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MAKING MILK OUT OF CEREAL

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Running out of corn silage or alfalfa silage is a real worry this time of year. There are many options when we are being faced with forage shortages on farm. Certainly, dietary starch can be replaced through feeding of more grain, however replacing the fiber portions of the ration is more difficult.

One option is to chop and feed green chop corn. The issue pertains to the low fiber digestibility of the green chop corn resulting in lowered production. Figure 1 demonstrates the increase in fiber digestibility of corn silage from fresh chop through to ensiled for 11 months. In particular, it should be noted that the NDFD30 (NDF digestibility after 30 hours in the rumen) increased by 5% after 3 months in storage.

A second option would be to purchase in hay which at times can add significant cost to many dairy rations as hay approaches $250 per MT or higher. A third option includes using cereal grains as a substitute for corn silage, as when harvested correctly they can have high fiber digestibility resulting in increased milk production.

The main three crops that should be considered are barley, oats and winter wheat; the relatively low growing costs make these attractive for use in SW Ontario dairy rations.

Barley

- Barley should be harvested at flag leaf to increase fiber digestibility
- Barley can be harvested at mid dough to increase starch to increase yield
- Barley silage should be harvested with 60 to 65% moisture; this requires some wilting in the field when harvested at flag leaf, however no wilting is needed when harvesting at mid dough
- The seeding rate for Barley is 150 lbs/acre when seeded as straight barley and 50 lbs/acre if under seeded with another crop
- Barley silage harvested as a grass can yield over 6 MT to the acre, and upwards of 9 MT per acre when taken at mid dough.

Oats

- Oats should only be harvested at flag leaf to maximize forage digestibility
- This also allows for the possibility of a second cut of oats for silage
- Allowing Oats to head out will decrease total digestibility severely, resulting in poor feeding value for lactating animals.
- The seeding rate of oats are 50-100 lbs/acre depending if it will be used as a cover crop for new alfalfa
- Oats should be ensiled at 60 to 65% moisture
- Oats in Ontario can yield over 8 to 10 MT per acre at 65% moisture.

Average changes in digestibility values after ensiling

Time (mo.)	DMD12	DMD30	NDFD30	STRD12	ttSTRD
0	37.4%	42.5%	29.2%	69.3%	91.6%
1	37.9%	43.2%	30.9%	70.6%	92.5%
3	38.8%	44.3%	34.6%	72.5%	94.1%
5	39.5%	45.1%	36.6%	73.5%	95.3%
7	40.0%	45.6%	37.4%	73.6%	96.1%
9	40.4%	45.9%	38.6%	73.9%	96.4%
11	40.5%	46.4%	39.2%	73.9%	96.9%
Monthly change (0-6 mo.)	0.50%	0.70%	1.20%	0.60%	1.80%

DMD = dry matter digestibility at 12 or 30 hours
NDFD30 = digestibility of NDF fraction at 30 hours
STRD12 = starch digestibility at 12 hours
ttSTRD = total tract starch digestibility

Figure 1. Changes in digestibility values after ensiling corn silage

Hallad, C. (2010, April 28). Hoards's Dairyman: Why new corn silage doesn't feed as well. Retrieved May 05, 2017, from http://hoards.com/article-352-Hoards-Dairyman-Why-new-corn-silage-doesnt-feed-as-well.html

Winter Wheat

- Wheat should only be harvested at flag leaf to maximize forage digestibility. Wheat is similar to oats where digestibility decreases sharply once the plant has begun to head out.
- When harvested early, wheat silage can be more digestible than corn silage
- Wheat is a great option since you can double crop the field with beans as typically is harvested mid-June in SW Ontario.

	Protein (%)	Starch (%)	NDF (%)	NDF 30 hr
Barley – Flag Leaf	12.8	5.05	54.9	63.5
Barley – Mid Dough	11.8	18.9	48.7	48.7
Oats – Flag Leaf	12.2	4.32	56.5	51
Wheat – Flag Leaf	13.9	3.43	54.3	57.7
Corn Silage	8.04	30.3	42.6	59.1
Alfalfa Silage	19.5	2.12	43.2	43.8

Table 1. Comparative protein, starch, NDF and 30 hour NDF digestibility values for common forages in Canada.

Final Thoughts

Certainly, many dairy producers in the west have had strong milk production without the use of corn silage, or have used corn silage as a very minimal role in their dairy rations. Digestible fiber is difficult to add into Ontario dairy rations without adding significant cost, however harvesting cereal grains as grass type silages is an economical solution. It is important to remember that harvesting cereals for silage is no different than any other silage, maintaining moisture levels of 60 to 65% is the most crucial factor in making good silage. Follow this with proper cut length combined with proper packing techniques will provide producers with an economical and viable alternative to stretch corn silage inventory without losses in milk production.

STRIPE RUST

Stripe Rust is a common fungus that appears in cereal grains, decreasing yields through defoliation and shriveled kernels. It is important to check the plant just before flag leaf emergence since yield losses can be prevented by having frequent crop inspections and timely fungicide application.

Since typically in SW Ontario we harvest cereals for silage at or before flag leaf, it is not a significant concern for many producers. For those producers who are wishing to leave their barley until the mid-dough stage to maximize starch yield, they should consider a fungicide application at flag leaf. This will prevent the stripe rust, as well as delay the dry down of the stocks allowing a wider harvest window for ensiling the crop.

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DAIRY UPDATE is published in the interest of helping dairy producers become more profitable. We welcome your comments.

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