

In Situ Degradation Characteristics of Sorghum Silage Treated with Fibrolytic Enzymes

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Sorghum (*Sorghum bicolor* L.) silage utilization in beef and dairy cattle diets has increased in recent years due to the increased water efficiency and acceptable feeding values when compared to corn silage. The objective of this study was to determine if fibrolytic enzymes would improve *in situ* disappearance of photoperiod sensitive sorghum and hybrid silage varieties with or without the brown midrib (BMR) trait: forage sorghum (FS), BMR forage sorghum (FS-BMR), sorghum-sudangrass (SS), and BMR sorghum-sudangrass (SS-BMR). The experiment was a 4 × 2 factorial design with two replicated periods. Each sorghum silage variety (n=4) was grown, harvested, chopped, and treated with water (control) or a fibrolytic enzyme prior to the ensiling process. Sorghum silage samples were incubated *in situ* for 0, 4, 8, 16, 24, 48, or 72 h to determine rate and extent of DM disappearance. Sorghum silage yields were low due to drought. SS yielded the most (P < 0.01; 5.3 Mg of DM/ha) compared to SS-BMR (3.8 Mg of DM/ha), FS (3.8 Mg of DM/ha), and FS-BMR (3.7 Mg of DM/ha). All silage reached a pH between 3.1 and 3.5, suggesting that proper ensiling did occur. There were no interactions between treatment and forage variety for DM (P ≥ 0.21) in the *in situ* trial. Non-BMR silage had a greater potentially degradable fraction (P < 0.01); however, BMR varieties had a greater wash loss (A; P < 0.01) and extent of digestion (ERD; P < 0.01). Enzyme treated forage also had a greater A fraction (P = 0.03) and ERD (P = 0.03). Selecting a sorghum variety containing the BMR trait or using a fibrolytic enzyme can improve silage degradation characteristics.