk response, depending on other ingredients in the diet. Seek advice from your herd nutrition adviser.



Canola crop in flower

Further reading

M. J. Auldist, L. C. Marett, J. S. Greenwood, M. M. Wright, M. Hannah, J. L. Jacobs and W. J. Wales 2014. Replacing wheat with canola meal in a partial mixed ration increases the milk production of cows grazing at a restricted pasture allowance in spring. *Animal Production Science*, 2014, 54, 869–878.