The Art and Science of Targeted Grazing

USING LIVESTOCK TO CONTROL RANGELAND AND RIPARIAN WEEDS

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UC COOPERATIVE EXTENSION

http://rangelands.ucdavis.edu

Overview

The Science: understanding plant growth and animal behavior

The Art: using targeted grazing to control weeds

Monitoring

Case Studies

The science...

Prescribed grazing is the controlled implementation of the timing, frequency, and intensity of grazing to achieve specific goals.

The grazing manager can prescribe:

1. *Type of livestock*
2. *Number of livestock*
3. *Duration of grazing*
4. *Seasonal timing of grazing*
5. *Frequency of grazing*
6. *Spatial distribution of grazing*

The science…

Grazing behavior and animal impacts

❖ Select the right species for the weed!

❖ Goats and sheep have different, but overlapping, forage preferences.

❖ Cattle may be more appropriate in some settings.

❖ Not all animals are equal – animals should have experience with specific weeds.

The science…

❖ Manage all 3 animal impacts
  ❖ Grazing (consumption)
  ❖ Trampling (facilitates carbon breakdown)
  ❖ Deposition of urine and excrement (targeted nutrient deposition)

The science…

Using BEHAVE principles helps train our vegetation management specialists (aka, the animals) – early exposure is critical!

Spatial memory is important – the animals remember the landscape, making multi-year projects are more successful than single treatments.

Strategic water, supplementation, and salt placement can draw animals to specific locations, concentrate animal impacts, and provide nutrients absent in the forage.

The science...

Key Considerations

1. Animal nutritional requirements (which vary annually and between classes of animals)

2. Plant requirements for critical functions (e.g., photosynthesis, reproduction)

3. Mitigate potential negative impacts of animals on soils, riparian areas, habitat, non-target plant species, etc.
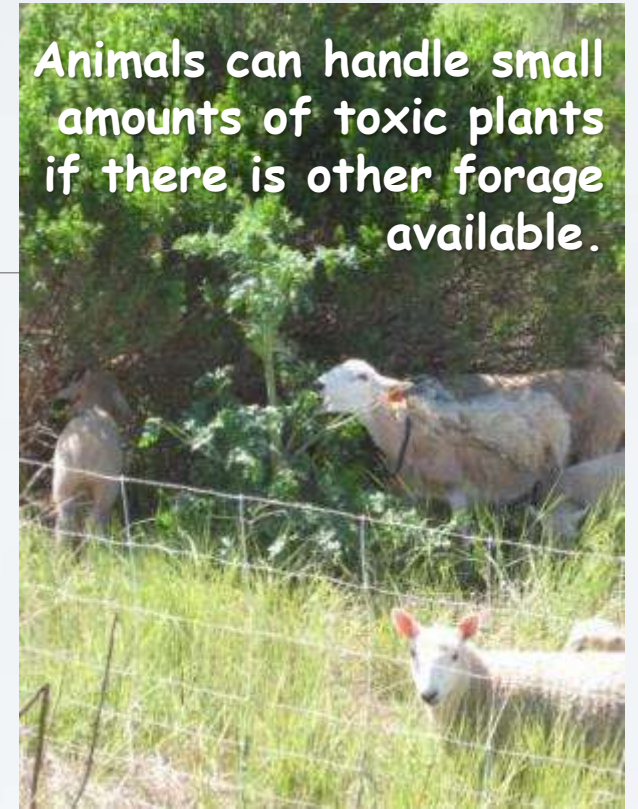
The science...

Using herd effect to manage annual grassland weeds.

Grazing behavior and preferences can be taught.

Animals can handle small amounts of toxic plants if there is other forage available.

The art...

From a producer's perspective, what business are you in?

❖ Critical to balance animal performance with weed control goals.

❖ There are classes of animals in most operations that are better suited to targeted grazing projects.

❖ Small ruminants may provide more flexibility given their shorter gestation.

❖ What are your primary products? Meat? Weaned animals? Grazing services?

Vegetation
Management
For information contact
Flying Mule Farm
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The art…

Landowner goals, objectives and expectations

❖ Long term suppression vs. immediate eradication?

❖ Is aesthetic appearance a motivating factor?

❖ Are there external factors that may limit the use of livestock (e.g., food safety concerns, endangered species habitat, etc.)?

❖ Is it possible to target specific areas or weed species?

❖ Fuel-load reduction vs. saving fall forage?

The art...

Exposing young animals to a variety of vegetation *while they are nursing* seems to help create a flock or herd with widely varied dietary preferences.

Sheep will eat blackberries!

Fenceline shot – 100 ewes on starthistle.

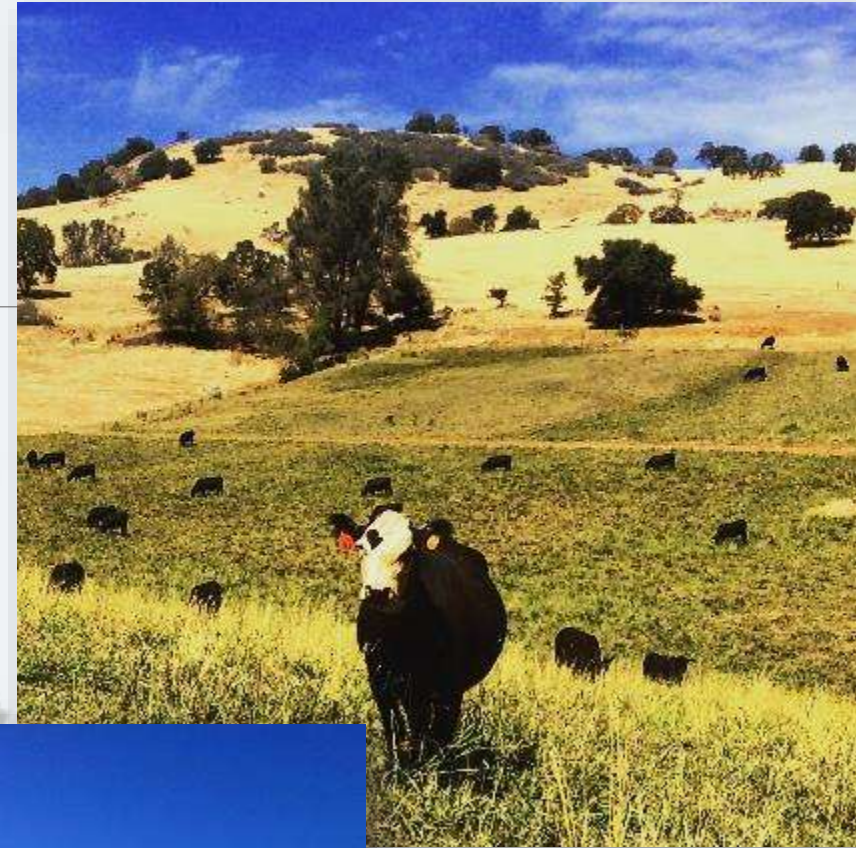# The art…

Infrastructure needs
- ❖ Fencing
- ❖ Stockwater equipment
- ❖ Transportation equipment
- ❖ Predator control
- ❖ SKILLS
  - ❖ Herding and stockmanship
  - ❖ Business management
  - ❖ Range management

The art…

Economics and Logistics

❖ Not necessarily the low cost option.

❖ Works best where spraying, mechanical treatment or prescribed fire are too costly and/or difficult to use.

❖ Effects can be more subtle than other treatments (like spraying, for example).

❖ Operators must know where animals will be before and after the "project" – you don't put them in storage!

❖ This typically isn't an issue for on-ranch targeted grazing project using your own livestock.

The art…

There are tradeoffs and costs involved…

- Roche and Tate et al. found that steer ADG was lower in targeted grazing systems at SFREC (as opposed to more traditional set-stock grazing).

- On the other hand, targeted grazing resulted in more stockpiled forage for fall grazing (in other words, an effective drought buffer)

The art…

Image Name: allender-2014-Jul-19 point
GPS co-ordinates: 38.937439,-121.130363
Date: Jul 19, 2014, 3:41:48 PM PDT
Direction: 131 N

Image Name: allender-2014-Jul-16 point
GPS co-ordinates: 38.937440,-121.130360
Date: Jul 16, 2014, 8:57:28 AM PDT
Direction: 131 N

Control versus suppression

❖ Grazing, in most cases, will suppress (rather than eliminate) invasive weeds.

❖ Some annual weeds require multi-year treatment before the seedbank is depleted.

Are we treating the symptom or the disease? What replaces the undesirable vegetation?

Some targeted grazing projects require "over-grazing on purpose" – time and timing are critical!

Risks

The risks depend on the type and location of project, but may include:

❖ Toxic plants and other toxicity issues (the Cornell poisonous plants website is outstanding!)

❖ Wildfire

❖ Predation

❖ Loss of animal condition/performance

❖ Property damage

❖ Spread of weed seeds

Business Considerations and Grazing Principles – a case study

2009 Canyon View Project

- 67 dry ewes + 13 goat wethers
- 7.5 acres
- 40 days
- 3 trailer loads
- 68 hours labor (transportation and management)
- $3,200 gross
- $38.10/hr return on labor
- $426/acre

2010 Canyon View Project

- 211 dry ewes
- 10 acres treated
- 21 days
- 6 trailer loads
- 84 hours labor (transportation and management)
- $4,400 gross
- $64.70/hr return on labor
- $440/acre

Preparing a Bid

- Per acre vs. per head/day
- Forage type(s), quality and quantity
- How many acres per day can you cover?
- Access points (loading, unloading, camps, etc.)
- Stock water (onsite, hauled, etc.)
- Ease of fencing

- Time of year (and stage of growth)
- Where will you go if you finish early?
- What will happen if the project takes longer than expected?
- Risks (fire, vandalism, toxic plants, etc.)
- Cost of labor

Keep good records!

Expecting the Unexpected

Easter Sunday – Stop the Trains!

The Kids are Back in School!

4-Legged Landscapers

Conclusion

Targeted grazing can be a useful tool for suppressing rangeland and riparian weeds, and for reducing wildfire threat.

Successful targeted grazing projects require knowledge about grazing systems and impacts, and animal behavior.

Time, timing and class/type of livestock are critical considerations for these types of projects.

Selected References

Brown, D. 2014. Plants poisonous to livestock and other animals. Cornell University, Department of Animal Science. Available at www.ansci.cornell.edu/plants)

Davy, J., et al. 2015. Introducing cattle grazing to a noxious weed-dominated rangeland shifts plant communities. California Agriculture.

George, M., B. Frost, and N. McDougald. 2014. *Annual Rangeland Handbook.* Chapter 8. Grazing management.

Howery, L.D., F.D. Provenza, and B. Burrit. 2010. Herbivores learn to forage in a world where the only constant is change. University of Arizona Cooperative Extension Publication AZ1518

Launchbaugh, K., and J. Walker. 2006. *Targeted Grazing Handbook.* Chapter 1. Targeted Grazing – a new paradigm for livestock management.

Roche, L. 2017. Adaptive Grazing Management for Multiple Goals (presentation at CDFW training)