

Corn Germ from ethanol production as an energy supplement for lactating dairy cows. M. M. Abdelqader*, A. R. Hippen, and D. J. Schingoethe, K. F. Kalscheur, K. Karges and M. L. Gibson. South Dakota State University, Brookings. Dakota Gold Research Association, Sioux Falls, SD.

Sixteen multiparous cows (12 Holstein and 4 Brown Swiss, 132 ± 36 days in milk) were used in a replicated 4×4 Latin square design with a 4-week periods to determine the effects of feeding corn germ on dairy cow performance. Diets were formulated with increasing concentrations of corn germ at 0, 7, 14, and 21% of the diet DM. All diets contained 55:45 forage to concentrate ratio, where forage was 60% corn silage and 40% alfalfa hay. Diets were formulated to be similar in CP (17.2%), NDF (30.8%), and ADF (19.2%). Dietary fat increased from 4.6% in the control diet to 8.3% at the highest inclusion rate of corn germ. The addition of corn germ had no effect ($P > 0.05$) on DMI (27.8, 28.4, 27.5, and 26.8 kg/d). Feeding increasing concentrations of corn germ caused yields of milk (36.8, 37.8, 38.3, and 36.7 kg/d) and energy-corrected milk (38.7, 40.4, 40.4, and 37.4 kg/d) to respond in a quadratic fashion ($P < 0.05$). Milk fat concentrations (3.73, 3.81, 3.77, and 3.53%) and yields (1.36, 1.45, 1.44, and 1.28 kg/d), also responded in a quadratic fashion ($P < 0.05$) to increased concentrations of corn germ in the diets. Furthermore, milk fat yield decreased ($P < 0.05$) when cows were fed the 21% corn germ diet compared with other dietary treatments. Milk protein content decreased linearly (3.44, 3.35, 3.33, and 3.33%; $P < 0.05$) as the concentration of corn germ increased in the diet; however, milk protein yield (1.26, 1.28, 1.27, and 1.23 kg/d) was not affected ($P > 0.05$). Dietary treatments had no effect on feed efficiency, which averaged 1.44 kg ECM/kg DMI. Inclusion of corn germ at 7% and 14% of dietary dry matter resulted in increased milk and fat yields, however, inclusion of corn germ at 21% of diet DM decreased concentration and yield of milk fat. Germ removed from corn grain prior to ethanol production provides an alternative source of fat for energy in lactating dairy cows.

Key words: Corn Germ, Fat, Dairy Cows.