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Carbs for transition cows

Could there be an alternative to high nonfiber carbohydrates rations for close-up cows?

By Kelly Smith and Tom Overton

The transition period is an important time for dairy farm profitability. How well cows make the transition from pregnancy to lactation helps determine their future reproductive performance and milk yield.

Because lactation makes a large energy demand on a cow, she mobilizes her body reserves to meet her energy needs. This, in turn, makes her vulnerable to metabolic disorders such as displaced abomasums, fatty liver and ketosis.

Typical feeding strategies include feeding close-up dry cows high amounts of nonfiber carbohydrates (NFC) from feeds such as corn meal. This diet helps cows' rumens adapt to a lactation ration that generally includes a large amount of starch-based NFC. Research indicates this feeding strategy may increase pre- and postpartum dry matter intake (DMI) and improve cows' ability to ward off metabolic disorders.

A different approach

Recent research has investigated including nonforage fiber sources (NFFS), such as beet pulp and soybean hulls, in the close-up ration. Researchers at Penn State reported that prepartum DMI was higher when cows were fed a prepartum diet in which part of the forage was replaced with NFFS.

Promoting intake by including NFFS may decrease cows' reliance on body fat stores and help to minimize metabolic disorders that plague the transition period. There is a strong correlation between pre- and postpartum DMI, and the relationship becomes stronger as cows approach calving. Alternative carbohydrate sources also provide dairies with more options to feed close-up cows without compromising performance.

We conducted research to determine whether replacing starch-based NFC with NFFS in the close-up diet would affect cow performance and metabolism. Cows received one of two prepartum diets:

1. Typical close-up diet where carbohydrates consist of NFC (40% of DM as NFC).

2. An experimental diet with the carbohy-



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drate portion based on NFFS (34% of DM as NFC).

Forage content of the two diets was similar, and we predicted they would supply similar amounts of energy and metabolizable protein. The diets differed in one way. The one with the carbohydrates based on NFC had higher starch content; the diet with carbohydrates based on NFFS had higher fiber content. Postpartum was the same.

The results

Our research indicates that feeding NFFS to close-up dry cows is just as effective as feeding NFC during the close-up period. Our results also draw attention to the fact that nutritionists may not need to base the concentrate portion of the close-up diet on NFC. Other conclusions of our research:

Carbohydrate source did not affect preor postpartum DMI.

There were no differences in milk yield or milk composition between the cows fed the different close-up diets.

Cows fed NFFS prepartum had higher blood-glucose concentrations during the pre- and postpartum periods and higher stores of glucose in their liver.

Both groups of close-up cows had exceptionally high prepartum DMI, averaging approximately 30 pounds per day.

Research points to feeding close-up diets of moderately higher concentrations of NFC (34 to 36%). Use a blend of starch-based NFC and NFFS as energy sources within the concentrate portion of the close-up diet.



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