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THE ROUNDUP

University of California Cooperative Extension

Livestock, Range, and Natural Resources Newsletter

Kern, Tulare, and Kings Counties

SAVE THE DATE!!

2015 Southern San Joaquin Livestock Symposium

Thursday, February 25, 2016

- ***When?*** - **Thursday, February 25, 2016**.
- ***Reproduction Focus!*** - This year it's all about reproduction! The Livestock Symposium will focus on reproduction covering topics such as artificial insemination, breeding soundness exams in bulls, cost comparison of AI vs. natural service and more!
- ***New Format and Locations!*** - This year, a morning meeting will be held in Bakersfield and an evening meeting will be held in northern Tulare County. Both meetings will cover the same topics and offer a delicious beef meal.
- ***More Details to Come!*** - Watch for updates on locations, times, topics, speakers, and door prizes as planning progresses.

Mark Your Calendars and Plan to Attend!

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2015 Drought Assessment

For the 2014-15 growing season I evaluated and collected data from 17 sites in Kern County and 7 in Tulare County. My Kern County sites are all established plots that have been sampled for 3 years in a row; elevation ranged from 850 feet to 3,800 feet above sea level. In Tulare County, I utilized sites previously established and continuously sampled by Jim Sullins; elevation at the sampling sites ranged from 600 feet to 3,200 feet above sea level.

I expect a large degree of variation between and within my sampling sites and I am careful to note this expectation as well as its causes in my letter to the Farm Services Agency. Variation can be attributed to slope, aspect, patchy precipitation patterns, elevation, soil type, amount of RDM present, and more. This year precipitation amount and timing were favorable for grass growth until about January when the rains just quit. Quantifying the forage loss due to the lack of regrowth on grazed pastures from January to about March or April was a challenge. In the end, my best estimate was about 25% forage loss from the early cessation of rains in Kern County and about 20% forage loss from the early cessation of rains in Tulare County. My findings, by County, are summarized in the following tables. The tables are formatted differently based on USDA Farm Services Agency differences in each County.

Table 1. Estimated percent forage loss for Kern County for the 2014-15 growing season. Forage loss due to lack of regrowth does not apply to desert ecosystems.

Elevation Range	Avg % Forage Loss as Clipped	Avg % Forage Loss including 25%
Less than 2500 feet	44	69
Above 2500 feet	52	77
East Desert	63	63

County Average: 70

Table 2. Estimated percent forage loss for Tulare County for the 2014-15 growing season.

Elevation	Soil	Production (lbs/acre)	Expected Production (avg Yr)	Estimated % Loss	Estimated with 20% Loss
2665	Blasingame	991	3000	67	87
3279	Blasingame Sandy Loam	1274	3200	60	80
591	Porterville Clay	1172	2100	44	64
2548	Blasingame	686	3000	77	97
1479	Las Posas	1590	3000	47	67
1842	Fallbrook Sandy Loam	1452	2500	42	62

County Average: 76

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Weed Eating Biomachines: How Grazing Livestock can Help Control Invasive Weeds

In any good weed control program there are some basic steps that should be followed. In general, these steps are:

- Identify the weed
- Research and consider potential control options
- Choose control options and make a plan
- Implement weed control plan
- Track results and modify treatments as necessary
- Maintain weed population control through monitoring and continued control efforts

If one of the control options for your weed is grazing, you have to add one more step…choose the right species! Each species of livestock is unique and their individual characteristics must be considered as part of an effective targeted grazing program.

What is targeted grazing?

Targeted grazing is defined as: "the application of a specific kind of livestock at a determined season, duration, and intensity to accomplish defined vegetation or landscape goals" (Launchbaugh and Walker, 2006). In other words, targeted grazing uses the impact of livestock grazing a plant to manage vegetation. Targeted grazing extends beyond weed control and can also include fire fuel management and habitat management. This article, however, will focus on the weed control aspect of targeted grazing.

Grazers, browsers, and everything in between

A grazer is an animal that prefers to eat grass species. Horses and cows are generally considered grazers. Sheep are considered intermediate feeders because they tend to prefer forbs (broadleaf plants) over grasses, however, they readily eat both types of plants. Browsers are animals that prefer to eat shrubs; goats are considered browsers. While each species has definite preferences regarding the types of plants they prefer to eat if given the choice, they can all learn to eat other types of plants, especially if they are introduced to them at a young age.

Choosing the right species for your job

The species most commonly associated with targeted grazing are cattle, sheep, and goats; cattle are the largest of the three species. When considering which species to choose it is important to consider the overall height of the animal and also mouth design. Cattle have a relatively large muzzle and they use their tongue as a foraging tool. They wrap their tongue around the plant they want to eat, draw the plant material into their mouth and then use their lower teeth pressed against their upper dental pad to pinch or tear the vegetation off of the rooted portion of the plant. Because of their larger size and greater height, cattle can reach vegetation sheep may not be able to and they can also provide greater animal impact in the form of crushing and stomping unwanted vegetation when they are held at tight enough densities. The large rumen in cattle also allows them to consume and process large amounts of low quality forage.

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Weed Eating Biomachines, cont...

Sheep and goats have smaller mouths which allow greater ability to select individual plants and plant parts. Sheep and goats can graze a plant and eat only the flowers, or strip the leaves off the stem. In one study, conducted in Idaho, goats were used to control yellow starthistle. The goats were turned out late one year and the yellow starthistle had already entered the 'spiny' stage. Researchers watched as the goats moved through the paddock and ate almost every spiny starthistle flower first. Once the bulk of the flowers had been consumed, the goats moved back through the paddock and proceeded to strip the leaves off the stem of the starthistle plants. The grazing treatment significantly reduced seedset and further, by removing the leaves, the goats reduced the ability of the plant to recover and potentially set seed a second time that season.

Viability of seeds post-digestion

The main goal of any good weed control program should be to significantly reduce seedset. Under that premise, the viability of seeds after passing through a ruminant digestive tract is an important topic to consider. Viability of seeds after being digested is hard to predict because so many factors related to both seed characteristics and digestive function of each ruminant species must be considered. However, a general rule that less than 50% of seeds survive can be assumed with a fair amount of certainty. In the case of yellow starthistle seed viability post digestion was between 2 and 8%. If there is any concern with animals transporting viable seed via feces to uninfested areas, a holding period of 4 to 7 days is recommended.

Final thoughts

When considering which species to choose for any weed control job, the goal should be to match site and plant characteristics to animal ability. Factors such as percent slope, palatability of target species, and growth form of target species are important and should be taken into consideration. Additionally, some weeds may be poisonous to some species of livestock. When planning a targeted grazing program there are many factors to consider and experienced targeted grazing practitioners can help match animal ability, age, pen size, and duration of treatment to individual goals and situations.

It's important to remember that using livestock as a weed control tool also requires consideration of proper animal care and husbandry. Weed eating biomachines cannot be put on a shelf until the next job is ready. They need food and water 24/7/365. Be prepared to work with your livestock owner to meet animal needs and be flexible. Additionally, be prepared for the unexpected, animals have a way of surprising us. For more information contact Julie at: 661-868-6219 or via email at: jafinzel@ucanr.edu.

References:

Launchbaugh and Walker. 2006. Targeted Grazing: A natural approach to vegetation management and landscape enhancement. American Sheep Industry Assocation.

Goehring, B.J., K.L. Launchbaugh, and L.M. Wilson. 2010. Late-season targeted grazing of yellow starthistle (*Centaurea solstitialis*) with goats in Idaho. Invasive Plant Science and Management. 3(2): 148-154

Goehring, B.J. 2009. Effects of targeted grazing of yellow starthistle by domestic goats in northern Idaho and an examination of seed survival in the ruminant digestive tract. M.S. Thesis. University of Idaho, Moscow.

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Residual Dry Matter: What is it and why is it important?

Residual dry matter is basically old, dry grass or other plant material that is left on the ground at the beginning of a new growing season. RDM is important to next year's grass crop because it serves as a natural mulch. RDM helps regulate the temperature and moisture of the soil, giving new grass sprouts a better chance at survival. It also protects the soil from rain drops. This may seem highly counterintuitive to many of you, because clearly, the soil should absorb as much precipitation as possible in order to grow the maximum amount of grass. Let me explain.

When raindrops hit bare ground, they affect the surface of the soil. Raindrops are usually 1 to 7 mm in diameter and can hit the ground at speeds as high as 20 mph. If that raindrop hits bare soil, the impact breaks apart surface soil structure, dislodges soil particles and can splash them up to 5 ft away. The splashed soil particles fill pores in the soil surface that water and air pass through (when water enters the soil it displaces air) and thereby reduce water infiltration rates. Reduced infiltration rates lead to increased runoff, increased soil erosion and they can also lead to reduced production, because less water is absorbed into the soil and made available for plant growth. In contrast, if that raindrop is slowed down by vegetation before it hits the soil, it is far less likely to destroy the structure of the soil at the surface and far more likely to be absorbed into the soil. Water infiltration into the soil is affected by more than just the structure of the soil at the surface, but the soil surface is like the front door of your house and RDM is the welcome mat for your guests. If the water can't get past the front door, it's not getting in.

Many of you may be aware that a thick thatch of dead annual grasses can build up quickly in the absence of grazing. In this case, too much RDM can also be detrimental. When a thick thatch of grass is present, grass seedlings have trouble getting enough sunlight. This can cause reduced plant vigor and even plant death. In addition, water infiltration rates are reduced because bare ground develops under the thatch. Further, bare ground, even under a thick thatch of grass is susceptible to erosion and rills may form as water moves under the thatch.Finally, a thick stand of dead, dry grass poses a very serious fire danger.

Recommended levels of RDM seek to find balance between the damaging effects of too little and too much grass left on the ground as a new growing season approaches. Levels are based on a combination of average rainfall, percent slope, and percent cover from trees and shrubs. Basically, as average rainfall increases, slope increases and percent cover from trees and shrubs decreases, more and more RDM is needed to adequately protect the soil. In areas with an average rainfall less than 12 inches, a percent slope of 10 – 20%, and 0 – 25% cover from trees or shrubs, maintaining at least 400 lbs/acre of RDM is recommended. In areas with an average rainfall between 12 and 40 inches, with a 10 – 20% slope and 0 – 25% cover, 600 lbs/acre of RDM is recommended.

The most accurate time to measure RDM is in the fall, just before the fall rains are expected to begin; usually late September and into October. However, RDM can be measured

Residual Dry Matter, cont…

anytime once grazing has ceased for the season. There are a couple of factors that should also be considered, first, will the pasture be grazed again before the next season of growth? If the answer is yes, than an adequate amount of forage should be left to sustain the herd and protect the soil until new grass growth can replace it. Leaving adequate forage to return to in the fall has the added benefit of reducing the need to buy hay. Second, RDM degrades at an average rate of about 7% each month. This degradation is increased by summer rains and early fall rains that aren't sufficient to trigger germination. If RDM is measured in a pasture on July 1, the target RDM for the area is 500 lbs/acre on October 1, and there will be no further grazing in the pasture until January, then the average RDM in the pasture on July 1, should be close to 600 lbs/acre to account for the natural breakdown of the vegetation.

For more detailed information on RDM guidelines for your area the University of California has published a free guide to managing RDM on annual grasslands in California. It is available at: http://anrcatalog.ucdavis.edu, or I can provide it to you free of charge. The publication is called "Guidelines for Residual Dry Matter on Coastal and Foothill Rangelands in California" and it is UC publication number 8092.

This publication also provides information on estimating and measuring RDM. Measuring RDM is much the same as measuring production and can be done easily be clipping a 1 ft square, to the ground; be careful to only collect the current year's growth. Once clipped, the vegetation should be weighed; one gram per square foot equals 96 lbs/acre. The vegetation can be assumed to be air dry in early October, unless a rain shower has passed through.

Ranching Sustainability Self-Assessment (RSA)

The Ranching Sustainability Self-Assessment (RSA) is a ranch assessment tool developed by ranchers, for ranchers. The RSA is a completely voluntary program and is a "ranching self-help tool [intended] to stimulate awareness and critical thought about how to keep ranchers as working stewards of the land indefinitely through proper economic, social, and environmental practices."

There are a series of questions within 11 assessment categories that include: livestock management, soil management, forage management, biodiversity/wildlife conservation, economics, energy, pest management, and water quality. Completed assessments are submitted to the San Luis Obispo Cattlemen's Association where all personal identifying data is removed and replaced with a unique code. Once all personal data has been removed, the assessment is forwarded to the UC Cooperative Extension Office in San Luis Obispo for entry into the database. Through this procedure, UCCE will periodically distribute updates on the status and progress of the RSA.

The RSA can be accessed at: http://cesanluisobispo.ucanr.edu/files/189997.pdf, or by contacting Julie.

Research Update–Grazing Management Strategies

Roche, L.M., B.B. Cutts, J.D. Derner, M.N. Lubell, and K.W. Tate. 2015. On-Ranch Grazing Strategies: Context for Rotational Grazing Dilemma. Rangeland Ecology & Management 68: 248-256

In 2008, Dr. David Briske published a paper that reviewed and assessed the research to date on grazing management systems. One of the key take-home messages was that rotational grazing strategies do not increase livestock production. The range management community was in an uproar after this controversial article was published.

A number of papers and responses followed, in fact, an entire issue of *Rangelands* was devoted to the response. Today, the debate continues and centers around criticism of the research on a few key points: 1) Research focused on livestock production measurements (weight gain, etc.) vs. a whole picture scenario that includes habitat assessments, species composition, etc.; 2) The studies compromised flexibility in management in order to adhere to a strict grazing method system to maintain scientific and statistical defensibility; and 3) Research focused on small-scale studies, that do not really represent ranch level management.

In 2013, in cooperation with scientists from Wyoming, the Wyoming Stock Grower's Association, and the California Cattlemen's Association, Dr. Leslie Roche and Dr. Ken Tate distributed a survey that sought to assess current grazing systems being used in California and Wyoming and try to draw some conclusions about why one grazing system is used over another. Specifically, they argued that, "characterizing on-ranch grazing strategies, as well as understanding the social, economic, and ecological variables driving ranchers' grazing strategy preferences, is an essential first step toward reconciling the discrepancies between *experimental research-based* and *experiential management-based* perceptions of grazing strategy effectiveness." In other words, lots of people utilize and value rotation-based grazing systems, and if science wants to quantify the value of rotation-based grazing systems, we need to take a step back and look at the bigger picture.

Some of the California survey responses included:

- Grazing strategies: 46% Rotational; 35% Growing-season long continuous; 19% Year-long continuous
- In response to the statement, "I like to experiment with new ways of doing things":
    - Those where were neutral or disagreed were least likely to adopt a rotational grazing strategy (probability of 0.32)
    - Those who agreed with the statement and *did not* rank livestock production as their number one goal had the highest probability of adopting rotation (probability of 0.63)
    - The remainder of the group who agreed with the statement above, but did list livestock production as their number one goal, and identified more than seven "good" or "excellent" information sources were more likely to adopt rotational grazing (probability of 0.60) than those identifying less than seven "good" or "excellent" information sources (probability of 0.43)

Research Update, cont…

- In response to the statement, "With respect to business, I always choose the option with the lowest risk":
  - Those who disagreed had a 0.12 probability of adopting year-long continuous grazing
  - Those who were neutral or agreed and *did not* lease public land were the most likely to adopt year-long continuous grazing (probablility = 0.27)
  - Those who were neutral or agreed and *did* lease public land were the least likely to adopt year-long continuous grazing (probability = 0.08)

In Wyoming, those who did not lease public land had the lowest probability of adopting a rotational grazing system (0.17) and ranchers who ranked livestock production below fourth place (out of nine) had the greatest probability of adopting an intensive rotational grazing system.

The findings of the study show that ranchers do adopt and value rotational grazing strategies despite limited scientific support and public land ranching affects rancher decision making on private lands. Further the study concluded that current science focuses on intensive rotational grazing, when most ranches use a more extensive type of rotation. And, finally, ranchers' grazing system choices and perceptions of success are not driven solely by the types of livestock production variables commonly assessed in grazing systems research.

Cows Cause Global Warming?…Nope!

Cattle are a common target of finger pointing when discussing climate change. However, in 2011 the EPA showed that cattle production does not produce a majority of greenhouse gases in the U.S. The statistics below were originally published on the website http://factsaboutbeef.com in July of 2012. However, they continue to ring true and they clearly demonstrate the sustainability of the beef industry in America.

According to the EPA in 2011:

- Agriculture = 6.9% of total U.S. greenhouse gas emissions
- Livestock = 3.1% of total U.S. greenhouse gas emissions
- Methane from livestock = 2.8% of total U.S. greenhouse gas emissions
- Methane from beef cattle = 1.5% of total U.S. greenhouse gas emissions

Compared with other industries:

- Electricity generation = 33% of total U.S. greenhouse gas emissions
- Transportation = 26% of total U.S. greenhouse gas emissions
- Industrial Use = 11% of total U.S. greenhouse gas emissions
- Residential and commercial use = 8% of total U.S. greenhouse gas emissions

Foothill Abortion Vaccine Update

- The vaccine is being tested under the oversight of the USDA's Center for Veterinary Biologics (CVB)
- The vaccine is currently an experimental product (unlicensed). As such, a permit to transport and administer the vaccine is required from both the USDA and whatever state it is being used in. For example, in order to vaccinate cattle in Nevada, permits are required from California (to move the vaccine through the state), Nevada (to move and administer the vaccine), and the USDA. If any one of these agencies denies the permit, the vaccine cannot be used.
- The reason the vaccine is still an unlicensed product is because the UCD Stott lab have been unable to set up a production facility that meets USDA regulations. The UCD Stott lab is partnering with a small vaccine company who hopes to bring the vaccine to market. The USDA will allow some of the safety and efficacy testing the UCD Stott lab has conducted to be applied to facilitate licensure of their product, but not all. Assuming the small vaccine company is successful, it could take a while before the vaccine is available for commercial use. How long is not known.
- In order to try to provide relief to ranchers and better establish the market share, and with the cooperation of the USDA/CVB, we have partnered with CCA to expand vaccine trials. CCA is coordinating the trials and collecting donations from participating producers to defray the cost of vaccine production, distribution, administration, and safety/efficacy data acquisition. The UCD Stott lab is assisting with logistics, interacting with federal and state agencies and providing vaccine.
- Ranchers who are interested in participating in vaccine trials may fill out an application, (contact Julie if you need the application) and submit it to Billy Gatlin with CCA. At this time, applications may be accepted for 2016. Obtaining the necessary permits can be restrictively time-consuming and may prevent some from participating.
- Each producer will have to fulfill several obligations in order to participate in the trial (contact CCA or Julie for more information). Producers who are unwilling or unable to meet these requirements will not be accepted into the trial.
- The end date for the trials is fluid, however, once the vaccine is on the market, the trials will end. Currently there are plans to vaccinate 2015 fall calvers and 2016 spring calvers. The trial may be extended to include 2016 fall calvers (minimally). The UCD Stott lab will try to extend the trials for as long as needed, but the total trial period is unknown.
- Applications are being accepted from ranchers in areas known to have Foothill Abortion (parts of NV and OR are included). The number of producers who can participate in the trials may be limited by funding and manpower. Submission of an application does not guarantee acceptance into the trial, however, CCA will do their best to accommodate as many ranches as possible. In some cases, logistics may prevent an interested party from participating.

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