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

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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

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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

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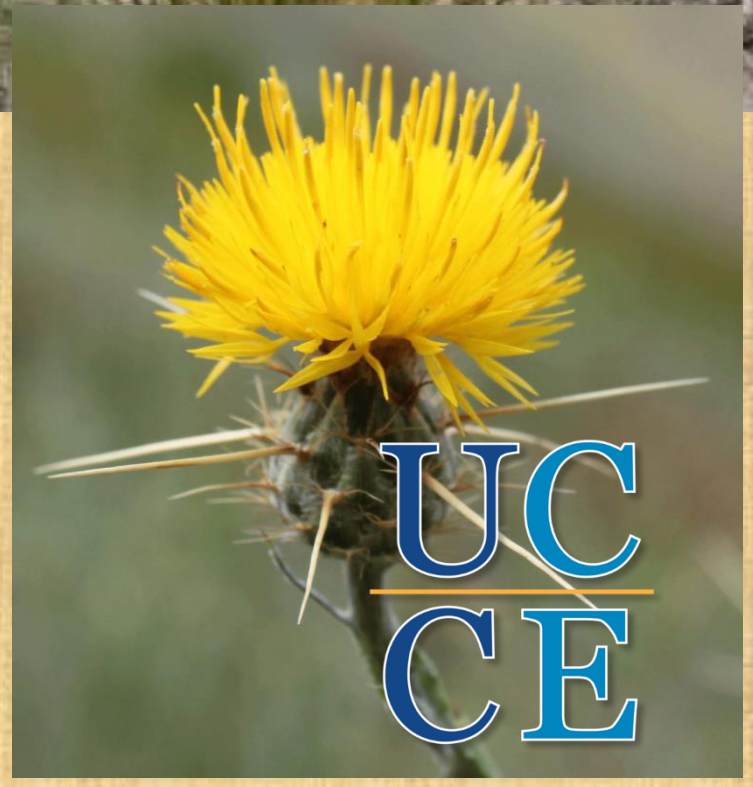
Principles of Weed Control

- 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

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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

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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

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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

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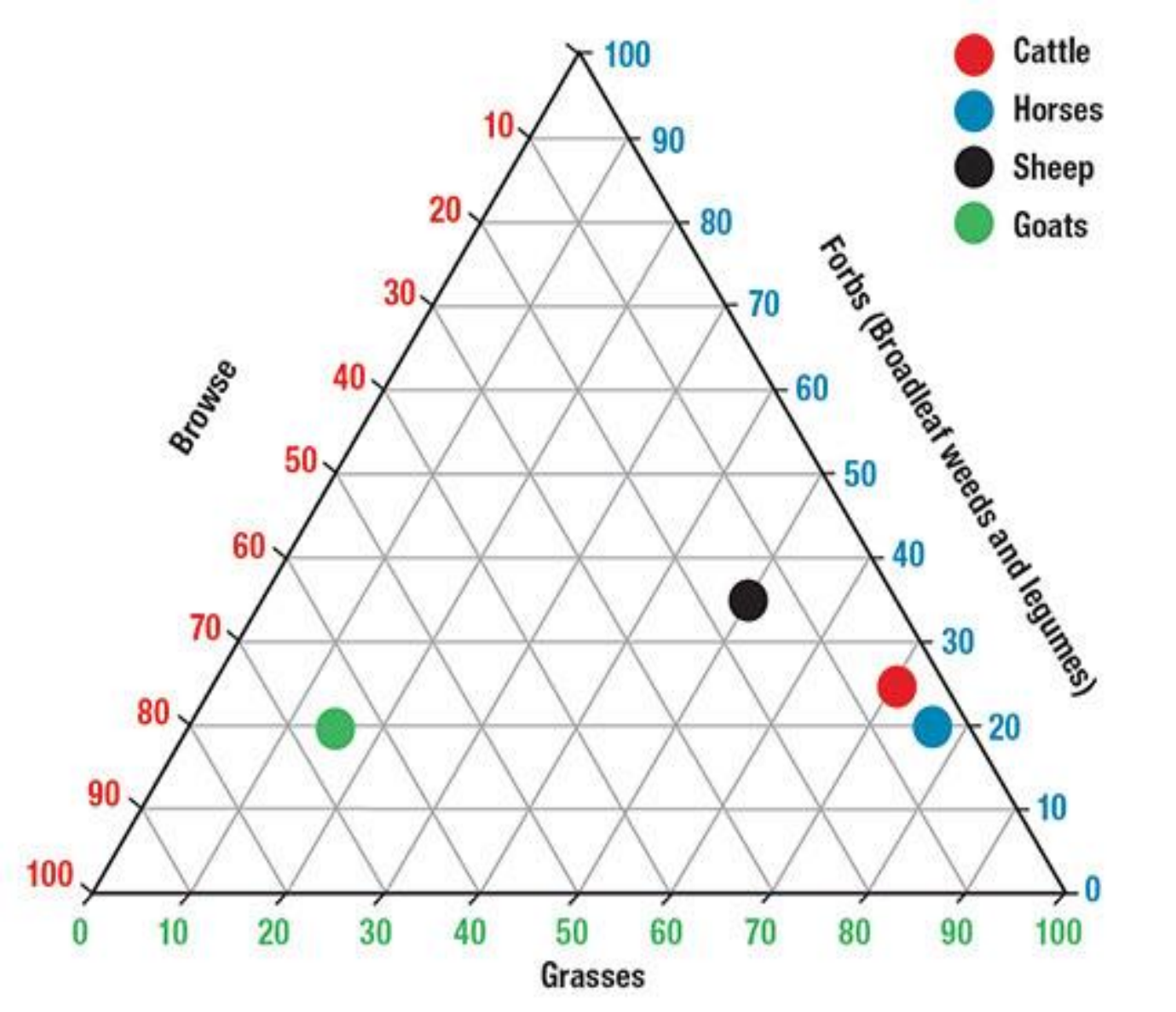
Diet preferences and foraging behavior of livestock



Diet preferences and foraging behavior of livestock

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

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Animal of choice: *Cows*

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

Photo: Tim McCabe

Examples

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

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?

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