FUZZY AND EASIFLO® COTTONSEED PASSAGE THROUGH
THE DIGESTIVE TRACT OF LACTATING COWS
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TAKE HOME MESSAGE

- Whole linted (fuzzy) and EasiFlo® cottonseeds passed through the digestive tract of lactating cows in a similar manner. Cows extensively utilized both forms; only about 2% of the cottonseeds consumed passed to the feces intact in a 72-hour period.

INTRODUCTION

By coating cottonseeds with a small amount of feed-grade cornstarch, Cotton Incorporated (Cary, NC) developed a product (EasiFlo® cottonseed) thought to have the same nutritional benefits of whole linted (fuzzy) cottonseed but with improved handling characteristics and a higher storage density. Research at the Univ. of Tennessee suggested that EasiFlo® cottonseed contained the same nutrients as fuzzy cottonseed but improved dry matter intake. At Texas A&M Univ., researchers found that 11% of whole acid-delinted cottonseed passed through the digestive tract of lactating Holstein cows without being degraded. Less than 1% of fuzzy cottonseed reached the feces intact. They assumed that fuzzy cottonseeds stratified in the rumen contents, were regurgitated with the forage, and were chewed during rumination; whereas, a significant portion of the acid-delinted cottonseeds did not do so. Our objective was to determine whether fuzzy or EasiFlo® cottonseeds differed significantly in their passage through the digestive tract.

MATERIALS AND METHODS

Two mid-lactation Holstein cows of similar age and size were used. They were initially fed a diet that did not contain cottonseed. For two or three days prior to the experiment, the cows were fed in the morning as usual but feed that remained two hours later was removed and weighed. The afternoon feeding followed the normal procedure. On the day of the trial, cows again had access to their morning feeding for two hours. This procedure induced a greater appetite for the afternoon feeding. At the afternoon feeding, cows were given 20 to 25 pounds of their normal diet that also contained 3.3 pounds of either fuzzy or EasiFlo® cottonseed. After two hours the remaining feed was again removed and weighed; the procedure resulted in the cows having consumed about 15,000 seeds. The normal totally mixed diet (without cottonseed) was then presented and fed regularly thereafter. The cows were provided with free access to water throughout the experiment.

Feces voided by the animals over a 72-hour period were weighed and sampled at defecation. Samples of feces were washed individually through a screen and the number, and form, of cottonseeds passed was recorded. Fecal collection began 12 hours after the cows were fed the cottonseeds. This procedure ensured that most of the cottonseeds were accounted for, either by
digestion or passage. The experiment was repeated with each cow receiving the opposite form of cottonseed. After soaking in water for 44 hours, the specific gravity of fuzzy and EasiFlo® cottonseeds was also measured.

RESULTS AND DISCUSSION

Composite results of the experiment are graphed in Figure 1. No appreciable difference was apparent in the kinetics of fuzzy and EasiFlo® cottonseed passage through the digestive tract of lactating cows. The cows extensively utilized both forms of cottonseed. Only about 2% passed to the feces intact over a 72-hour period.

![Figure 1. Cottonseed passage.](image)

After soaking in water, fuzzy and EasiFlo® cottonseeds had specific gravities of 1.16 and 1.19. Particles with specific gravities in this range are expected to be retained in the rumen longer and ruminated more extensively than slightly more dense (1.3 to 1.4) digesta particles (those having lower fat contents). Gas production during fermentation would be expected to reduce the functional specific gravity of cottonseeds, further increasing their likelihood of degradation.

The passage and specific gravity results indicated that both fuzzy and EasiFlo® cottonseeds stratified in the rumen contents, were regurgitated with the forage, and were chewed during rumination. Chewing during eating also contributed to extensive utilization of both forms of whole cottonseed.