

# Stockpiling Native Warm-Season Forage Grasses in the Mid-South



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## Introduction

Increasing drought severity and frequency (IPCC 2014) will challenge cow-calf producers in the mid-South. Native warm-season grasses (NWSG) provide an economically advantageous alternative forage source for mid-summer and drought periods. However, NWSG grow slowly during fall and require a rest period to build energy reserves and resist cool season weed encroachment. Utilizing this pre-existing forage accumulation as stockpiled forage for winter may provide a secondary use for NWSG.

Prior research shows that fall stockpiling can be a profitable tool for cow-calf producers managing tall fescue pastures. However, there is limited research on stockpiling native warm-season grasses in the Mid-South.

## Methods

The experiment occurred at the Middle Tennessee AgResearch and Education Center near Spring Hill, TN during 2016-2017. The array was established in 2008 and consists of 24 randomly assigned 1.2 hectare paddocks seeded into three forage types: tall fescue (KY-31), switchgrass (Alamo), and a 1:1 mixture of indiangrass (Rumsey) and big bluestem (OZ-70). Fall stockpiling began after clipping in late July. Two to three Angus heifers grazed each paddock depending on forage availability from January until April. They were supplemented with 0.16 kg CP heifer<sup>-1</sup> day<sup>-1</sup> through either fishmeal or dried distiller's grains (McFarlane 2016).

Forage variables were measured in stockpiled paddocks during the 2016 winter grazing period (January-April) and the 2016 and 2017 fall stockpiling period (August-January). Forage samples were weighed to determine available forage and analyzed for forage nutrient values using NIR spectroscopy (Grass Hay Equations, NIRS Forage & Feed Testing Consortium).

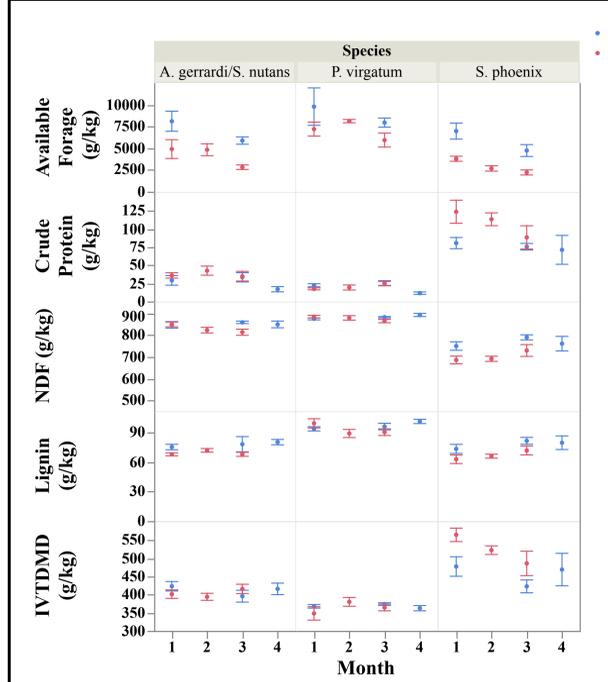
Data was analyzed using JMP Pro 14 Mixed Models with Tukey's least significant difference between means ( $\alpha = 0.05$ ) in SAS software (Cary, NC).



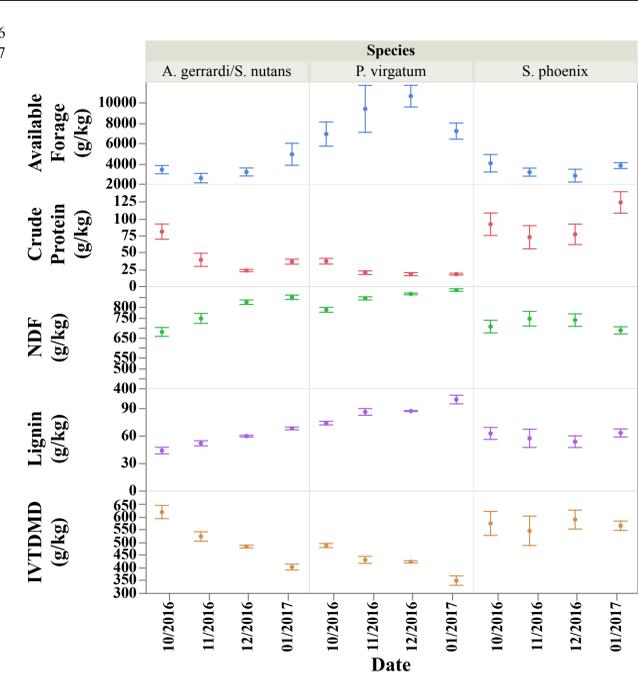
Image 1. Pasture array at the Middle Tennessee AgResearch and Education center, Spring Hill, TN

## Results and Discussion

The 2016 stockpiling period began with a severe drought, potentially resulting in atypical results. Significant nutritional loss occurred in paddocks during fall stockpiling, but did not continue after January. At the end of stockpiling and during grazing, forage crude protein and NDF was superior in tall fescue compared to NWSG paddocks. Big Bluestem/Indiangrass had comparable lignin and IVTDMD to tall fescue paddocks and superior dNDF48 content (not pictured; 37g kg<sup>-1</sup> vs 32g kg<sup>-1</sup>). Switchgrass maintained higher available forage mass during the stockpiling and grazing period.



Graph 1. Forage quantity and quality variables during the winter grazing period of 2016 and 2017. Error Bars are one std. error from the mean.



Graph 2. Forage quantity and quality variables during the 2017 fall stockpiling period. Error Bars are one std. error from the mean.



Above: Stockpiled Switchgrass and heifer, January, 2016. Below: Tall Fescue and Switchgrass during 2017 drought (Oct.).

## Conclusion

Stockpiling warm-season grasses for winter forage may provide a secondary use for these pasture grasses. Despite low protein in senesced material, variation in fiber digestibility between NWSG exist. Further research could determine how to optimize this low cost, high volume forage resource.

## References

IPCC. 2014. *Climate Change 2013: The Physical Science Basis: Working Group I Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.

McFarlane, Z. D., J. D. Hobbs, E. R. Cope, R. L. Nave, and J. T. Mulliniks. 2016. "Heifer Development Using Stockpiled, Dormant Native Forages Delays Gain without Altering Reproductive Performance." *Journal of Animal Science* 94: 607-8.

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## Utilizing high-fiber forage

McFarlane et. al. (2016) found that weekly protein supplement improved animal intake of stockpiled NWSG and resulted in equivalent spring pregnancy rates for first year heifers developed on NWSG and tall fescue (right).

