Urea in Liquid Feeds

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Urea is added to liquid feeds for two reasons. Foremost, urea provides ammonia nitrogen which is metabolized by rumen microbes to make true protein. The true protein is digested in the intestinal track and used by the cow. Microbial growth also enhances the digestion of fiber and other nutrients consumed by the cow. Urea will cause cattle to increase their intake of low quality roughages like frosted perennial grasses and even saw palmetto.

Secondly, urea is used in liquid feeds to control intake. That is why a 16 to 20% crude protein liquid supplement is usually consumed by cows at a rate of 4 to 6 pounds per head per day and a 32 to 36% crude protein liquid feed is usually consumed at a rate of 1 to 3 pounds per cow per day.

Research studies have shown that the quantity of urea converted into true protein by rumen microbes is directly related to the energy level of the diet. Cattle fed high energy diets containing corn or other grains can utilize 0.20 to 0.30 pounds of urea daily. Cattle fed moderate energy diets such as silages can utilize 0.15 to 0.20 pounds of urea daily. Cattle offered a low energy diet like bahiagrass pasture in the winter can utilize 0.10 to 0.15 pounds of urea daily.

Generally, the quantity of urea needed in a liquid feed to control supplement intake at a specific rate by cows grazing tropical grass pastures exceeds the amount of urea effectively utilized by rumen microorganisms. For example, a 16 to 20% crude protein liquid feed consumed at 5 pounds per cow per day provides 0.20 to 0.25 pounds of urea, while 0.10 to 0.15 pounds of urea would be utilized. Likewise, a 32 to 36% crude protein liquid feed consumed at 2 pounds per cow per day provides 0.20 to 0.23 pounds of urea, while 0.10 to 0.15 pounds of urea is utilized.

The excess urea is not very expensive and is needed to control liquid feed intake. The question often asked, "will these levels of urea cause toxicity problems?" The answer is; if consumed at proper levels, stated above, there is no problem with most molasses-urea formulas. In fact, cows can consume relatively high levels of urea if they are adapted to urea intake over an extended period of time.

Urea toxicity usually occurs when hungry cattle, not adapted to urea, consume large
amounts of urea-containing feed over a short period of time. It is important to be cautious when first offering cattle any free-choice supplement containing medium to high levels of urea. This caution is especially important with cattle that have been poorly nourished immediately prior to offering any urea-containing supplement.

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