



Dairy Briefs

The Latest Information on Dairy Cattle Nutrition



Feeding Wheat to Dairy Cattle

Laura Martin, M.Sc

Wheat is a commonly grown crop in Ontario, but it is not something that is commonly fed to dairy cattle here. Wheat, in Canada, is typically grown for human consumption, while off-spec wheat and wheat milling by-products are more available as feed sources. In Europe, where cooler weather limits corn acres, wheat is one of the most common grains fed to dairy cattle. Wheat is an excellent source of energy and protein but it can be difficult to feed, and with lots of corn available in Ontario is wheat worth it?

There are many different classes of wheat – hard or soft, winter or spring, red or white, and each class has a slightly different nutrient profile. When compared to other common grains, wheat is similar to corn in terms of energy, but is higher in protein than the other grains (Table 1). For swine and poultry, this makes wheat an excellent substitute for corn, if the price is right. For beef and dairy cattle, it gets a little more complicated.



The starch in wheat is rapidly fermented by rumen microbes, much faster than corn (Figure 1), making wheat a very “hot” feed for dairy cows. Wheat and corn both contain a lot of starch (>70%), however, with wheat 90% of this starch is degraded in the rumen, whereas only 60% of the starch in corn is used in the rumen. Since wheat is so highly degradable in the rumen, it can reduce rumen pH, which can increase the risk of acidosis and reduce fibre digestion. The drop in rumen pH, and its

Cont. >>

Inside this Issue...

Feeding Wheat to Dairy Cattle

By: Laura Martin, M. Sc, Nutritionist



**Get your calves off to
the right start with
firstSTART[®]C
Calf Milk Replacer!**

- firstSTART[®]C milk replacer has excellent palatability and mixing characteristics.
- All of its protein is from milk origin.
- 100% milk protein ensures consistent and steady growth and development of the calves.
- Producers are finding healthy calves with shiny coats.



Volume 10, Issue 5
July 2017

69819 London Road, RR #1, Centralia, Ontario, Canada, N0M 1K0

Tel: (519) 228-6444 or 1-800-265-2904 • Fax (519) 228-6560 • Email kpalen@kenpal.on.ca • www.kenpal.on.ca

consequences, are what make “hot” feeds particularly undesirable in Canada, as they can lead to a drop in butterfat.

That being said, wheat is still a great source of energy and protein and can be fed to dairy cattle. The trick to feeding wheat to ruminants is to use it as a partial replacement for corn instead of fully replacing corn. Recent research (Guo et al., 2013) looked at replacing one-third, two-thirds or all of the corn in a milk cow ration with coarsely ground wheat. Feed intake, milk production, components and rumen pH measurements were not affected by the addition of wheat in the diet, except when wheat



replaced all of the corn. These researchers concluded that wheat can be a suitable substitute for up to two-thirds of the corn in the ration, or 19% of the ration dry matter. Other research has also found that wheat can partially replace other grain sources in milk cow rations (up to 20% of the ration dry matter), with no effect on lactation performance observed (Nikkhah et al., 2012).

Dry cows and heifers can also be fed wheat as a partial grain

replacement. Transition dry cows may actually benefit from wheat in the ration. Research done in 2008 suggests that replacing other grain sources with wheat, at 18% of the ration dry matter, may actually improve calcium and energy status of cows to help them transition from dry cow rations to lactation rations. A related trial showed an improvement in milk production in cows and heifers fed wheat before calving (Nikkhah et al., 2011). Growing heifers can also handle wheat when it is used as a partial replacement for other grains.

There are some tricks that can help make feeding wheat, in any ration, easier. The processing of wheat is especially important when it comes to using it in ruminant rations. Whole wheat can quite easily pass right through a cow, and is easily visible in the manure. Processing can help increase the digestibility of the wheat to 86%. Coarsely rolling wheat, where the kernel is broken into 2-3 pieces, gives the best results. Processing wheat too fine will compound the rapid starch fermentation in the rumen and can increase the risk for acidosis. Adapting cows and heifers slowly to increasing levels of wheat can also help by giving the rumen time to adapt its microbe population to better handle the fast-acting starch. Plan to increase the wheat level over 3 – 4 steps, only moving on to the next step if butterfat and intakes are stable. There are different feed additives, such as ionophores and buffers, which can help the rumen adapt to “hot” feeds. These band-aids are best used as a last resort, especially if the intention is to use wheat to help reduce ration costs.

Feeding wheat to dairy cattle is definitely possible, especially if corn supply is tight or if off-spec wheat is a good price. Adapt the cows slowly to this faster-acting grain source to help prevent any rumen health issues. Just because a feed source is “hot” doesn’t mean it cannot be fed successfully to dairy cows.

Table 1: Nutrient Comparison of Cereal Grains

Nutrient	Corn	Soft White/Red Wheat	Hard Red Wheat	Barley
DM, %	88	89	89	90
TDN, %	88	87	87	84
NE _L (Mcal/kg)	2.01	1.99	1.99	1.86
Crude Protein, %	8.2	10.9	14.5	11.3
Crude Fat, %	3.5	1.4	1.9	2.1
Crude Fibre, %	2.0	2.3	2.6	3.9
Calcium, %	0.02	0.03	0.06	0.06
Phosphorus, %	0.26	0.3	0.39	0.35

Adapted from NRC

Cont. >>

summerSTART

BUFFER PAK FOR DAIRY COWS

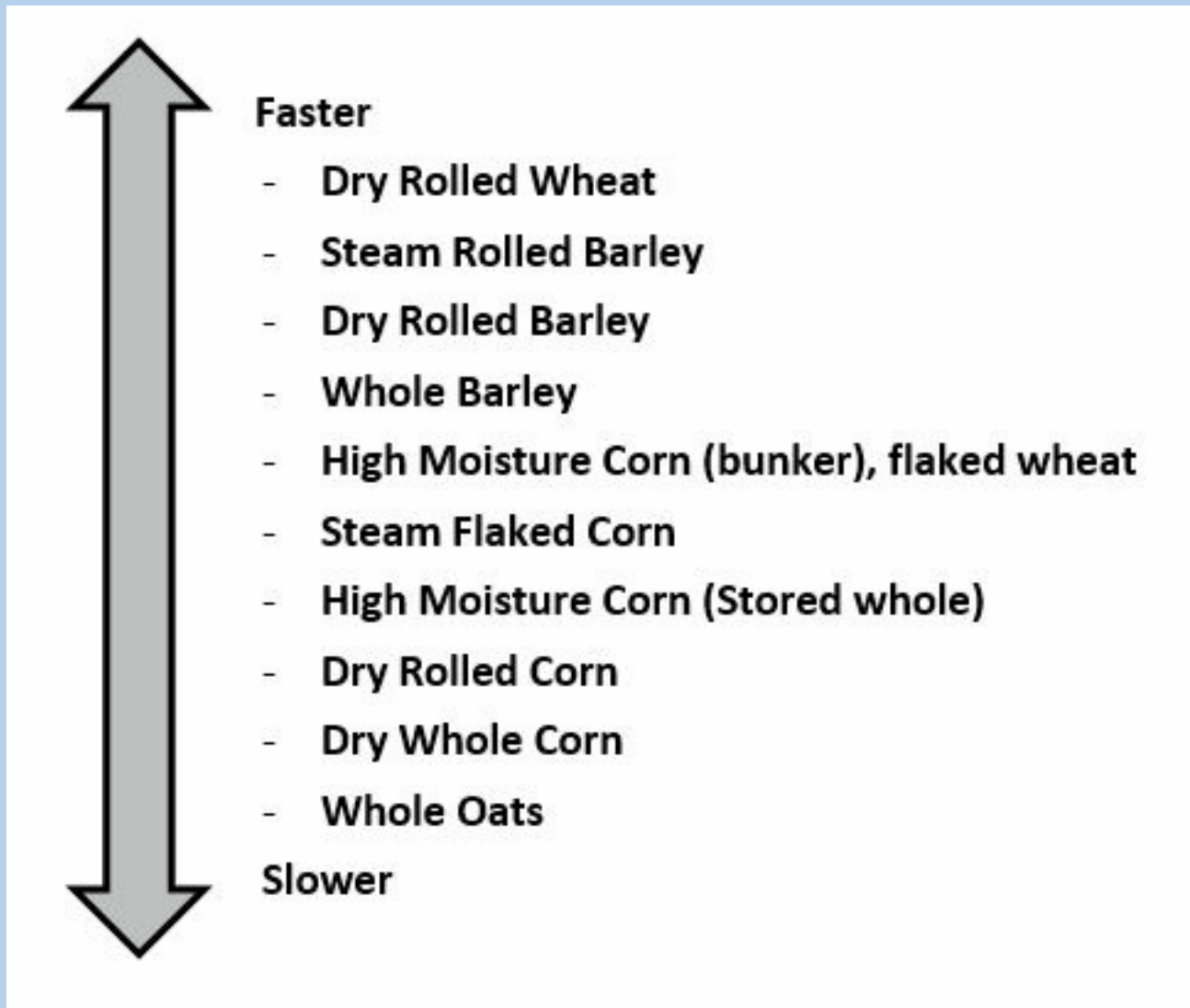
Potential Benefits

- Helps replenish lost electrolytes.
- Provides buffering to help the production of rumen bugs.
- Promotes dry matter intake and helps increase ration digestibility.
- Helps improve milk production during hot weather.
- May help reduce breeding problems during heat stress conditions.



Specifically formulated to help prepare the dairy cow to combat the effects of summer heat with the addition of key ingredients to the ration.

Figure 1: Ruminant Fermentation Rates of Different Grain Sources



Derived from Stock and Britton (1993)

Published By:



WE APPRECIATE YOUR BUSINESS

69819 London Road, RR #1, Centralia, Ontario, Canada, N0M 1K0

Tel: (519) 228-6444 or 1-800-265-2904 • Fax (519) 228-6560 • Email kpalen@kenpal.on.ca • www.kenpal.on.ca