**2009F089R Utilization of wheat-based distillers in grains**

**as a feed for lactating dairy cows**

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Background: Western Canadian dried distillers grains with soluble (DDGS) production is currently produced from a mixture of wheat and corn grain, or just wheat. Although DDGS becomes available at low costs and feeding values have been studied extensively, the specific effects of wheat based relative to corn-based DDGS on lactation performance and feeding values of DDGS as a source of energy require more work.

Objectives:

1. Compare the effects of feeding wheat vs. corn DDGS on performance
2. Evaluate the effects of feeding wheat DDGS as a replacement of barley grain or barley silage
3. Evaluate the effects of feeding wheat DDGS as a replacement of barley silage in a low grain diet
4. Evaluate the effects of feeding wheat DDGS as a replacement of barley grain on reproductive function

Methods:

1. 30 lactating cows were fed 1 of 3 diets: wheat DDGS, corn DDGS, or a control diet of canola and soybean meal. 6 cows were cannulated. DMI, milk yield and components, body weight and rumen fermentation profile measured.
2. 6 lactating cannulated cows were fed 1 of 3 diets: control, wheat DDGS replacing 20% of barley silage, or wheat DDGS replacing 20% of barley grain. DMI, milk yield and components, body weight, plasma metabolites, feeding behaviour and rumen fermentation profile measured.
3. 30 lactating cows will be fed 1 of 3 diets: control low grain diet, wheat DDGS replacing 20% of barley silage or wheat DDGS and alfalfa hay replacing 20% and 10% of barley silage, respectively. DMI, milk yield and components, body weight, and feeding behaviour measured.
4. 60 cows, 10 cannulated, will be fed either a control diet or wheat DDGS replacing 20% of barley silage after calving. Production and rumen fermentation will be measured as well as reproductive performance.

Outcome:

* A mixture of wheat and corn DDGS has similar feeding values to both DDGS sources and can be used as a alterative protein source
* Partial replacement of barley silage with wheat DDGS improves productivity without negatively affecting rumen fermentation. Cows fed 20% DDGS had greater DMI, milk yield, milk protein and milk lactose but not milk fat.
* Partial replacement of barley silage with wheat DDGS improves productivity but may decrease chewing time, rumen pH and milk fat concentration. Cows fed 20% DDGS had greater DMI, milk yield, milk protein, milk lactose and body weight gain.
* Replacing barley grain with wheat DDGS did not affect interval to first ovulation or conception rate to the first A.I. but did decrease the percentage of cows ovulating multiple follicles at the first ovulation. Feeding wheat DDGS in place of grain is associated with decreasing E intake.

Recommendations: Feeding wheat DDGS improves productivity but may negatively affect rumen pH when replacing barley silage.

Benefits to industry: DDGS is a feed by-product that can be used as an alternative protein source in the diet and can improve production.

KTT

* 3 MSc, 1 post doc, 3 undergraduate students and several technicians trained
* 3 published papers
* 6 abstracts
* 7 presentations