Rangeland Management

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Helping People Help the Land
Mission Statement:

“The Best Defense Is A Good Offense”

...Healthy Prairie
What We See
The more I learn, the more I realize how little I know
Where are we Going?

- Offensive Strategies
  - Soil Relationships (Minimize Bare Ground)
  - Optimizing Plant Growth (Healthy Prairie)
  - Plant Identification

- Defensive Strategies
  - Stay on Offense
  - Invasive Species Control
OFFENSE:
Soil Relationships
Below-Ground Relationships

Mycorrhizal fungi

Sources of Phosphorus (Big Bluestem)

Interplant transfer up to 19.7 inches

- Mycorrhizal mediated: 75%
- Mycorrhizal interplant: 17%
- Nonmycorrhizal: 8%
Greenhouse Study: 
Dependence on mycorrhizal symbiosis

Non-Sterile + Mycorrhizal fungi

Native: Big Bluestem
Andropogon gerardii

Sterile - Mycorrhizal fungi

Exotic: Old World Bluestem
Bothriochloa sp.

Non-Sterile + Mycorrhizal fungi

Sterile - Mycorrhizal fungi

Wilson et al. 2012

Slide Credit: Gail W.T. Wilson
Mycorrhizal colonization of plants grown alone or with Caucasian Bluestem.
• Production of plants grown alone or with Caucasian Bluestem.

“Invasive warm-season grasses reduce mycorrhizal root colonization and biomass production of native prairie grasses”
Gail W. T. Wilson & Karen R. Hickman & Melinda M. Williamson
Soil Aggregate Stability

Glomalin is a Glycoprotein (sugar protein)
- Coats and protects hyphae
- Deposited on organic matter and soil particles
- Hydrophobic (water hating)
- Holds soil particles together

-Six et al., 2002
Old World Bluestem Monocultures

Soil Erosion Concerns

Lack of Diversity?

Photo Credit: Walt Fick, KSU
Thoughts

- Minimize Bare Ground
  - Problem Areas
    - Pond dams
    - Cattle trails
    - Sediment deposits in draws
    - Mineral & feed sites

- Don’t give OWB plants an open door. Once they are in...they don’t play well with others!
OFFENSE: Optimizing Plant Growth/Health
Tall Grass Prairie

Fire

Weather / Climate

Grazing
Energy Capture – Solar Panel

“Pasture management is really leaf management!”
Grass: The Stockman’s Crop
Grass Root Growth

Grazing Affects on Grass Root Growth

Take Half, Leave Half

80% removal = 12 days w/ no root growth
90% removal = 18 days w/ no root growth
Maintaining the Prairie

1/3 of Annual Growth

2/3 of Annual Growth

30-35% of grass root system replaced annually
Community Growth

Root Systems of Prairie Plants

Diversity – Above & Below
What has the Advantage?
A weak prairie system

Photo Credit: Grass: The stockman’s crop (Dietz)
Rainfall Versus Forage Growth Variable Amongst Years

Florence Soil – Average = 3,142 lbs/acre
Thoughts

• Maintain a healthy plant community
  • Grazing Plan
    • Stocking Rates (Forage & Animal Balance)
    • Growing Season Rest Opportunities
  • Prescribed Burning
    • Timing & Frequency

• Drought Plan
  • Monitor precipitation & forage growth
  • Have a written plan
  • Adjust grazing plan accordingly
OFFENSE:
Plant Identification
Thoughts

• Improve Plant Identification Skills
  • Both Native and Invasive ID
  • On-line resources
  • Field days
  • Range schools
  • Wildflower tours

• Active Scouting
  • Go looking for invasive plants...if you wait to stumble across them, you’re already behind...
  • Time of year – when differences in plant color or structure are most apparent
OFFENSE SUMMARY

• Offensive Strategies
  • Soil Relationships (Minimize Bare Ground)
  • Optimizing Plant Growth (Healthy Prairie)
  • Plant Identification

“Unless commitment is made, there are only promises and hopes... but no plans.”

“Plans are only good intentions unless they immediately degenerate into hard work.”

Peter Drucker
Respond & Control

- Attack early in the infestation stage and with force
- Follow established control guidelines to be most effective
- Eradication would be best, but not likely
- Minimum: Prevent seed production
Additional Strategies

- Know the source of feed supplement
  - Hay Forage Type
  - Location of Hayland (road ditch?)

- Use only native species if seeding disturbed areas

- Keep equipment clean when traveling from an infested pasture to a “clean” pasture
With Offense or Defense...

YOU GOTA

KEEP ON KEEPIN' ON

Joe Dirt, 2001
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