
Texas Cooperative
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Forage Selection and Grazing Principles on Small Acreages

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Forage Types

- Annual vs. Perennial
  - Usually cheaper over long run to have perennial
  - Less nuisance—and risk—of seeding annually
- Warm-season vs. cool-season
  - Typically a choice among grasses
  - Warm-season production, May-October
  - Cool-season production (irrigated), September-April/May; (limited rainfall in winter restricts unirrigated cool-season forages)
- Grasses vs. legumes
  - Legume forage choices for the South Plains are few

Forage Types

- Each class offers different qualities or advantages

Rules of Thumb—Forage Quality

- Courtesy of Leonard Lauriault, NMSU-Tucumcari/Clovis:
- Forage quality increases as you go from
  - Perennial to annual
  - Warm-season to cool-season
  - Grasses to legumes

Forage Selection

- What kind of animal?
- When do you want forage?
- How much time do you have to take care of pasture?
- Establishment & maintenance costs
- Irrigation needed or even available?

Forage Selection—Bottom Line

- What is your goal?

Forage Selection—Pitfalls to Avoid

- Go with forages that have been grown in your area and are adapted
  - Let someone else develop the learning curve for new forages and find out what the potential problems might be
- Avoid “miracle forages” that promise everything
  - Marketing hype oversells many forages
  - Remember, “if it sounds too good to be true...”
  - Stick with local and regional seed and forage sales

Forage Selection—Pitfalls to Avoid

- Don’t be greedy or have unrealistic expectations
  - A hardy, reliable perennial forage that delivers average results for 10 years is a decent forage
- For small acreages where grazing pressure and foot traffic tend to be high, a hardy tough forage is better than a lush, tender type

Forage Selection—Pitfalls to Avoid

- Excessive seed costs
- Cheap seed of a variety
  - Most likely older seed, lower purity, lower quality, lower germination
- In seed cost, “you get what you pay for”
  - You only want to have to establish your selected forage in the first try.

Forage Establishment

- Often the most important day in the life of a forage is the day you seed it!
  - Firm seedbed and/or packer to press seed into soil (heel sinks into soil no more than 3/8” when you walk across field)
  - Many grasses seeds can’t be seeded more than about ½” deep
  - Irrigate as needed to ensure stand

Legumes in the TX High Plains

- For the most part, clovers are not adapted due to high soil pH > 7.5, and give poor results
- Alfalfa
  - Small acreages exist, and grazing alfalfa is actually a reasonable option, but good production requires a lot of water though stands are hardy in dry conditions
  - Not a reasonable option for most small acres
  - About 6-7” of water to produce 1 ton of alfalfa hay
  - Alfalfa info for TX @ http://lubbock.tamu.edu/othercrops

Annual Forages

- Cool-season small grains: wheat, rye, oats, triticale
- Warm-season: sorghum/sudan

- Although these crops are readily established, over time these crops have an annual cost of establishment that can exceed that of perennial forages

Wheat

Sorghum/Sudan

Small Grains

- Wheat for forage
  - If you might bale hay, then choose a “beardless” wheat, e.g. WeatherMaster 135, Longhorn, etc. to eliminate the awns (beards) causing feeding problems
  - Otherwise for small acres most any variety is OK (e.g. TAM 105, TAM 110, Cutter, etc.)
  - Seed Sept. 1-20 (after Oct. 1 might not give adequate growth for any Fall grazing)
  - If irrigated, add nitrogen fertilizer (30-50 lbs. N/acre of N is reasonable, 60 lbs. N/acre of N for high irrigation)
  - Seeding rate (lbs./acre): Dryland, ~50; Irrigated, ~100 ($0.10-0.15/lb.)

Small Grains

- Oats
  - Better for late forage seeded after Feb. 7 for Lubbock
  - Seeding and fertilizer: similar to wheat
  - Long maturity varieties are better for forage: Troy, Charisma, Monida, Harrison, Magnum, Walken
- Rye
  - More cold tolerant than wheat or oats
  - Potentially produces more forage during fall and especially winter, but can get spindly if not kept grazed down; some growers report that livestock don’t eat rye as readily as wheat

Small Grains Grazing

- Don’t grub forage too short, but allow plants a few inches of stem so they will re-tiller and re-grow
- Practical grazing window—Mid-November to May (periodically, not necessarily continually); minimal growth during mid-Dec. to mid-Feb.
- If baling, quality goes down as bales per acre increases (~18-20% protein as the plants head out; 8-10% protein once grain begins to harden)

Sorghum/Sudans

- Warm season annual
- Re-tillers well
- Not for horses (potential cystitis problems)
- Many hybrids available
- Seeding best from ~15 May to early July
- Drilled seed rate (lbs./A): dryland, 15-20; irrigated, 25-30 ($0.30-0.45/lb.)
- N fertilizer for irrigated, 50-100 lbs. N/acre

Sorghum/Sudan Graze & Hay

- If grazing, don't grub stubble down to much (leave 4-6" of stalk on most plants) so forage will re-grow
- If stocking heavily, plug 2 of every 3 drill holes to give cattle a place to walk—they will tromp the forage much less, and forage yield will be similar
- Haying—
  - Leave 4-6" of stubble for regrowth
  - 14-16% protein as plants begins to head, 7-9% protein when grain hardens

Potential Problems in Sorghum/Sudans

- For horses sorghum/sudans (and other similar forages such as red top cane) should not be fed due to potential for cystitis
  - Hybrid Pearl Millet is similar to sorghum/sudan, leafier, and never has cystitis problems or prussic acid potential (see below). Millet is a good horse feed.
- Prussic acid potential
  - Most likely to develop after a killing frost in the fall—remove animals for at least a week, and also slight potential in drought-stressed sorghum/sudan

Perennial Grasses

- **Reality check**: Don't expect to run 3 horses or 3 cows on five acres
- View perennial forages as a long-term investment

- Bottom line grazing goals:
  - 1) avoid grubbing forage down to where it can't come back (pen horses or livestock)
  - 2) for small acreages, grazing supplements your regular forage and feed, not vice versa

How Seed is Sold

- Seed may be labeled differently
- Base seed application on ‘PLS’ or Pure Live Seed, which accounts for trash, non-viable seed, etc.
- Recommendations should be for pounds of PLS per acre

Suggestions--Introduced Warm-Season Perennial Grasses

- Old world bluestems
  - These are the ones you are most likely to hear about, but how do they compare to natives?
- ‘Spar’ and ‘WWB Dahl’

Suggestions--Introduced Warm-Season Perennial Grasses

- Spar is easier to establish, costs less, and is easier to maintain
- Dahl requires significant inputs (water, fertilizer) to have an advantage, and Dahl is hard to establish at a much higher cost per acre

‘Spar’ Old World Bluestem

- Seeded stands relatively easy to achieve, and readily last 8-10 years and more
- Responds adequately to irrigation, but can do as well as any grass on dryland, though perhaps not as palatable as the native grasses

‘Spar’ Old World Bluestem

- Spar is tough, but still subject to injury if grazed into the ground and has heavy animal foot traffic
- Seeding—
  - March 1—May 15 (optimum April?), ideally with grass seed drill
  - ~2 lbs./acre @ $7-10 per pound
- Grazing season May to ~October 1
- Let seed out every 3 years to keep seed in soil

Suggestions--Native Warm-Season Perennial Grasses

- What Mother Nature had here in the first place...
- Several choices, but these are the ones, most often in combinations or mixes, that seem to provide satisfactory results
- Probably better suited for non-intensive management and dryland. Can be managed intensively, but probably more hardy if conditions are not favorable (irrigated little, recovering from drought, etc.)

Suggestions--Native Warm-Season Perennial Grasses

- Blue grama

- Sideoats grama

Suggestions--Native Warm-Season Perennial Grasses

- Native bluestems (as compared to introduced bluestems like Spar, WWB Dahl, and Caucasian)
- These may be combined with green sprangletop, buffalograss, wheatgrass, switchgrass, etc.

Example: Warm-Season Grass Mixes

- Blend of blue grama (Hatchita), sideoats grama (Haskell), and green sprangletop
- Blend of blue grama (Hatchita), sideoats grama (El Reno), green sprangletop, Blackwell switchgrass, Texoka buffalograss, western wheatgrass
- May graze longer into the Fall than ‘Spar’

Example: Warm-Season Grass Mixes

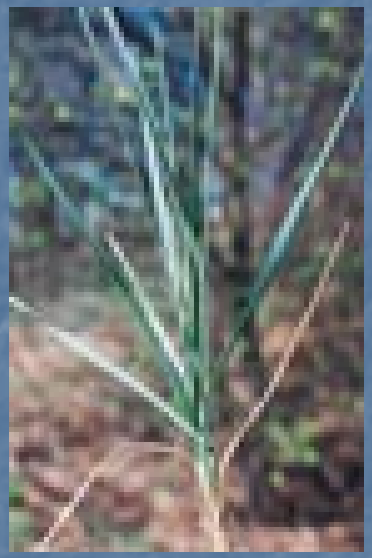
- These mixes may remain palatable longer and produce adequate forage for most “ranchette” operation
- Will respond well to fertilizer and retain palatability better in winter months, but may be easier to maintain and not get as tall or course
- Stand life lasts indefinitely
- Seed cost, ~$40-45/acre

Cool-Season Grasses--Irrigated

- Jose Tall Wheatgrass and Western Wheatgrass
  - Jose a popular choice for horses
- Forage production roughly from September to May, but dormant during the summer (but still needs some watering?)

Cool-Season Grasses--Irrigated

- Wheatgrasses establish easy, persists a long time, and yield potential is good
- Without proper management, however, the forage can get very course and turns livestock away
  - Needs to be kept grazed down in Fall and Spring when growth is strong, or perhaps an occasional mowing



More on Wheatgrasses

- Seed in mid-August to Nov. 1, but September is optimum
- Grass seed drill seeding rate: target 7-10 lbs. PLS/acre (low end of range for Western, high end for Jose?)
  - 2005 quoted prices: Jose, $3-4/lb.; Western, $10/lb.
- May use more irrigation during a year due to requirements in Spring and late Fall
- Jose vs. Western: some seed industry personnel recommend Western over Jose as they don't believe Jose is tough enough; Jose better for high irrigation

Cool-Season Grasses and Dryland

- Probably not enough moisture to give satisfactory production
- Annual rainfall in South Plains averages only 2.0-2.5” from November 1 to the end of February
  - This won’t sustain adequate forage production though sometimes wheat can give modest growth, however, it won’t recover until it rains

What About Bermudagrass?

- Bermudagrasses, in order to perform well, need relatively more water and fertilizer
- Most sprigged varieties tend to yield more than seeded varieties, but at a much higher establishment cost
- Cold tolerance is necessary for the South Plains region, and among seeded varieties Giant, Guymon, Cheyenne, and Common are acceptable

Bermudagrass for Forage

- 'Giant' seeded bermudagrass
  - Mix of 2/3 Giant and 1/3 Common is popular
- Stands in Lubbock region have remained strong for 15+ years
  - Aggressive—will spread causing problems in yard, garden, fields
- Relatively easy to establish in May, but needs frequent watering
- Seed cost? $2-4/pound, 2-5 lbs./acre
- Grazing May to Oct. (slightly longer than 'Spar')
- "Forage Bermudagrass: Selection, Establishment, and Management", publication E-179 from Texas Cooperative Extension (download at http://tcebookstore.org)

Other Grasses You'll Hear Of

- Forage buffalograss, pretty pastures (if irrigated), palatable, nutritious (perhaps better if blended with blue grama, ~$50/acre seed cost)
- Lovegrass, commonly used on many CRP (Conservation Reserve Program) acres—cheap but requires management and fertilizer
- Kleingrass, very palatable, but not for horses or sheep

Grass Seeding & Establishment

- Smooth, firm seedbeds are best
  - Shoe heel sink no more than 3/8” into soil
  - Use a packer to help press seed into soil and firm after seeding if necessary
  - Irrigate frequently, if necessary, to ensure establishment
- Rough, cloddy soils and soils with a lot or plant residue or trash on the surface are not as easy to seed

Grass Seeding & Establishment

- Drills are best and can give better seed placement hence a reduced seeding rate
  - Great Plains, Tye, Truax drills with grass seed attachments
  - Ask NRCS, Extension agent, neighbor farmers
- Seed spreaders
  - May require seeding rate 20-50% higher
  - Lightly harrow the seed in to cover seed ¼ to ½” deep

Web Resources for Grasses

- Oklahoma's Noble Foundation (Oklahoma-Texas book with color photographs for grasses)
- http://www.noble.org/imagegallery/grasses.html

- Texas A&M Cooperative Extension
- "Know Your Grasses"
- Description with drawings at http://texnat.tamu.edu/cmplants/B-182/main.htm