

UA Division of Agriculture

Fall Forage Production Demonstration

Using warm season annuals to fill forage production gaps in Arkansas

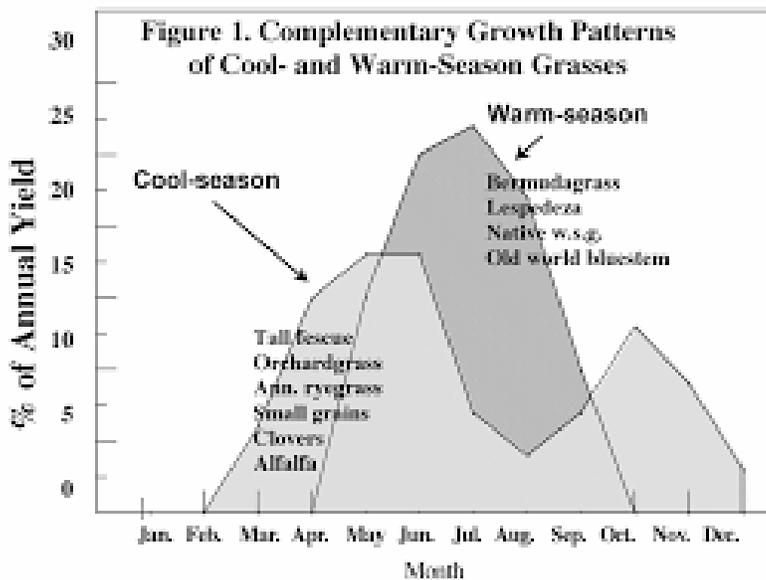
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Background:

Livestock production in Arkansas is primarily pasture based. The two predominant forages grown in the state are fescue and Bermuda grass. Historically Extension efforts have focused on helping producers increase the growth of these two forages and find creative ways to extend the production of these forages into periods of the year that are outside of their normal growth curves.

Dr. John Jennings and Kenny Simon, Extension forage specialists, were intrigued with the idea of using temporary forages to fill the gap in production of these common forages grown in Arkansas. Along with County Agents from multiple counties in livestock production areas of the state, they designed a series of forage production demonstrations to test the ability of late planted warm season annual forages to help producers fill the production gaps of fescue and Bermuda.



The predominant forages grown for livestock production in Arkansas produce the majority of their dry matter production in either spring or summer. This leaves many livestock producers looking for ways to increase forage production in the fall.

Methods:

Demonstrations were conducted at the UA Farm in Fayetteville and the Research Station at Hope. Warm season annual forages were planted according to Extension seeding recommendations and fertilized according to University soil test recommendations in late summer. These forages were evaluated for total dry matter production in late fall. Forages evaluated included corn, pearl millet, browntop millet, and sorghum sudan varieties.

Planting and harvesting dates were: 2017- planted August 23, harvested October 20; 2018- planted August August 30, harvested October 11; 2019 – planted August 29, harvested October 18.

Forage Species	Seeding rate/acre (lbs/acre)	Seed cost per acre
Sorghum Sudan	25	\$30
Pearl Millet	25	\$36.50
Browntop Millet	25	\$20
Corn	50	\$50-60 (depending on variety)

These figures are from the 2018 demonstrations.

Results:



Plots were harvested using a sickle mower, raked, weighed as-cut, and then sub samples were dried to adjust to dry matter produced per acre.

In 2018 the sub samples were also evaluated for forage quality both before and after the first frost.

Results of those tests were:

Forage	Before Frost (October 11, 2018)		After Frost (November 30, 2018)	
	Crude Protein	TDN	Crude Protein	TDN
Sorghum Sudan	16.2	62.1	14.5	62.4
Pearl Millet	17.5	62.2	11.8	61.1
Browntop Millet	17.2	60.1	13.1	51
Corn (3 varieties evaluated)	16.2-18.3	63.2-65.5	12.9-15.1	62.2-65.4



Browntop Millet



Yellow Dent Corn



Pearl Millet



Sorghum Sudan

Average Dry Matter Production over 3 years was as follows:

Forage	Dry Matter Production (lbs/Acre)
Browntop Millet	2398 (Average of 2 yrs)
Pearl Millet	3502 (Average of 3 yrs)
Sorghum Sudan	2478* (Average of 3 yrs)
Corn	2122*(Average of 3 varieties, 3 years)

- In 2019, sorghum sudan plots were devastated by sugar cane aphids. Average of the previous 2 years would have been nearly 3,500 pounds dry matter/acre produced.
- Corn varieties varied in production. Varieties used included Reid's, Trucker's, and BMR grazing corn. Deer corn was shown to be an unreliable seed choice.

Costs of Dry Matter Production in 2018

Variety	Cost per ton of Dry Matter Production
Browntop Millet	\$70
Pearl Millet	\$62
Sorghum Sudan	\$60
Corn	\$86

Observations:

- Early planting (August in Northern Arkansas) is critical.
- Sod suppression is a must if drilled into an existing sod. Prepared seedbeds yielded the greatest results.
- Soil insects may be a factor in the dry matter production of corn and if so, a treated seed is recommended.
- Sugar cane aphids can greatly reduce sorghum sudan production.
- Fertilization with 50-60 pounds of nitrogen per acre is necessary.
- Proper drill set up and calibration is important.
- Use caution if grazing sorghum sudan varieties after frost.

Conclusion:

These forages which are typically planted in early summer for summer forage production have great potential for fall dry matter production as well. Several factors will affect the success of the individual forages, but these demonstrations have shown that late summer planted warm season annual forages can provide high quality forage for grazing or harvesting in the fall.

Pearl millet tended to be the most reliable in production from year to year.

Browntop millet has great production potential in as little as six weeks but does not have the total production potential of the other forages evaluated.



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