

CanolaMeal!

Dairy cows fed canola meal give an extra litre of milk per day!

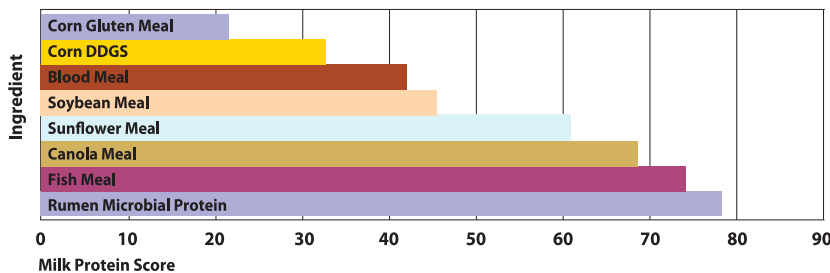
Milk Production of Cows fed Canola meal compared to soybean meal or cottonseed meal.

	Milk Yield (kg/day)	
	Control	Canola
Ingalls and Sharma (1975)	23.0	23.7
Fisher and Walsh (1976)	24.4	23.0
Laarveld and Christensen (1976)	24.9	26.4
Sharma et al. (1977)	20.7	20.9
Sharma et al. (1977)	21.5	21.8
Papas et al. (1978)	24.3	25.2
Papas et al. (1978)	23.9	24.6
Papas et al. (1979)	21.8	22.2
Laarveld et al. (1981)	26.4	27.7
Sanchez and Claypool (1983)	33.4	37.7
DePeters and Bath (1986)	39.8	41.4
Vincent and Hill (1988)	28.5	28.6
Vincent et al. (1990)	25.1	26.7
McLean and Laarveld (1991)	28.9	30.7
MacLeod (1991)	17.2	16.9
Emmanuelson et al. (1993)	21.0	21.9
Dewhurst et al. (1999)	24.0	24.5
Dewhurst et al. (1999)	23.7	25.5
Whales et al. (2000)	21.8	22.3
White et al. (2004)*	21.7	22.7
Maesooml et al. (2006)	27.0	28.0
Johansson and Nadeau (2006)**	35.4	38.4
Brito and Broderick (2007)	40.0	41.1
Mulrooney et al. (2008)***	34.3	35.2

Average Milk Yield 26.4^a 27.4^b

* Ruminal protected canola meal vs lupin
 ** Canola expeller meal vs commercial concentrate
 *** Canola meal vs DDGS
^ab Students T test P<0.0001

Milk Protein Score of Common Feed Ingredients for Dairy Cattle (Schingoethe, 1991)



Feeding Canola Meal To Dairy Cows

Canola meal is an excellent protein supplement for lactating dairy cows. In a summary of 24 research trials with canola meal, the average milk production increase was +1.0 kg/cow/day on canola meal diets when compared to diets containing soybean meal or cottonseed meal. Recent research with cows producing > 40 kg milk/day (Brito and Broderick, 2007) clearly indicates that, even at high levels of production, canola meal is a superior protein supplement.

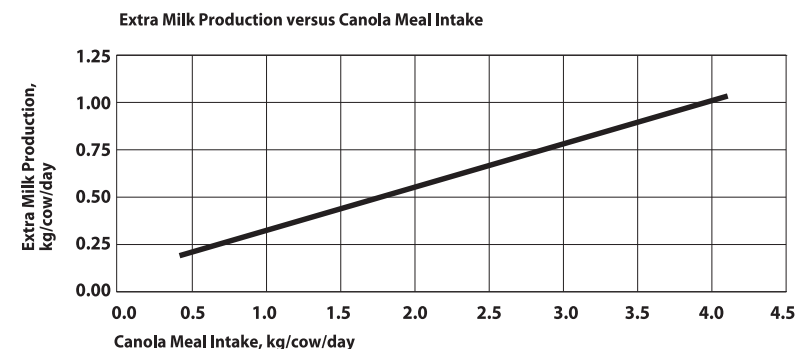
Why is canola meal such a good ingredient for feeding dairy cows?

Canola meal has an excellent balance of amino acids that the dairy cow needs for milk protein production. Canola meal contains higher levels of histidine, valine, methionine and tryptophan than are found in rumen microbial protein, and as such canola meal complements rumen microbial protein in meeting the amino acid requirements for milk production. In fact, canola meal has one of the highest milk protein scores (balance of amino acids required for milk production) of all protein sources for dairy cows.

A few other things to know about feeding canola meal:

Do dairy cows like the taste of canola meal? Dairy cows like the taste of canola meal. Canola meal does not taste bitter. Cows have been fed up to 4.0 kg of canola meal per day and there has been no decrease in feed intake. Some experiments have actually shown an increase in feed intake when canola meal has replaced soybean meal in the diet.

If you feed greater amounts of canola meal, will you get higher milk production? This is a tough question to answer because it depends on so many other things in the diet. It is clear there is a milk production response from canola meal when it is substituted for other protein ingredients, even if the cows are only eating 0.5 – 1.0 kg per day, but there is a mild trend to higher milk production as the intake of canola meal increases.



What is the maximum amount of canola meal that can be fed to dairy cows? Generally there is no recommended maximum limit. The amount fed is determined mainly by the protein required in the diet. As mentioned, it is common to feed up to 4 kg per cow per day. Note that canola meal has low levels of fat (removed from the canola seed at the crushing plants) so there are no concerns about putting too much oil in the rumen.

Is canola meal expensive? Generally, canola meal is very cost effective. Even if you don't count the extra milk production often seen from feeding canola meal, on a cost per unit protein basis it is very competitive to soybean meal.

A few key numbers on the nutrient content of canola meal to keep in mind when using it in dairy feeds.

Nutrient Amount (dry matter basis)

Crude Protein, %	41
Rumen Bypass Protein, %	35
Acid Detergent Fibre, %	19
Neutral Detergent Fibre, %	24
Calcium, %	0.70
Phosphorus, %	1.20
Lysine, %	2.27
Methionine, %	0.84
Histidine, %	1.27
Valine, %	2.24
Tryptophan, %	0.55
Net Energy Lactation, mcal/kg	1.80

Can I substitute canola meal for soybean meal in the diet equally? The diets should be balanced to the same protein levels which means that more canola meal will be required to replace higher protein soybean meal; something else will also come out of the diet (usually some grain).

How quickly can I make the change to canola meal in the diet? Nutritionists recommend that any changes to dairy cows' feed be made gradually since they are very sensitive to change. Make the change over several weeks. For total mixed rations, the change can be made more quickly compared to top dressing.

What about feeding canola meal in combination with dried distillers grains (DDG)? DDG are much more available these days due to the rapid expansion of the ethanol industry. Note that most nutritionists will put a limit on the maximum amount of DDG in the dairy feed (concern about too much oil in DDG, concern about too much corn in the diet if it also contains corn grain and corn silage). A recent experiment at South Dakota State University (Mulrooney et al., 2008) showed that a combination of 2/3 canola meal and 1/3 distillers grains provided the best combination for maximizing milk production.

How much canola meal is used in dairy feeds? Dairy feeds are the number one use of canola meal. Each year, Canada produces over 2.5 million tonnes of canola meal. About 75% of that production is exported to the United States, where it is used primarily in dairy feeds. California alone consumes over 800,000 tonnes of Canadian canola meal per year and it is all used in dairy feeds!

Remember canola meal when feeding dairy cows! Very palatable – cows like the taste. Excellent balance of amino acids in the protein – well suited to maximize milk production. Cost effective and proven performance.



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