

Amino Acid Supplementation of High Wheat Concentrate Mixtures for Dairy Cows

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The availability of surplus wheat is a determining factor for the use of this grain as a livestock ration. However, to what extent wheat can be substituted for other grains and yet maintain productivity in lactating dairy cows has yet to be defined. In recent studies at OSU, milk yield declined in response to an increase in the amount of wheat in the ration. The amount of rumen undegradable protein (RUP) and, in particular, the amount of lysine was reduced in the rations wherein wheat was substituted for corn and some soybean meal. Whether or not this is responsible for a decline in milk yield when cows are fed rations containing a large amount of wheat remains to be determined.

A feeding trial is currently in progress to compare the performances of lactating dairy cows fed high wheat concentrate mixtures. The experimental rations are:

- a) Positive control (corn as principal grain)
- b) Negative control (high wheat concentrate mixture having low RUP and low rumen undegradable lysine content)
- c) High wheat mixture with supplemental protected lysine⁴
- d) High wheat mixture with supplemental protected lysine and RUP equal to the positive control

The rations consist of 55% concentrate and 45% sorghum silage on a dry matter basis. A total of 24 cows in their second or greater lactation are used in a switchback trial with three periods of 4 weeks each. The cows are being fed individually in three portions at 8-hour intervals. Measurement criteria are: milk yield and composition, feed intake, weight change, body condition change, concentration of lysine and urea in blood plasma, ruminal fluid pH and volatile fatty acid concentration, and nutrient digestibility.

This study should provide information to increase the potential for using high levels of wheat in high energy rations for dairy cows.

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