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BYPASS PROTEIN FOR DAIRY CATTLE

The dairy cow has two sources of protein: Microbial and bypass. Microbial protein is produced by the microbes in the rumen. Bypass protein is the feed protein which escapes digestion in the rumen and is absorbed in the lower digestive tract. It was previously thought that ruminants were capable of producing all the amino acids needed from microbial protein.

That was probably true until improved genetics, nutrition and management resulted in production increases demanding more amino acids than microbial synthesis can produce alone. Manipulating the amounts of both microbial and bypass proteins is an effort to make more efficient use of the total protein available to the cow. If microbial synthesis is the only source of those amino acids, high producing cows may be operating on suboptimal levels of certain amino acids (likely lysine and Methionine) making maximum production unattainable. If those suboptimal amino acids can be supplied production should increase.

Merely increasing the amount of protein escaping degradation may not result in improved production. It must be digested in the lower digestive tract and provide the amino acids the cow needs for the intended function. Bypass protein values of many feedstuffs are not well defined. It is known that some proteins are protected naturally by heat during normal processing and have good bypass characteristics. This particularly true of porcine meat & bone meal and porcine flash dried blood meal which also have high lysine contents.

ADDED FAT IN DAIRY COW RATIONS

Adding fat, an energy-rich nutrient source, to the diet of high-producing dairy cows can help maintain high milk yields. If sufficient energy is not provided, cows may utilize body fat, losing 2 to 3 pounds of body weight per day in the first 100 days of lactation. Reductions in milk yield and fat tests can result. Ketosis may also develop and reproductive performance may decline.

Both animal fats and vegetable oils contain fatty acids and are comparable in energy value, but they differ in composition, affecting how the body is able to use the energy. The difference in form also affects their handling characteristics as feed additives. Basically, at room temperature, oil is a liquid and fat is a solid or semi-solid. Animal fats, such as tallow and lard contain relatively large amounts of saturated fatty acids that are more efficiently used than are unsaturated fats. Vegetable oils such as soy and corn contain unsaturated fatty acids that can alter production of volatile fatty acids (VFA) in the rumen and decrease fiber digestibility, which can lower fat test and feed utilization. Fish oils are also highly unsaturated and can lower fat test and rumen digestion, but are not commonly used in the Midwest.

Cows in early lactation will usually show the greatest response to added fat. Be sure to maintain adequate levels of fiber, increase calcium levels, increase bypass protein and gradually increase fat over 2 to 3 weeks to reach recommended levels.

REF: Illinois-Iowa Dairy Guide, No 209.

For More Information Contact:

**Hormel Foods Corporation
Feed Division
1 Hormel Place
Austin, MN 55912
PH: 800-533-2228**

Website: www.hormelfeeds.com