Climatic Impacts and Range Condition

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Climatic Impacts and Range Condition

- Identifying the problems or understanding drought symptoms.
  - Goals for today!
    - Identifying resource concerns
    - Understanding the impacts
    - Formulating an approach
    - Measuring the success or accomplishment
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- So what are some of the reasons for changes in plant communities?
  - Climatic conditions
  - Management
  - Combination of the two!
Drought is a major factor in range management!

- In any given year, rangeland vegetation is either in the recovery phase, under the direct influence of drought, or by the producer’s management, preparing for drought.
- Management strategies must provide plants with opportunities to maintain or improve vigor.
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- Drought is generally defined as a prolonged period of time during which precipitation is less than 75 percent of average for a given year, or poor distribution of precipitation in a single year or less than average precipitation in successive years.
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- History and Impacts of past droughts:
  - Dramatic shifts in species composition and productivity of native grasslands were documented in the Great Plains during and following the major drought of the 1930’s
History and Impacts of past droughts:

Finding: The combination of drought and heavy grazing can cause severe reductions in forage production and plant vigor.
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- As plant communities change, the surface or plant cover also changes.

- Good grazing management is vital to maximize the effectiveness of precipitation.
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- Practices which increase plant cover or plant vigor lead to an increase in the amount of precipitation that enters the soil.
When plant vigor improves, root systems become more extensive and provide surface openings for water movement into the soil profile.
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- Plant litter and standing plants reduce evaporation losses by moderating extremes in soil surface temperatures and the impact of drying winds.
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- Negative impacts of Drought and Management:
  - Lower range conditions intensify drought effects.
  - Decreased diversity in the native plant community reflects more severe drought impacts. (Lower range condition-more severe impacts)
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- Negative Impacts cont:
  - Recovery time is increased in rangeland where range condition or vigor is lower going into drought periods
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- Negative Impacts cont:
  - Improvement of rangeland condition and vigor should be practiced or targeted in years not identified as drought years, leading to quicker recovery of plant communities coming out of drought periods
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- Drought Plan? Do we need one? What does it contain?
  - A drought plan should:
    - protect vegetation and plant communities during a drought
    - hasten vegetation recovery after drought
    - be specific to your operation
    - minimize financial hardship
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Drought Plan cont:

- Drought plans identify action to be taken at the first sign of drought as well as with continued indications of moisture and forage shortages
- Stocking rate adjustments need to be specific in terms of how many and how long
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- **Drought Plan cont:**
  - Actions should be based upon seasonal check points and indicators
    - Ex. (monthly monitoring, moisture to begin the growing season, quickness of green-up of desirable species, production available based upon expected yields throughout the growing season, and carryover or accumulated forage)
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Contingency Plan Trigger Dates

- **East**: April 1, June 15, July 15, Aug 15, Sept – Nov
- **Central**: Sept 15 – Nov
- **West**: 24 Month, June 1, July 1, Aug 1

- **Central**: April 1, June 15, July 15, Aug 15
- **West**: 24 Month, June 1, July 1, Aug 1
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- Stocking rate rules of thumb:
  - Cattle require approximately 3% of their body weight in pounds of forage each day
  - 1000 pound cow = 30 pounds of air dry forage
  - At a minimum 900 pounds per month
Stocking Rate Breakdown:

- If your rangeland produces 4000 pounds/acre
- Approximately 1000 pounds is available to be grazed
- Meaning it takes approximately one acre/month to support an 1100 pound cow if your rangeland averages 4000 pounds of production
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Stocking Rate Breakdown:

- Depending upon the production potential of your rangeland, you will need more or less acres to support your livestock.
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Stocking Rate Breakdown:

- What do I need to know?
  - What does my rangeland/grazingland produce in pounds of air dry forage?
  - What do my livestock actually weigh?
  - What is their true demand?
  - How do I compensate for cows with calves?
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- Stocking Rate Breakdown:
  - Are there years when production is greater than normal as well as less than normal?
  - What are the impacts to the livestock as well as the forage or plant community during drought?
    - IT DEPENDS! – ON YOU!
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Stocking Rate Reductions in Hardland Soils

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<th>Percent Reduction in Stocking Rates</th>
<th>Percent of Normal Rainfall between March and May</th>
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- Percent Moisture
- Stocking rate reduction

Percent of Normal Rainfall between March and May

Percent Reduction in Stocking Rates
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Stocking Rate Reductions on Sandy Soils

- 0%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%

Inches of Moist Soil

Reduction in Stocking Rate

Good Condition Plant Community

Poor to Fair Condition Plant Community

Inches of Moist Soil
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<th>Total</th>
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Precipitation - 2011 through November
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Stocking Rate Breakdown:

- Typically animal performance does not suffer in drought conditions until animal intake is reduced significantly (forage quality remains high)
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Stocking Rate Breakdown:

- Remember, heavy continuous grazing which alters the plant community and changes the surface of the soil, makes possible:
  - harsher conditions and drought impacts
  - more difficult and lengthy recovery periods
  - potential financial hardship due to extended forage reduction
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Things to remember:

- The healthier a plant community enters a drought and the more carefully a plant community is managed during a drought, the quicker and healthier a plant community will respond coming out of a drought.
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- **Examples of Management Style Changes**
  - Grazing systems which focus on rest
  - Flexibility in herd management
    - Early weaning
    - Later calving season
    - Minimizing feed costs or inputs
    - Limit feeding hay
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