

Title Optimizing utilization of corn silage nutrients through improved harvest
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Abstract

A corn silage-shredding harvester was modified to improve crop throughput. A new spout was constructed and several components were added throughout the harvester. A corn field was harvested using the shredding harvester and a corn chopper. Three treatments of corn silage were collected: shredded (SCS), 0.008 m (0.313 in) theoretical length of cut (TLC) chopped (CCS), and 0.019 m (0.750 in) TLC chopped with roll processing (CPS). A nine-week feeding trial was conducted with six lactating dairy cattle. Some of the results compared SCS to CCS or CPS; other comparisons were made with CCS and CPS combined (BCS). The results of the experiment show that DMI of SCS and BCS was indifferent ($p < 0.05$). Chewing time for cows consuming SCS increased almost 5% and long particle consumption increased 485% over BCS ($p < 0.05$). The variance for rumen pH was lower with SCS, but not significantly lower than the rumen pH variance for the CCS or CPS rations ($p < 0.05$). Finally, there was no significant difference between milk fat and protein levels for the different treatments ($p < 0.05$). Consequently, SCS allowed cows to eat greater amounts of long particles and increase chewing activity without sacrificing DMI, milk production, or milk quality.