Targeted Grazing for Weed Control

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Outline

• Definition of weeds
• Weed characteristics
• Tools for weed control
• Targeted grazing as a tool
• Animal of choice
What is a weed?

• Plant growing where it is not wanted
• Plant out of place and not intentionally sown
• Plant whose benefits have not yet been discovered.
• Plants competitive, persistent, and interfering negatively with human activity

*subjective
Weeds vs. invasive vs noxious weeds

Weeds:
• native and non-native plants that impact production, cause health problems or are aesthetically unpleasing.

Invasive weeds:
• non-natives that aggressively infest ecosystems.
• increase in area and density

Noxious weed
• designated by country, state, county etc as injurious
Characteristics of weeds

- Abundant seed production
- Early germination
- Rapid population establishment
- Good competitors
- Seed dormancy
- Adaptation for spread
- Vegetative reproductive structures (stolons/rhizomes)
- Occupy disturbed sites
- Allelopathy
Principles of Weed Control

- Identification
- Prevention vs control
- Invasion corridors

Timing of control after invasion:
  - The sooner the better - effectiveness declines with time
  - Season: When most susceptible

- Plant physiology – eg phenology, seed bank viability
Tools for weed management

• Mechanical Control
• Biological Control
• Chemical Control
• Cultural Control
  • Grazing
  • Fire
• Preventative weed control
Targeted grazing defined

• Application of controlled grazing (specific animal, at a specified season, duration, and intensity) to accomplish specific vegetation management and landscape goals.

• Use animals to shift the balance of competition to create desirable plant communities
Targeted grazing vs Grazing management

• Grazing Management: – manipulation of *grazing factors* to optimize economic returns per acre and other goals while maintaining or improving long-term natural resource productivity under changing conditions

• Unlike conventional grazing management → goal shift from predominantly animal production to landscape condition
Goals of targeted grazing

- Control invasive plants on
  - Natural ecosystems
  - Organic agriculture – orchards
- Reducing fuel load in wildland
  - Defensible space
  - Remove excessive RDM
- Aid restoration projects
- Improve wildlife habitat
  - Mosaic landscapes
- Maintain riparian areas e.g. vernal pools
- Control herbaceous plants in tree crops
- Increases nutrient cycling
- No artificial chemicals added to environment
Where to use this

• Rangelands
• Forests
• Orchards and vineyards
• Non-agricultural lands – with the challenge to balance environmental, social and economic goals.
  • Around buildings
  • Along canals
  • Along power lines
  • Around solar panels
Principles of grazing used to achieve these goals

• Type of animals
• Class of animals
• Grazing season/timing of grazing
• Tolerance to toxic chemical
• Grazing height
• Plant palatability
• Season of plant susceptibility
Diet preferences and foraging behavior of livestock
Diet preferences and foraging behavior of livestock

<table>
<thead>
<tr>
<th>Cattle</th>
<th>Sheep</th>
<th>Goats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grass → Forbs → Browse</td>
<td>Forbs → Grass → Browse</td>
<td>Browse → Forbs → Grass</td>
</tr>
<tr>
<td>Primary grazers of grasses and legumes</td>
<td>Prefer clovers</td>
<td>Opportunistic grazers</td>
</tr>
<tr>
<td>Tend to graze taller grasses that sheep will refuse</td>
<td>Graze close to the ground</td>
<td>Do not like clover but will eat it</td>
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<tr>
<td>Prefer lower flatter areas</td>
<td>Inclined to graze higher and drier areas</td>
<td>Do not like to graze close to the soil surface</td>
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<td>Sensitive to plant toxic compounds and tannins</td>
<td>Can tolerate salty compounds</td>
<td>Inclined to grazer higher and drier areas</td>
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<tr>
<td></td>
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<td>Tolerance for tannins and bitter plant compounds and fewer problems with plant toxicities</td>
</tr>
</tbody>
</table>
Animal of choice: Cows

- Most available herbivore
- Not as susceptible to predators as smaller ruminant
- Large ruminant
- Trample target vegetation

Examples
- Grasses: red brome, medusahead,
- Train cows to eat weeds: knapp weed, sagebrush

Photo: Tim McCabe
Animal of choice:  *Cows cont....*

Disadvantages:
• Not adaptable to difficult terrains
• Not great browsers
• Susceptible to toxins
• Loose weight
Animal of choice:  

Goats

- Small ruminants
- Versatile, adaptable herbivores
- Can access difficult terrains
- Tolerate some toxins
- Clearing brush, vines and saplings
- Choose seeds first and reduce seed production

Examples
- Poison oak
- Thistles – yellow star, Italian
Animal of choice:  **Goats**

Disadvantages
- Small ruminants
- Tough on fences
- Not best for grass
Animal of choice:  *Sheep*

- Small and versatile
- Great on forbs and grass
- Eat lower than cows

*Examples:* Targeted grazing on vineyards
- October-April
- July-August
- Organic orchards
- Leafy spurge, knapp weed
Animal of choice: Sheep

Disadvantages
• Small ruminants
• Not as agile as goats
• Less tolerant to toxins
• Awns get stuck in wool
  • Reduced wool quality
Questions?