



In Situ ruminal degradation properties of the residue of two grain sorghum varieties

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Introduction

The long-standing drought and continually dwindling groundwater resources in the Texas High Plains (THP) has resulted in growers more aggressively seeking alternative production options and have indicated an increasing interest in growing sorghum. Grain sorghum is an attractive crop for the THP thanks to its water frugal nature, and is therefore a viable option for farmers wishing to diversify cropping operations in this region. The majority of research with sorghum in the region has focused primarily on grain yields, with limited to no information regarding the value of the residue for grazing. Additionally, newer varieties of grain sorghum have been developed which provide greater amounts of grain production under limited irrigation, but information is lacking on their impact on residue yield and quality when grazed. The “stay-green” trait has been incorporated into some hybrids because of its greater drought tolerance. This trait also shows longer maintenance of green leaves after grain ripening. Delayed leaf senescence potentially maintains greater protein and digestibility levels in the crop residue compared with conventional types.

Objectives

To determine differences in ruminal *in situ* degradation of two grain sorghum varieties (stay-green and traditional)

Procedures

Procedures were conducted at the Texas Tech University Burnett Center, in accordance with an approved Animal Care and Use Protocol. Six cannulated steers (722 ±44 kg) fed chopped grain sorghum residue (either traditional or stay-green), for *ad libitum* intake. Steers were adapted to diets for 10-d. Samples of either the traditional or stay-green residue were ground to pass 2mm screen and 5g of sample were placed in Dacron bags for ruminal incubation for 0, 3, 6, 12, 24, 36, 48, and 72 hr. Following the incubation period, bags were rinsed with water to remove particles attached to bags. Bags were then dried at 55°C for 72 hr. Residue was analyzed for DM, NDF and ADF.

Results

In Situ ruminal ADF degradation of the residue of two grain sorghum varieties

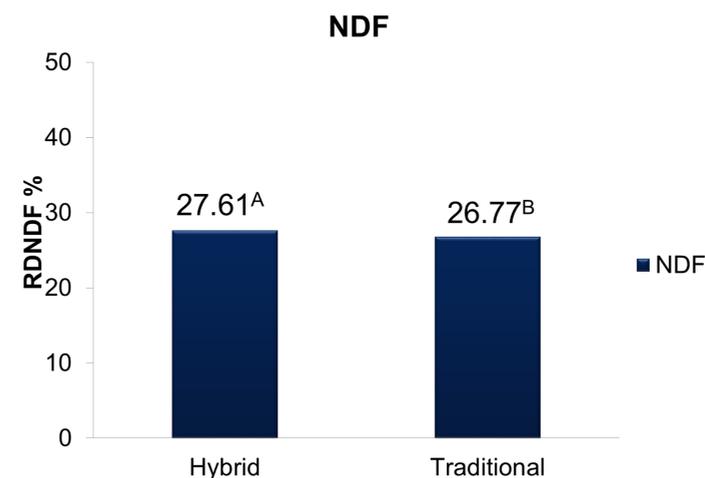
	Traditional	Hybrid	SEM
A fraction, %	9.88 ^A	6.85 ^B	0.616
B fraction, %	53.05	58.03	1.469
C fraction, %	37.06	35.12	1.784

^{A, B}means within a row with different superscripts differ $P \leq 0.05$.

In Situ ruminal NDF degradation of the residue of two grain sorghum varieties

	Traditional	Hybrid	SEM
A fraction, %	11.83 ^A	11.97 ^B	0.704
B fraction, %	50.44	52.2	1.876
C fraction, %	37.73	305.83	1.797

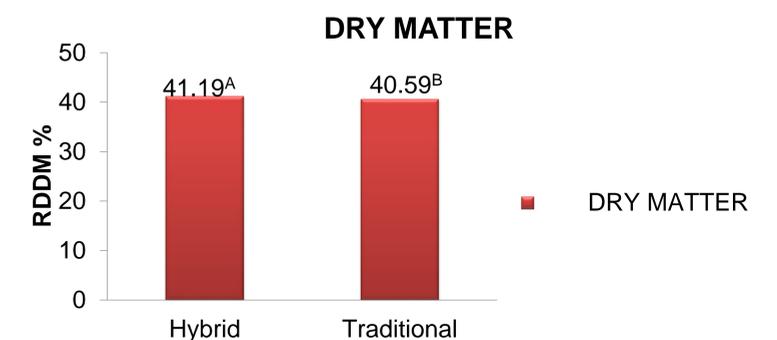
^{A, B}means within a row with different superscripts differ $P \leq 0.05$.



^{A, B}means the differences between traditional and hybrid $P \leq 0.05$.

In Situ ruminal Dry matter degradation of the residue of two grain sorghum varieties

	Traditional	Hybrid	SEM
A fraction, %	25.78	26.17	0.631
B fraction, %	39.18	39.18	1.267
C fraction, %	35.04	34.65	0.924



^{A, B}means the differences between traditional and hybrid differ, $P \leq 0.05$.

Conclusions

- A fraction disappearance of ADF and NDF was greater for traditional vs. hybrid.
- Potentially degradable DM and NDF were greater for the hybrid vs. traditional, indicating the hybrid variety may be higher in quality for livestock feed.
- Differences in ruminal disappearance rates of residue suggest that variety can influence quality. More work should be performed to more clearly delineate these differences and implications for animal performance.

