Engaging Livestock in Weed Management

A Western Perspective

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Grazing is Powerful

Sheep Reduce Forbs

Goats Reduce Oak

Winter Browsing Reduces Willows

Livestock affect *Weeds*

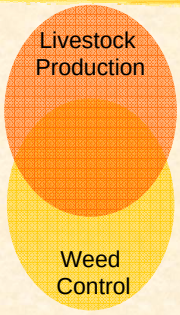
Increase Spread of Weeds	Suppress Weeds
➢ Cause disturbance ➢ Transport seeds ➢ Reduce competition from native plants	➢ Stress weeds ➢ Reduce root biomass ➢ Reduce seed production ➢ Reduce competitive edge

Livestock affect Weeds

Increase Spread of Weeds ⟷ **Suppress Weeds**

Uncontrolled or Improper Grazing — **Prescription Grazing in an Integrated System**

Weeds affect Livestock



Weeds as Forage

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Proper Grazing Management

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Prescribed Grazing

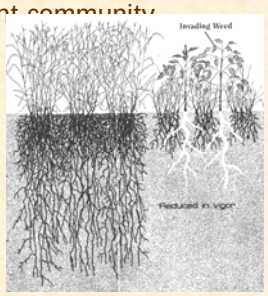
Weeds As Forage

- Many weeds are "nutritious & delicious"
  - Manage weeds as forage resource
  - Consider forage value
  - Concentrate on weeds to meet livestock production goals

Weed → Feed

Proper Grazing Management

- Maintain weed resistant community
  - Minimize Infestations
  - Slow Spread of Weeds
- Increase efficacy and longevity of weed treatments



Prescription Grazing

- *"Carefully controlled grazing to meet land management objectives"*
  - reduce weeds in crop systems
  - control herbaceous biomass in tree crops
  - remove weeds in 'waste' places
  - **control weeds on forest & rangelands**

Keys to Prescribed Grazing

- Accomplished by control of:
  - **Timing**
    - Appropriate Season
  - **Herbivore**
    - Species
    - Breed
    - Background
    - Condition
    - Age
  - **Intensity** of defoliation
    - Stocking Rate
    - Frequency

Prescription Grazing

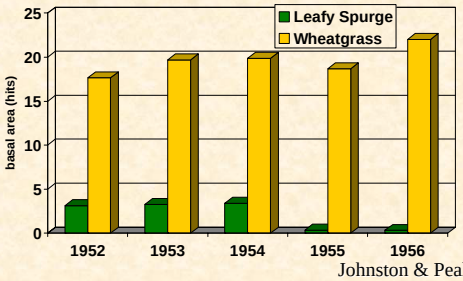
- **Examples of Application**
  - Leafy Spurge
  - Cheatgrass
  - Juniper

Leafy Spurge

- 2.7 million acres
- Sheep and goats successfully used for spurge control
- Considered a "good forage" for sheep
- Some cattle producers contract sheep producers

Leafy Spurge

Effects of sheep grazing



Johnston & Peake 1960

Leafy Spurge Prior to Sheep Grazing – June 7, 2002
Deer Lodge Valley

Sheep Grazing Leafy Spurge after 1 Year – June 17, 2003
Deer Lodge Valley

Sheep Grazing Leafy Spurge after 2 Years – June 18 2004
Deer Lodge Valley

Sheep Grazing Leafy Spurge after 3 Years – June 20, 2005
Deer Lodge Valley

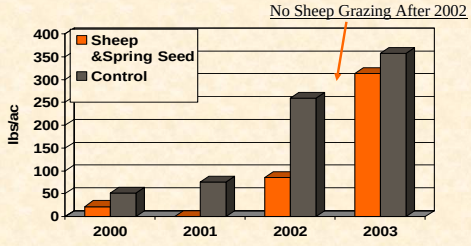
Leafy Spurge

- **Palatability - S**heep must learn to eat spurge and prefer young plants. Goats readily eat leafy spurge at all growth stages
- **Effectiveness of grazing treatment** low 1st yr, improves after 2nd yr, stem density and biomass significantly declines after several years
- **Plant response -** May see an increase in 2nd year, with declining biomass and stem density beginning the 3rd year; If grazing is discontinued, leafy spurge can return to its original density
- **Grazing objective -** Remove 95% of top growth; graze regrowth after first treatment; prevent flowering and seed production
- **Number of treatments per year-** leafy spurge monoculture: continuous grazing throughout growing season desirable species present: rotational grazing twice per season minimum
- **Number of treatment years** four to five minimum
- **Integration w/ Other control methods -** very high with flea beetles (biological) and fall spraying (herbicides)

Cheatgrass or Downy Brome

- Covers 95 million acres
- Palatable and nutritious in early spring
- Grazed by cattle and sheep
- Remove livestock before perennial grasses grow significantly

Cheatgrass or Downy Brome



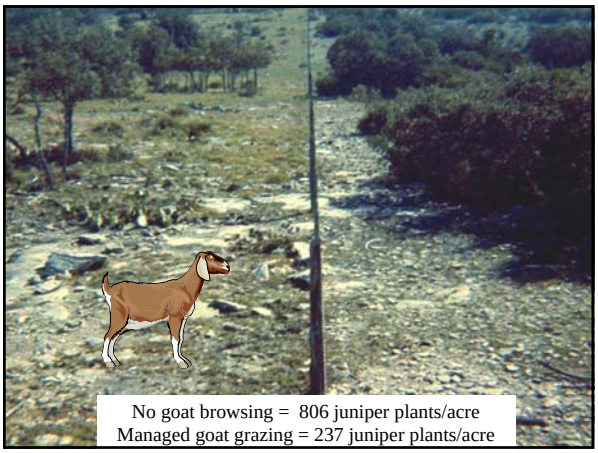
Davison et al. 2004

Cheatgrass

- **Palatability –** Sheep & goats readily consumed when green and until plants begin to turn purple
- **Effectiveness of grazing treatment -** Effective if repeated 2 times/year for at least 2 years
- **Plant response -** Heavy repeated grazing will reduce plant numbers, size, and seed production.
- **Grazing objective -** Graze cheatgrass plants as early as possible without harming desireable perennial plants nd repeat to prevent seeds from ripening.
- **Number of treatments per year-** Minimum of 2 treatments per year recommended
- **Number of treatment years –** Two years of grazing required to reduce plant populations significantly
- **Integration w/ Other control methods -** Can be used with mechanical methods, herbicides and controlled burning

Juniper

- Important Invasive Species:
  - Eastern Red Cedar
  - Redberry Juniper
  - Western Juniper
- Goats successfully used for spurge control
- Sheep & cattle largely ineffective



No goat browsing = 806 juniper plants/acre
Managed goat grazing = 237 juniper plants/acre

Keys to Prescribed Grazing

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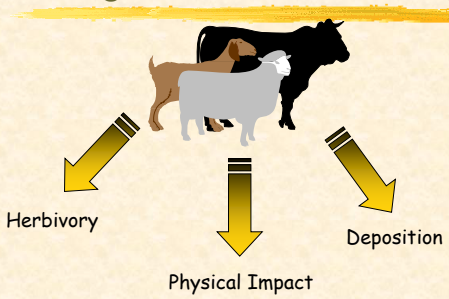
Ecological Forces of Grazing



Costs & Benefits of Prescription Grazing

Costs of Grazing for Weed Control

- cost of animals
- difficult to find animals
- fencing, water, herders, trailers
- reduced animal production
- damage to non-target species
- spread of weed seed in feces, wool, hair, or hooves
- may be incompatible with wildlife

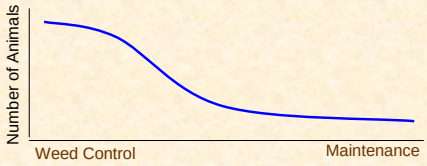
Costs & Benefits of Prescription Grazing

Benefits of Grazing for Weed Control

- can be highly effective
- improved pasture quality
- no pesticide residue… *'environmentally friendly'*
- lower effect on non-target species
- convert weeds into saleable product
- more sustainable control
- feasible in rough terrain

Scale-Dependent Implications

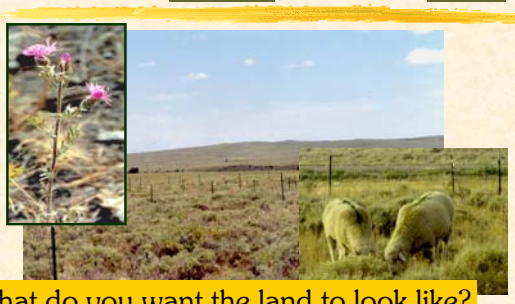
- Temporal
  - Long time frame
  - Require long-term planning & commitment
  - Short-term/High-impact?



Scale-Dependent Implications

- Spatial Scale
  - Small to large projects
  - Large-scale restoration possible

It's not about **Weeds**, its about **Land**



What do you want the land to look like?

Livestock affect Weeds

Increase Spread of Weeds

Suppress Weeds

Uncontrolled or Improper Grazing

Prescription Grazing in an Integrated System

Depends on Skill & Knowledge!!