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Optimizing the use of fibrous residues in beef and dairy diets

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0316 Optimizing the use of fibrous residues in beef and dairy diets. J. C. MacDonald*, G. E. Erickson, P. J. Kononoff, and T. J. Klopfenstein, *University of Nebraska, Lincoln.*

Increased corn prices over the past decade have altered land use away from traditional forage in favor of corn. Accordingly, beef and dairy producers have had to adopt non-traditional forage resources into their production systems, many of which have become available as a result of increased corn production. Byproducts of the wet and dry milling industries have been used to replace both corn and forage in beef and dairy diets. Byproducts containing corn bran have large amounts of readily digestible hemicellulose. The use of byproducts may increase milk production, ADG, and G:F in dairy, beef growing, and beef finishing diets, respectively. In beef finishing diets, byproducts allow for use of low quality forages or partial replacement of traditional forages with minimal losses in ADG or G:F by formulating for equal NDF concentrations. Corn residues have become more available due to increases in corn acres and yield. The individual plant components (i.e., husk, leaf, stem) vary in fiber digestibility (NDF digestibility estimates = 40.5%, 31.4%, and 0.6% \pm 0.8 for husk, leaf, and stalk, respectively). Selectivity for husks and leaves by grazing cattle likely improves their performance. New technologies that allow for selective harvesting of husk and leaf may result in a higher value feed product. Alkaline treatment is another technology that may improve the feeding value of residues. Concentrations of up to 20% harvested corn residue treated with calcium oxide may be included in finishing diets with an average of 2.3% reduction in G:F when diets contain 40% wet or modified distillers grains. Conversely, when untreated corn residues are included in similar finishing diets, G:F may be reduced by 20%. Calcium oxide treated residues included in beef growing diets increases DMI and ADG without significant improvements in G:F. Calcium oxide treatment of corn residues has been evaluated in dairy diets by replacing corn or corn silage with variable results. Harvesting corn silage rather than separate harvest of corn grain and residue may allow for greater total net energy per acre to be captured. The use of wet and modified corn milling byproducts enhances the use of corn silage in finishing diets. While G:F may be reduced, feeding greater concentrations of corn silage may be economical. Efficient use of non-traditional fiber sources, like corn milling by products and corn residue, are critical to the future viability of ruminant animal production.

Key Words: alternative fiber sources, corn milling byproducts, corn residue