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### Our Forage Mindset

- Forage Type for Selection
- Establishment of Texas Forages
- Annual Pasture Maintenance
  - Fertilizer
  - Weed Management
- WHAT IS YOUR GOAL??

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### Forage Selection



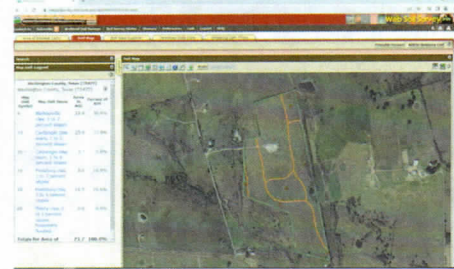
Soils



Environmental Conditions (rainfall and temperature)

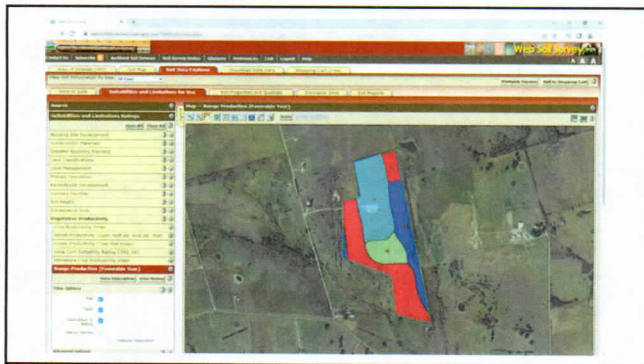
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### USDA NRCS Web Soil Survey



<http://websoilsurvey.nrcs.usda.gov>

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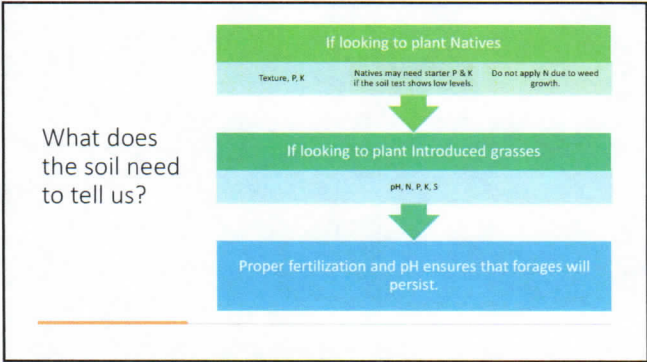
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Summary by Map Unit

Map unit symbol	Map unit name	Netting (pounds per acre per year)	Acres in AUI	Percent of AUI
9	Blountville clay, 1 to 3 percent slopes	5975	22.0	30.6%
19	Cherokee clay loam, 3 to 5 percent slopes	5125	25.0	33.0%
20	Carthage clay loam, 3 to 5 percent slopes	5125	3.7	5.0%
31	Freshburg clay, 1 to 2 percent slopes	4950	8.0	10.8%
32	Freshburg clay, 1 to 5 percent slopes	7235	14.5	19.4%
59	Winterville clay, 0 to 1 percent slopes, frequently flooded	6345	0.0	0.0%
<b>Totals for Area of Interest</b>			<b>73.7</b>	<b>100.0%</b>

**Description - Range Production (Favorable Year)**  
 Total range production is the amount of vegetation that can be expected to grow annually in a well managed area that is supporting the potential natural plant community. It includes all conditions, whether or not it is suitable for grazing animals. It includes the current and growth of leaves, stems, and tubers of woody plants. It does not include the increase in percent of trees and shrubs. It is expressed in pounds per acre of air dry vegetation. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. Yields are adjusted to a constant percent of air dry moisture content.  
 In areas that have similar climate and topography, differences in the soil and amount of vegetation produced on comparable acre usually related to the kind of soil. Effective management is based on the relationship between the soil and vegetation and water.  
**Soiling Options - Range Production (Favorable Year)**  
 Units of Measure: pounds per acre per year  
 Aggregation Method: Weighted Average  
 Component Retrieval Method: None Specified  
 File Break Rule: Integer  
 Interpretation Rule as Error: No

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## Soil Reports

**Soil Analysis Report**  
 Texas A&M AgriLife Extension  
 Department of Soil and Water Conservation  
 2025 S. Loop West  
 College Station, TX 77843-2479  
 979.244.4444 (ext. 2479)  
 Web site: <http://soiltesting.tamu.edu>

Sample received on: 04/20/23  
 Printed on: 04/20/23  
 Area Representative: M. J. ...

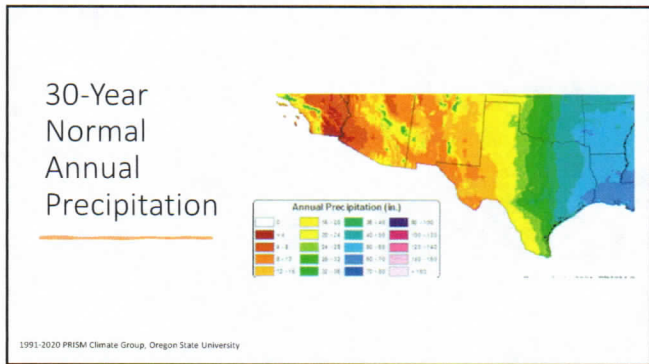
Analysis	Request	CL	SL	Units	Result	Units	Fertilizer Recommendation
pH	7.2				7.2		
Conductivity	187	100-200		µmhos/cm	187		
Nitrate-N	21	0-20	0-20	ppm	21		0 lbs N/acre
Phosphorus	23	0-20	0-20	ppm	23		0 lbs P/acre
Potassium	4.51	0-20	0-20	ppm	4.51		0 lbs K/acre
Sulfur	64	0-20	0-20	ppm	64		0 lbs S/acre
Zinc	34	0-20	0-20	ppm	34		0 lbs Zn/acre
Calcium							
Magnesium							
Boron							

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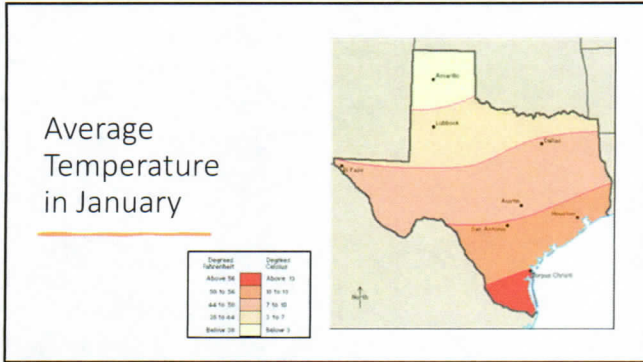
## Prepare to Plan

- Test soils early
  - Lime needs to be incorporated 3-6 months prior to planting.
  - P & K are not mobile and need to be incorporated 3 months prior to planting.
  - After a drought check MIN REQUIREMENT on soil testing form. This ensures recommendations won't be too heavy for stressed forages.

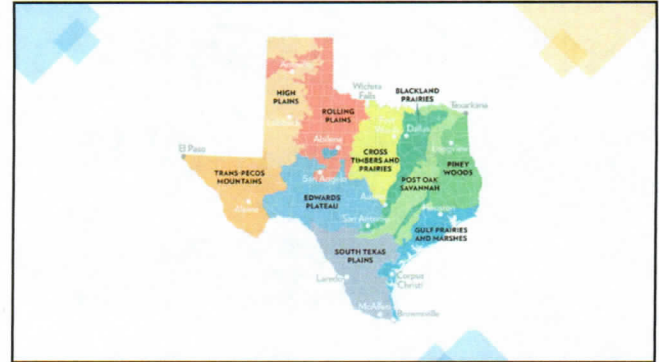
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## Selecting a Species????

### Forage Species for Texas

Vincenta Corbin-Olson and Larry A. Ballouso  
Extension Forage Specialist, Oregon, TX, and State Extension Forage Specialist, College Station, TX

From ARS Agricultural Extension Service  
Department of Soil and Crop Sciences

Forage and forage-based livestock production enterprises are big business in the US. Latest available USDA statistics (2015) indicate hay harvested in the US was worth approximately \$29.21 billion (Table 1). This makes hay third in overall value among agricultural crops grown in the US, only corn and soybeans exceeded the value of hay. The value of all cows and calves in 2012 was estimated at approximately 49.2 billion dollars with the gross income from beef cattle estimated at \$95 billion the same year.

A large majority of cattle and hay produced in the US is contained in 14 western states. It should be obvious that forages play a major role in the economies of these states, including Texas. While winter-sown perennial grasses provide the base of most operations, cool-season forages also play a significant role in both cow-calf and stocker calf production systems. The main species adapted for use as grazable forages or hay crops in the south, with special emphasis on Texas, will be discussed in the following sections.

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### Cool Season Grasses and Legumes

- Perennials
  - High quality
  - Not many in Texas
  - They persist year after year once established.
- Forages
  - Tall Fescue
  - Texas Winter Grass
  - Bluegrass
  - Clovers and vetches
    - Need P and K
    - Lime in acid soils
- Annuals
  - High quality and production
  - Planting and fertilizing
  - Establish rapidly, can graze sooner, highly productive for one season.
- Forages
  - Rye and ryegrass
  - Wheat
  - Oats
  - Barley
  - Triticale

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### Warm Season Plants

- Perennials
  - Tend to be best grasses
  - Long season
  - No replanting
  - Lower quality in summer
- Grasses
  - Bermudas
  - Bahia grass
  - Buffelgrass
  - Dallisgrass
  - Johnson grass
  - Klein grass
  - Guinea grass
  - Vasey grass
- Natives and native bluestems
- Old world bluestems
- Annuals
  - Warm season
  - High growth
  - Planting and fertilization annually
- Cropped
  - Sudans and haygrazers
  - Legumes
    - Cowpea
    - Soybean
    - Peanuts

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### Introduced Warm Season Perennial Grass

- Bermudagrass – has the greatest fertility requirement
  - Seeded or sprigged
  - “Jiggs” susceptible to leaf disease
  - “Tifton 85” out yields, is more drought tolerant, and greater nutritive value than “Coastal”
  - Seeded lines are generally sold as blends
- Kleingrass
  - Fairly drought tolerant and productive in low fertility conditions
  - Seeded
  - Use for cattle only

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### Introduced Warm Season Perennial Grass

- Bahiagrass
  - Most productive on sandy soil with pH from 5.5 – 6.5 and requires less fertilizer than bermudagrass with a longer growing season.
  - Seeded
  - Manage seedheads if grazing pregnant mares.
- Old World Bluestems
  - Tolerate dense soils and are extremely drought hardy and cold tolerant.
  - Seeded
  - Several ecotypes: Angleton, KR, Kleberg (invasives)

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### Texas Native Warm Season Perennial Grasses


- Marketed by region due to ecotype differences
- List of commonly available grasses:
  - Bluestem (little, big, silver)
  - Grama (blue, hairy, Texas, slender)
  - Sideoats grama
  - Lovegrass
  - Dropseed
  - Buffalograss
  - Indiangrass
  - Swithgrass
  - Sprangletop
  - Curly Mesquite



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## Preparing the Seedbed

- Eliminate existing vegetation
  - Plow/Disk
  - Herbicide
- Clean, FIRM seedbed
  - Adult footprint ¼ inch deep
- Drill planting increases seed-soil contact.
- Cultipack after sprigging.
- Increase seeding rate if broadcasting.



Credit:  
www.ipmcenters.org

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## Eliminate Weed Competition

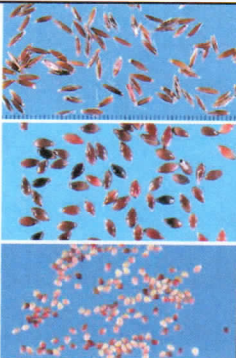
- Combination of tillage/mowing and broad-spectrum herbicide
  - Repeat glyphosate more effective than imazapyr + glyphosate
- Look on herbicide label for:
  - Plant back interval
  - Rotational crop restriction
  - Minimum rotational crop planting interval from last application
- Glyphosate 7 days before tillage
- Glufosinate 180 days for forage crops
- Imazapyr 12 months
- Consider preemergent options



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## Seeding Rate and Depth

- Seeding Rate
  - Generally, the smaller the seed the lower the seeding rate.
  - Most seed companies will provide a seeding rate recommendation.
- Seeding Depth
  - Generally, the smaller the seed the shallower the depth.

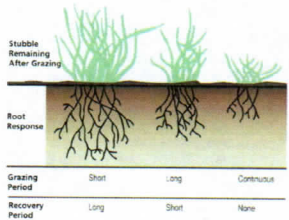


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## Grazing Management Following Planting

**Stubble/Pasture Health**

- DELAY GRAZING POST PLANTING!!!
  - Grazing animals can easily pull out seedlings.
  - Root growth decreases.
  - Bare ground gives weeds the opportunity to take over.
  - Use post-emergent herbicides when necessary.



Stubble Remaining After Grazing	Short	Long	Continuous
Root Response	Short	Long	Continuous
Grazing Period	Short	Long	Continuous
Recovery Period	Long	Short	None

<https://cslablog.extension.oregonstate.edu/vml3022.html>

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### Suggested Forage Residue Height for Optimum Animal Performance and Stand Persistence

Species	Residue Ht (in)	Utilization (%)
Alfalfa	4 - 6	50
Annual Ryegrass	3 - 4	75
Arrowleaf Clover	3 - 4	50
Bermudagrasses	2 - 3	75 <sup>1</sup>
Oats <sup>2</sup>	4 - 6	75
Old World Bluestems	3 - 4	65
Midgrass Native Range	4 - 6	50
Wheat <sup>2</sup>	4 - 6	75
White Clover	2 - 3	75

<sup>1</sup>Higher with adequate rain and fertilization. <sup>2</sup>Can be grazed shorter in Spring.

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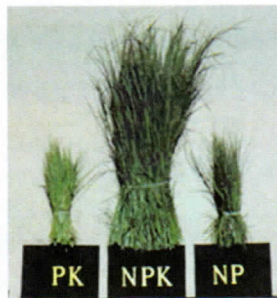
### Recommended Initial and Ending Grazing Heights and Recovery Time

Forage Species	Beginning Ht (in)	Ending Ht (Residual) in	Recovery Time (d)
Annual Ryegrass	8	3	14-45
Old World Bluestems			
Wheat, Oats and Rye	8	4	14-45
Alfalfa	8	2	24-32
Sudangrass Hybrids	18	8	14-30
Johnsongrass	22	8-10	30-50
Warm Season Grasses	18	8	30-50
Common Bermuda	8	2	14-45
Hybrid Bermudas	8	3	14-45

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### Fertilizer Maintenance

- Soil testing:
  - Hay fields – every year
  - Grazing pastures – every 3-4 years
- Fertilize according to soil test
- N – need approximately 50lbs of N to produce 1 ton of high protein, warm season perennial grass hay.
- P – Common symptom of low phosphorus is declining forage. In an average hay production 14lbs of P is removed for each ton of dry matter harvested.
- K – Potassium is for persistence! Necessary nutrient for water transport. In an average hay production 45lbs of K is removed for each ton of dry matter harvested. Removal rate in grazing is nearly 0.
- P&K – Necessary for root development and winter survival!



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### Fertilization Strategy

- Recommendation from forage agronomists
  - 50lbs of N
  - 15lbs of P
  - 40lbs of K
  - 8lbs of S
    - Per acres for 1 ton of bermudagrass hay
    - This is about what that ton of hay will strip from the forage system.



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### Weed Control in Forages

- Increase grazable acreage.
- Increase total forage production.
- Eliminate noxious weeds that pose a threat to livestock.




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### Herbicide Reminders

- Weed ID is critical for chemical selection and application timing.
- Scout for weeds regularly.
  - Herbicides are more effective on younger weeds.
- Calibrate your sprayer.
  - If it applies too little you won't get the control you're looking for.
  - If it applies too much you may exceed label recommendations which indicates unintentional illegal activity.
- The label is the law!

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### 6" Coastal Bermudagrass (2206#/ac)



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6" Kleingrass (2229#/ac)



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20" Kleingrass (3880#/ac)



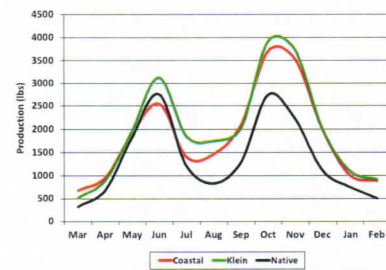
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20" Native Grass (3348#/ac)

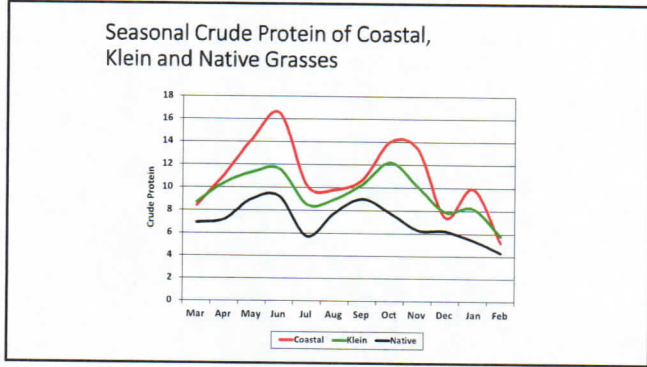


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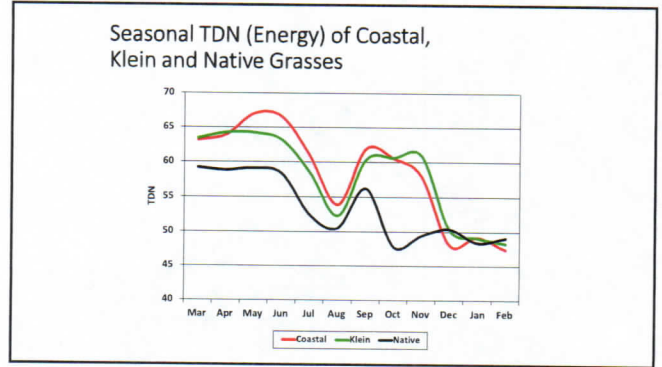
Seasonal Production of Coastal, Klein and Native Grasses



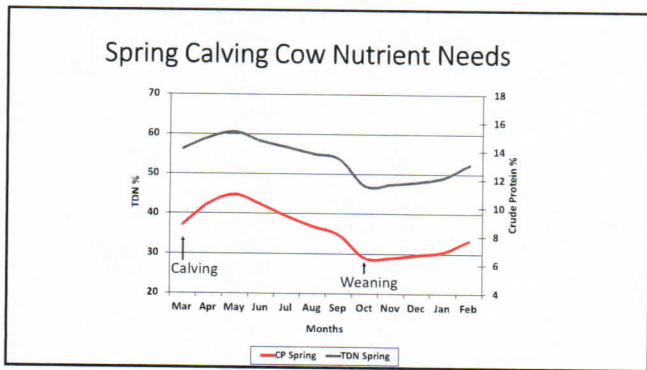
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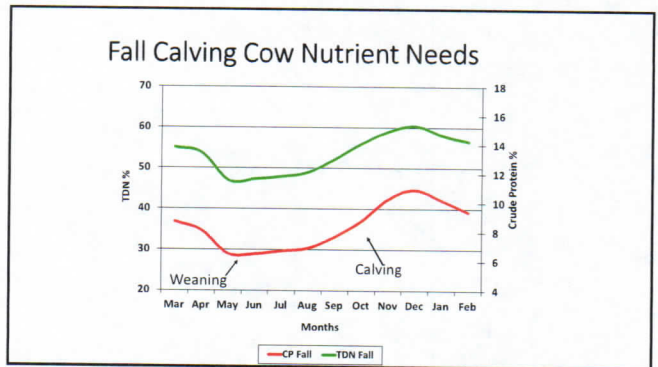
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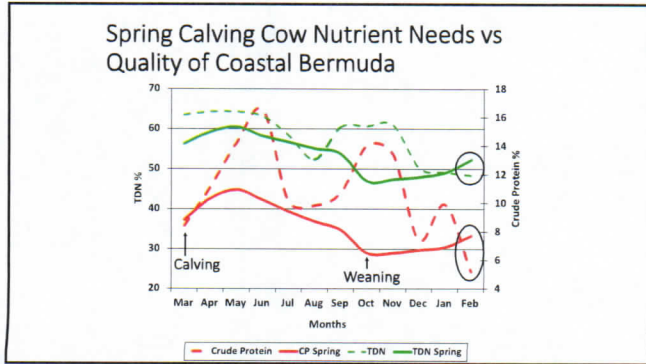
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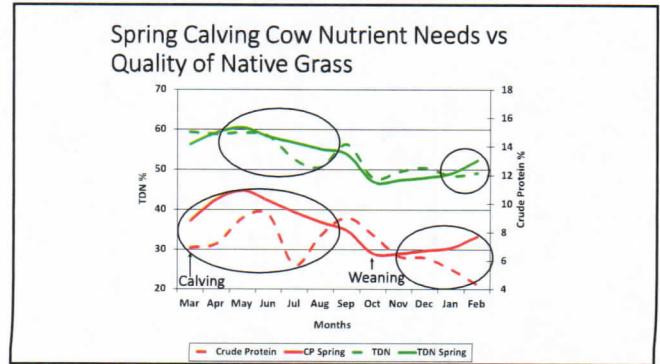
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#### Resources

- Dr. Joe Paschal – Retired Livestock Specialist – Texas A&M AgriLife Extension
- Dr. Josh McGinty – Agronomist – Texas A&M AgriLife Extension
- Dr. Jamie Foster – Forage Agronomist – Texas A&M AgriLife Research



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