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THE ROUNDUP

University of California Cooperative Extension

Livestock, Range, and Natural Resources Newsletter

Kern, Tulare, and Kings Counties

In my last newsletter, I reported on my work to measure the impact of the drought, specifically my work to set up a program in Kern County. Now, the numbers are in for Kern, Tulare, Kings, Fresno, and Madera Counties. Though I just started a program to measure percent forage loss due to drought in Kern County, UC Cooperative Extension has been monitoring drought conditions in Tulare, Kings, Fresno and Madera for at least 10 years in each County, and more than 10 in some Counties. Please refer to the table below of average percent forage loss due to drought, by County.

Western Fresno data represents western Fresno County and all of Kings County, while the calculations from Madera County also represent eastern Fresno County. These calculations are submitted to FSA in each County for them to use as part of their drought insurance program. FSA is required to use multiple sources to make their drought designations, so their findings will most likely differ somewhat from what I have detailed below. For more information about how these numbers are calculated or if you have other questions, please contact Julie at: 661-868-6219 or by email at: jafinzel@ucanr.edu.

I hope everyone is enjoying their summer!

Sincerely,

Julie

County/Area	Average % Forage Loss
Kern	53% loss
Tulare	58% loss
W Fresno	76% loss
Madera	35% loss

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Foothill Abortion Vaccine Status Update

Not long after I started with UC Cooperative Extension I presented an update on the status of the foothill abortion vaccine UC Davis and the University of Nevada, Reno are working to manufacture and make available commercially. At that time, I explained that previously some specialty vaccines, like the one for Anaplasmosis, were licensed through the California Department of Food and Agriculture. However, CDFA is no longer licensing new, specialty vaccines, so researchers must work with the U.S. Department of Agriculture to get the foothill abortion vaccine licensed.

USDA requirements are more stringent than CDFA requirements and both the vaccine researchers and the staff at USDA are charting new territory as they work to certify the safety and efficacy of a vaccine as unique as the foothill abortion vaccine. Currently the vaccine is still in the field testing phase where cattle herds are monitored for both potential negative reactions to the vaccine and the efficacy of the vaccine according to USDA standards and guidelines. The vaccine has proved 100% effective to date. There is no projected date when the vaccine could be available for use.

Some of the challenges the vaccine researchers are facing include a facility where the vaccine could be manufactured. They have been using a facility at UC Davis, however, that facility would need renovations to be able to support commercial production of the vaccine.

Researchers are aware of the some of the challenges producers would face when using the vaccine specifically, the vaccine must be transported and stored in liquid nitrogen and the cost of purchasing the vaccine could be high due to the process used to manufacture the vaccine. The cost of manufacturing the vaccine is expected to be high because it is a live vaccine that cannot be cultured in a dish, but must be cultured in a special mouse that does not have a functioning immune system. Immunodeficient mice are expensive and they must be euthanized so that the infective agent can be harvested from their spleen.

Work is being done to develop a recombinant vaccine through genomic research. In a recombinant vaccine, the genomic sequence of the infective agent, in this case a bacterium, is determined. Next, the genes actually being expressed during infection are identified and used to make a vaccine. A recombinant vaccine would be far less sensitive to temperature and would not require immunodeficient mice in the manufacturing process making the finished product much more cost-effective and practical for on ranch use.

More information on managing the occurrence of foothill abortion through the timing of pasture use can be found in the July/August 2013 issue of the CCA magazine.

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Research Update–Sheep Saliva Helps Grass Grow!

Liu J., L. Wang, D. Wang, S. Bonser, F. Sun, Y. Zhou, Y. Gao, and X. Teng. 2012. *Plants can benefit from herbivory: stimulatory effects of sheep saliva on growth of Leymus chinensis*. Plos One 7(1): e29259

In January of 2012 a group of Chinese researchers, and one researcher from Australia, published an article on the stimulatory effects sheep saliva can have on the growth of Chinese lyme grass (*Leymus chinensis*). The study was conducted three summers in a row, from 2006 to 2008.

Methods varied slightly from year to year, but each year seedlings of Chinese lyme grass were started from seed in small pots. Once established, the plants were transferred to larger pots and maintained outdoors for a month before clipping began. Plants were watered daily in all three years of experimentation. The grass plants were clipped at levels of 0%, 25%, 75%, and 100% utilization, with a fifth level of 50% added the second year of the study. Once a plant was clipped, sheep saliva was immediately brushed onto the cut ends of the leaves to simulate sheep herbivory. A second set of plants received the same clipping treatments without the application of saliva. One month after the clipping treatment, all plants were harvested.

Results were measured five ways: height of plant; aboveground biomass (weight of leaves, etc.); belowground biomass(weight of roots); tillers; and buds. Overall , there was little change in plant height from when the plants were clipped, until when they were harvested for both saliva treated plants and plants that were not treated with saliva. Among the remaining plant characteristics measured, there was a statistically significant difference between the saliva treated plants and the plants that were not treated with saliva at the 25% and 100% clipped levels. The saliva treated plants produced more aboveground biomass, belowground biomass, tillers and buds than the plants that were not treated with saliva. These are very interesting results because they clearly show that sheep saliva stimulated the growth of the Chinese lyme grass.

In their discussion, the authors pointed to the location of the apical and basal meristems on the grass plant as a potential explanation of why the plants responded the way they did. At the 25% and 100% levels of clipping the sheep saliva was applied at or very near the location of meristems. Meristems are critical growth points on perennial grass plants and they are located near the top of the plant (apical) and also near the bottom of the plant close to the ground (basal).

Seeing a strong response from the 100% level of clipping is definitely not a reason to try

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Ask the Advisor

I've got some great questions recently! Keep them coming!

Is there a budget worksheet/spreadsheet available to help calculate costs and profit on a cow/calf operation?

The UC has a two-part course called "Back in the Black" that runs through an example ranch budget in the first part, then in the second part participants enter information about their operation and work with their own budget. Participants in the course are provided with an Excel file in which to enter and edit data and are instructed on the use of the Excel file. The UC also has regional cost studies available for download at: http://coststudies.ucdavis.edu/current.php.
So, why deal with the headache of a budget anyway? The answer is quite simple and is an important business principal. A ranch is a business and if you want to make money in the ranching profession it's important to know your inputs and outputs versus your income. This allows a producer to identify areas where they might be able to cut back a little, or conversely, areas where a little more expenditure might reap large rewards and increase the profit margin for the operation.

If it's your first time calculating a ranch budget, it might be a good idea to start simple and calculate only the basics, for example total gross income minus expenditures made (leases, supplemental feed, equipment repairs, vet bills, etc.) to determine net income for the ranch. For others it might be time to start to account for depreciation, death loss, and costs per cow. Whatever the current state of your budget is, it's important to have one and to keep it updated to help the ranch prosper. I have a number of resources available to help with the budgeting process. Feel free to call, email, or stop by and I can provide them to you. Phone: 661-868-6219 Email: jafinzel@ucanr.edu

What is the proposed critical habitat designation for the Yellow-legged Frog and the Yosemite Toad?

Another great question! The US Fish and Wildlife Service (USFWS) released the proposed critical habitat for the Sierra Nevada yellow-legged frog (*Rana muscosa*) and the Yosemite toad (*Anaxyrus canorus*) on April 25, 2013. The document, including maps is about 60 pages long. I'll do my best to summarize the highlights here, but if anyone has more questions they can find the full proposal at: http://www.gpo.gov/fdsys/pkg/FR-2013-04-25/pdf/2013-09598.pdf
In total the proposed critical habitat encompasses over 12 million acres in Butte, Plumas, Lassen, Sierra, Nevada, Placer, El Dorado, Amador, Calaveras, Alpine, Mariposa, Mono, Madera, Tuolomne, Fresno, and Inyo Counties in California. The 12 million acres listed above includes proposed critical habitat for both the yellow-legged frog and the Yosemite toad. Maps are available online in the full document. The USFWS accepted comments until June 24, 2013 on the proposed critical habitat designation. I apologize for not getting information out about this in time for you all to comment. I wasn't aware of the release of the document until after the comment period had passed.

Some of you may be wondering, "What is critical habitat and why does the USFWS have to identify areas for critical habitat?" Basically, under the Endangered Species Act, the USFWS is required to

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The Importance of Residual Dry Matter

As a follow-up to a question I answered in my last newsletter regarding the calculation of stocking rate for a given area (See Spring 2013, Ask the Advisor, "How is stocking rate calculated"), I would like to address the importance of maintaining adequate amounts of residual dry matter (RDM) in order to benefit next year's crop of grass. 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 the new crop of grass because it serves as a natural mulch. It 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, we need the soil to absorb as much precipitation as possible so that as much grass as possible can be produced as forage for cattle. 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. 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 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 available for plant growth.

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 be detrimental too. Grass seedlings have trouble getting enough sunlight and water infiltration rates are reduced, not to mention the serious fire danger posed by thick stand of grass.

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.

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Ask the Advisor, cont…

identify areas of "critical habitat" or areas where endangered, threatened, or listed species live (habitat) that are important (critical) to the survival of the species. As such, when a species is listed or proposed to be listed the USFWS, as a part of the process they are held to by law, prepares a document that delineates and describes critical habitat for each species. Currently the yellow-legged frog is endangered south of the Tehachapi mountains and proposed threatened north of the Tehachapi mountains. The Yosemite toad is proposed threatened. Status of species can be accessed at: http://www.fws.gov/endangered/.

The Importance of RDM, cont…

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. 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 October or November, unless a rain shower has passed through.

Research Update—Sheep Saliva, cont…

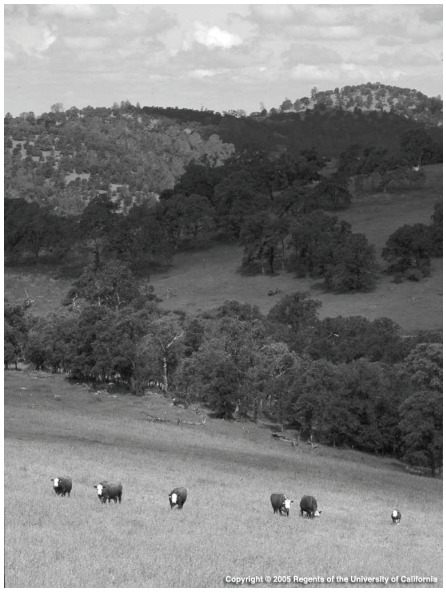
and graze perennial grass plants to the ground. The amount of time it would take the plant(s) to recover (if they survived) and the condition of the animals once they were removed from the area (very hungry and with a low body condition score) would result in a long-term negative return for any livestock operation, in addition to serious degradation of range condition.

This research article found that removing 25% of the plant had a positive effect on compensatory growth, but it did not look at other ecological effects of herbivory, especially at varying levels of utilization and therefore cannot be used to infer a great deal about the effect of stocking rate on the vigor and health of perennial grass plants. While reading through the article I did find a number of interesting references that may show up in this section of the newsletter eventually including a similar study done using bovine saliva.

Alternative Marketing Strategies– Humane, Grassfed, and Organic

I recently had the opportunity to participate in a small, group discussion that focused on the possibility of producing grassfed beef in Kern County, from birth to slaughter. My main thought as I reflected on the discussion was that there must be a strong motivation on the part of the rancher(s) in order to make an alternative marketing strategy like raising and finishing grassfed beef work. One of the main reasons my thoughts focused on that point is due to the number of potential hurdles a rancher must face when working to develop and secure a niche market such as grassfed, organic, or even just a humane certification of some sort. I do not mean to imply that this type of alternative marketing is impossible, on the contrary, a number of producers have pursued this option and been very successful. The right certification(s) can bring significantly more dollars per pound and when done carefully, input costs shouldn't rise much or may even fall.

With the long-term profitability and sustainability (economically, generationally, ecologically, etc.) of the ranching industry a major focus of many groups, I wanted to take this opportunity to provide a bit more information on the details of humane, grassfed, and organic marketing strategies.



First, I read through a couple of the standards and guidelines booklets for humane certifications and they are long enough that I could spend a great deal of time discussing the details of each, but that would take so much space! Instead, I'll provide a bit of information about the types of programs available and then list some of the management areas where these guidelines may differ from typical ranch management practices.

There are six certifying organizations that I am aware of:

- Humane Farm Animal Care (HFAC) – certification program is known as "Certified Humane"
- Animal Welfare Approved – certification program follows the same name
- Global Animal Partnership (GAP) – 5-step GAP Certification, includes a 5+ category
- USDA Organic Certification – USDA Organic
- American Humane Association – American Humane Certified
- American Grassfed Association (AGA) – American Grassfed

Each of these certifying organizations focuses on one or more beef cattle management areas. Also, while I am focusing on beef cattle today, all of these organizations also have certifications for other livestock and avian species. In the case of USDA and AGA, the focus is on the type of feed fed to or eaten by animals and whether or not hormones or antibiotics

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Weed Management–Information resources Available for Weed Management in California

There is a new resource available for weed management in California. It is called "Weed Control in Natural Areas in the Western United States". Joe DiTomaso served as lead author for this book and it is reasonably priced at $40 per copy. What makes this book so unique is that it brings together current research and regulations that pertain to weed management all in one place. A one-stop-shop! The book is available through the California Invasive Plants Council. One of the reasons the book is priced so reasonably is because research and regulations on weed management change rapidly and the book is intended to be updated often to reflect these changes. The lower price point was used so that it would be more affordable for people to replace the book on a regular basis as new research becomes available and as regulations change. The book reviews all methods of controlling and managing a wide variety of weeds including biological control and herbicides.

Joe has made a number of other resources available, for free, to the public which you can find by visiting his website: UC Weed Resource and Information Center (UCWeedRIC) at http://wric.ucdavis.edu/index.htm. Another helpful website that lists herbicides that are labeled for use in California is: http://www.cdpr.ca.gov/docs/label/prodnam.htm. This website is maintained by the California Department of Pesticide Regulation (CDPR). Their home page can be found at: http://www.cdpr.ca.gov/. The CDPR also maintains a database known as PRESCRIBE. PRESCRIBE is an online database that allows users to search for endangered species in an area by identifying the County and also the township and range of interest. Once the database has identified potential endangered species in the area, users can search the database for the product they hope to use, for example, Roundup®, and figure out if there are any use restrictions for the product in the area. The PRESCRIBE database can be found at: http://www.cdpr.ca.gov/docs/endspec/prescint.htm.

A number of other websites provide valuable information on herbicides and weed management:

- Crop Data Management Systems (CDMS) – searchable database of printable pesticide labels
  ⇒ http://www.cdms.net/manuf/default.asp
- Greenbook – a searchable database of printable pesticide labels, MSDS sheets and supplemental labels
  ⇒ http://www.greenbook.net
- National Pesticide Information Center (NPIC) – source of scientific, unbiased information
  ⇒ http://npic.orst.edu
- Pesticide toxicology information at EXTOXNET
  ⇒ http://extoxnet.orst.edu
- UC Integrated Pest Management Program (UCIPM) – educational materials, pesticide safety publications
  ⇒ http://www.ipm.ucdavis.edu/IPMPROJECT/pesttrain.html

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were used. AGA goes a step further and says the livestock much have originated in the U.S. and also that they were never confined to a feedlot situation. The certifications that focus more on animal welfare and handling focus less on what the animal is fed, though they do require that it be good quality feed, and more on how the animal is handled throughout its life. At the top of the GAP scale, at the 5+ level, animals may never be trucked anywhere, including when they are to be slaughtered. Many restrict castration methods, some forbid it. In some cases, marketing is critical, because part of the certification is knowing where all of your livestock originated and how it was treated by previous owners. These certifications require excellent record keeping, many restrict or forbid the use of antibiotics, and many even have shade requirements for cattle. Dehorning is restricted or forbidden by many, as is ear marking. They also require that cattle are maintained at or above a certain body condition score, for most this means somewhere between a 4 and a 6. Many also require low stress handling, restrict the use of electric prods, and require fence-line weaning.

For some ranchers, making a few changes in order to earn more dollars per pound would be rather simple, for others, making the changes required to comply with any certification like those described above would be quite challenging. Each operation is unique and must find its own way of being successful, profitable, and sustainable. If anyone has any questions on how to obtain the standards and guidelines for any of the certifications above, please feel free to call or email. Phone: 661-868-6219 Email: jafinzel@ucanr.edu

The price of stamps keeps going up and budgets seem to keep shrinking. If anyone reading this newsletter received a print version, has an email address and would like to receive the newsletter electronically, please email Julie at jafinzel@ucanr.edu. Thanks for your help!

Archives of "The Roundup" are available online at:
http://cekern.ucanr.edu/Livestock/Newsletters_21/

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