Drought and Range Management on Alberta Rangelands

Improving Drought Resilience – Forest to Valley Bottom
Montana, March 15, 2017
Alberta’s Rangelands

- Rangeland is land supporting indigenous or introduced vegetation that is either grazed or has the potential to be grazed and is managed as a natural ecosystem.
  - Includes grassland, grazeable forestland, shrubland, pastureland, and riparian areas
- Much of Alberta’s rangelands developed under a historic disturbance regime dominated by bison grazing and fire.
Drought

- Drought is a normal part of the climate fluctuation cycle
- Affects all rangelands
  - Forests, parkland, native grasslands, tame pastures and riparian areas
- Occurs when precipitation is well below normal and low moisture conditions are sustained over a period of time
Drought – Negative Impacts

- Lower forage production – impacts on wildlife habitat
- Reduced litter
- Water quality and quantity decreases
- Soil type – drought effects may be more pronounced on sandy vs. loamy or clay soils
Grazing During a Drought

- Grazing removes plant cover and litter
  - Further increases drying effect and worsens drought conditions

- Individual plants in a weakened state may die

- Weeds will take advantage of reduced competition and spread
Long-Term Effects of Over-grazing During Drought

• Range may experience long term loss of plant cover, productivity, and litter

• Plant species composition may shift and degrade

• Water supplies take longer to replenish

• Effects may be felt over a longer time frame

• Risk increases for more frequent or severe drought over time
Drought Impacts on Range

Cumulative and Long-term
1. Balance livestock needs with the forage supply

2. Avoid grazing during vulnerable periods

3. Distribute livestock evenly

4. Provide effective rest after grazing.
Stocking Rates and Carryover

- Proper use levels are site specific
- Ecologically Sustainable Stocking Rates are the first step
  - *Take half - leave half* or 50% use is generally too heavy in most native grassland and forest plant communities
Management Priorities During Drought

- Minimize impact to the range
- Maintain livestock performance
- Stay in business
Litter - The Best Insurance Policy

- Functions of Litter
  - cools soil surface
  - enhances water infiltration
  - retains scarce moisture
Litter conserves soil water and increases production

- Increased soil temperature
- Reduced moisture retention

Evaporation

Source: W. Willms, AAFC, Lethbridge, AB
The Importance of Litter – Alberta Studies

• Dry Mixedgrass (Onefour Studies)
  – Reduction of 40-60% of production
  – Repeated defoliations promote drought tolerant/less productive species

• Mixed Grass (ADRI Studies)
  – Litter had significant positive impacts in dry years
  – Less impact in moderate moisture years

• Foothills Fescue (Stavely Studies)
  – Little response
Litter – The Best Insurance Policy

• If litter levels are low when drought occurs
  – Production will decrease
  – Recovery period will increase

• If litter levels are allowed to increase through reduced grazing or periods of rest
  – Production will increase
  – Recovery period will decrease
Drought Preparation

• Minimizing the effects of drought to begins with a sound range management plan

• Effective range management before and during drought will have an impact on long-term grazing opportunities

• Range health assessment can be a useful tool to evaluate preparedness for drought as well as range recovery after drought
Drought Management in Alberta

• “the best time to prepare for drought is after the current drought”

• Conservative allocation and management of native rangelands helps mitigate effects of drought and speed recovery

• Delayed entry or early removal in drought years will protect the range and speed recovery

• We educate producers on managing through drought and recovery from drought
Running on EMPTY
Running on the BOTTOM HALF
Running on the TOP HALF
Will you be ready for next drought?
**Short** recovery period

**Long** recovery period
Additional Management Strategies

- Evaluate and adjust herd composition and numbers so stocking rates match forage production
- Secure sources of supplemental feed – additional pasture, hay, or failed crops
- Where appropriate seed a drought tolerant, quick growing cereal such as fall rye for emergency grazing
- Provide rest or defer grazing on lands in an unhealthy condition
- Use herding, fencing, salt placement, and water sources to improve distribution to prevent overgrazing in certain areas
Riparian Areas

• Provide forage and water resources during drought

• Preferred grazing areas
  – Need to be carefully managed to prevent overgrazing, maintain native cover, prevent trampling, soil erosion, and conserve water quality

• Offsite watering or point access watering can help mitigate impacts
Summary

• Drought is a normal occurrence

• Integrate drought planning into operational decision making and develop management plans to reduce the negative impacts of drought

• Proper stocking rates, healthy plants, and sufficient carryover/litter can all mitigate the impacts of drought