




**Native warm-season grasses for bioenergy and forage**



Dr. Jason de Koff  
Associate Professor – Agronomy and Soils

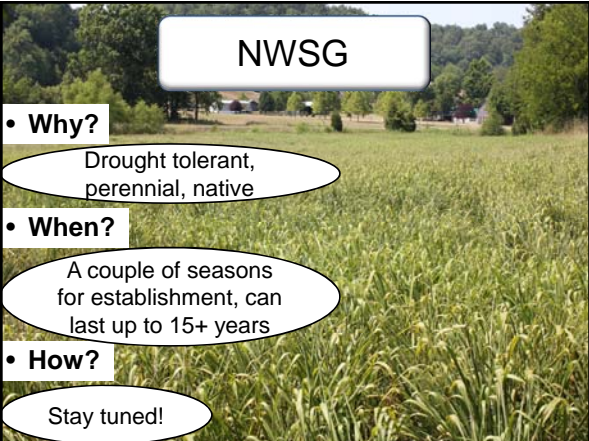
**NWSG**

- Who?
  - Switchgrass, big bluestem, little bluestem, indiagrass, eastern gamagrass
- What?
  - Tall-growing bunch grasses
- Where?
  - Here!





**NWSG**


- **Why?**
  - Drought tolerant, perennial, native
- **When?**
  - A couple of seasons for establishment, can last up to 15+ years
- **How?**
  - Stay tuned!




**Big Bluestem**

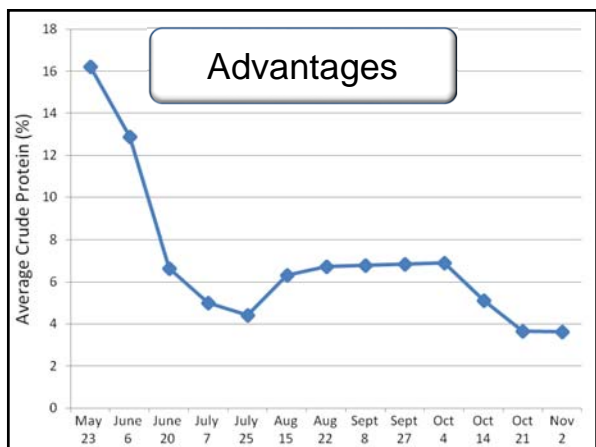
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University of Missouri

NRCS, Texas





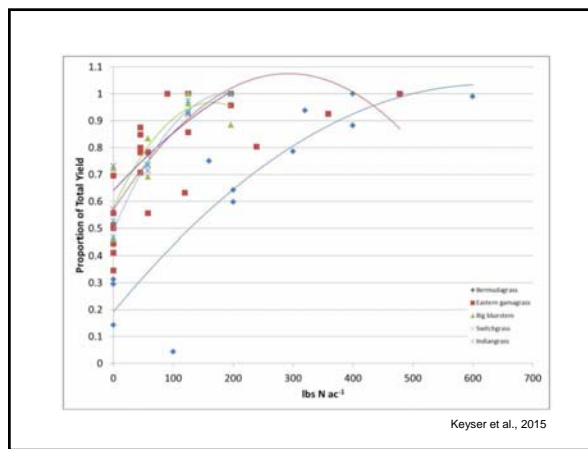
	Lowland (Alamo) Switchgrass	Big bluestem indiagrass blend
	Early Boot Stage	
Yield (T/ac)	3.5	2.1
CP (%)	10.7	11.5
NDF (%)	68.5	64.8
ADF (%)	40.3	39.2
TDN (%)	56.6	57.9
	Early Seedhead Stage	
Yield (T/ac)	5.5	2.8
CP (%)	8.7	9.3
NDF (%)	73.0	66.8
ADF (%)	43.5	40.2
TDN (%)	52.9	56.7

Table 1. The percentages and ranges of dry matter (DM), crude protein (CP), total calcium (Ca) and phosphorus (P) of Arkansas hays (DM basis).

Hay	Number Samples <sup>1</sup>	DM Avg <sup>2</sup> (Range) <sup>3</sup>	CP Avg (Range)	TDN Avg (Range)
Alfalfa	364	88 (63-95)	18.5 (6.1-33.1)	61 (37-78)
Bahiagrass	173	88 (72-94)	9.6 (4.1-17.6)	57 (46-77)
Bermudagrass	2,979	87 (61-97)	12.4 (3.7-23.7)	60 (40-81)
Bluestem	57	87 (66-94)	9.4 (2.6-15.6)	56 (37-71)
Bromegrass	29	88 (79-93)	10.7 (3.9-27.4)	56 (50-65)
Clover	45	87 (68-93)	14.0 (6.1-21.3)	56 (31-66)
Dallisgrass	32	89 (80-94)	10.8 (6.3-20.4)	58 (42-79)
Fescue	906	87 (64-97)	11.2 (3.9-22.4)	54 (42-70)
Johnsongrass	123	85 (63-94)	11.0 (4.0-21.7)	62 (48-73)
Legume/grass mix	200	87 (63-94)	12.6 (5.6-26.6)	55 (41-71)
Mixed grass	2,376	87 (60-99)	11.1 (2.1-24.8)	53 (35-72)
Orchardgrass	147	87 (63-94)	12.5 (6.3-23.6)	57 (45-68)
Ryegrass			8 (3.9-26.7)	56 (45-68)
Sudangrass		Diet Nutrient Density, DM Basis	6 (2.5-20.2)	62 (42-83)
Wheat		CP	3 (4.4-19.4)	55 (38-68)
		TDN		

Beef cows, 11 mo. since calving (last 1/3 pregnancy) 7.7% 52.1%  
 Beef cows, 2 mo. since calving, 20 lb peak milk 10.9% 60.4%

Philipp and Jennings, 2015



### Advantages

- Wildlife friendly



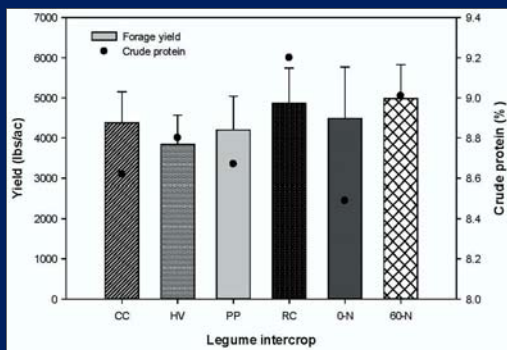
### Forage Quality

4-5 tons/acre for hay

1.5-2.5 lbs daily gain

Keyser et al., 2011a

### Interseeding Legumes



Ashworth et al., 2012

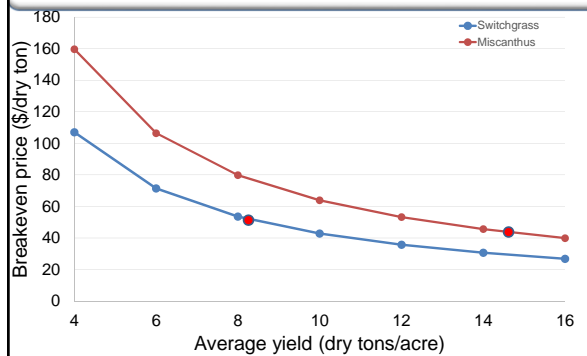
### Disadvantages



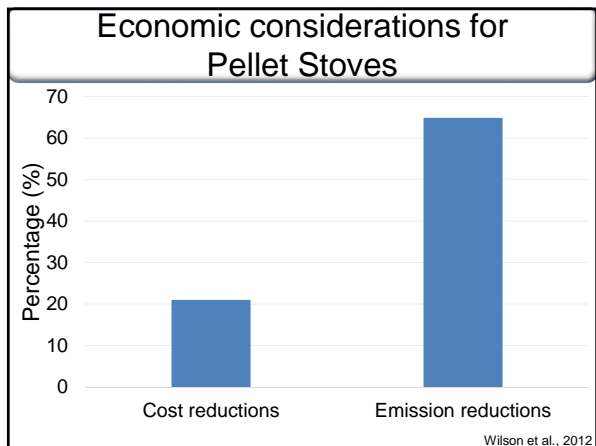
### Disadvantages



### Economic considerations for Ethanol



Adapted from Bansal et al., 2013



### Further information

Jason de Koff  
jdehoff@tnstate.edu  
615-963-4929  
Twitter: @TSUBioenergy

<http://www.extension.org/>