University of California Cooperative Extension

Livestock, Range, and Watershed

Division of Agriculture & Natural Resources

Counties of San Luis Obispo and Monterey

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Inside this issue:

Announcements

Range Improvement Association (RIA) Meeting.

The annual San Luis Obispo County Range Improvement Association Meeting and BBQ will be held Thursday April 22, 2009, at the Arroyo Grande Association Hall, 707 Huasna Rd., Arroyo Grande. The program will include topics on prescribed fires and the Santa Maria River TMDL. The social will begin at 6:00 pm. The dinner is $10. If you would like to join the RIA, the fees are $5. If you have any questions please call Mike Zimmerman (805) 489-4705 or *Mike@dz-law.net*.

Upcoming Workshops from *Working Among the Oaks*

Got weeds? Join us on April 29th, 2010, for a half-day workshop on "Animal Behavior Principles & Training Livestock to Eat Weeds." The specific location in San Luis Obispo is pending final approval, but plan to arrive between 8:30 and 9 AM and leave after lunch. In addition to Aaron Lazanoff, Mike Hall, Rob Rutherford, and Marc Horney from Cal Poly, contributors will include Beth Burritt, Outreach Coordinator for Utah State University's BEHAVE program ("a research and outreach program aimed at understanding the principles that govern diet and habitat selection" - http://www.behave.net), and Marc Lea, SLO County Weed Management Area Coordinator. In addition, Kathy Voth of Livestock for Landscapes (http://livestockforlandscapes.com) will be there via a special video she is preparing on some of the techniques she developed to teach livestock to eat weeds; these methods have been successfully put to the test by many livestock producers. For example, Joe Morris of San Juan Bautista taught his cows to eat milk thistle and found that the animals then readily ate Italian thistle and black mustard as well! Come learn how to make "weeds" part of YOUR animals' diet and improve your pasture at the same time. If you have concerns about any particular weeds or noxious plants, feel free to let us know about them ahead of time or just bring your questions with you. Have you done this before yourself and have some answers for the rest of us? Bring them along too. The cost to attend is $25, which covers materials, morning refreshments, and lunch; Cal Poly students may attend for FREE (please register so we have a ~~herd~~ head count).

Please see our website at http://ucanr.org/centralcoastoaks for a color flyer, updates, and information on other upcoming events. You can register by mail, phone, fax, email, or online (http://ucanr.org/makeweedsBEHAVE). Please make checks payable to UC Regents and mail to Livestock & Weeds Workshop, UC Cooperative Extension, 2156 Sierra Way, Suite C, San Luis Obispo, CA, 93401. All are welcome!

The next workshop event will be "Using Wildlife Trail Cameras" scheduled for 25 May at the Miller Moth Ranch in San Miguel. Join Reg Barrett, UC Berkeley wildlife researcher; Doug Roth, hunting outfitter and guide; Brandy Swain and Ed Bryant from the county Sheriff's Department; Kevin

Kester, rancher and former Sheriff; and our host Mitch Roth for a clinic on the various benefits of trail cameras and how to use them. Mitch and his son Garrett have been using trail cameras on their ranch to monitor wildlife use of water troughs and other resources on their ranch. Already have a trail camera? Whether you have used it yet or not, bring it along to either learn how to use it or share with others what you know. And yes, there will be plenty of food and coffee as well.

Other workshops being planned include topics such as the many values of grazing animals and grazing lands (aiming for late June at the Paso Robles Culinary Arts Academy) and Central Coast agritourism (likely a clinic for producers and existing agtour operators, aiming for the fall).

Supported by a grant from California's Oak Woodland Conservation Program, *Working Among the Oaks* conducts workshops on agricultural stewardship and oak woodland conservation. *Working Among the Oaks* provides a forum for teaching and learning among the public and agricultural community, with an emphasis on sharing practical expertise. The ultimate goal of the workshop series is to foster sustainable management of California's oak woodlands, which occur mostly on agriculturally zoned land.

Questions on any of the above? Contact Jim Zingo (jzingo@co.slo.ca.us) at 805-781-5938.

Cal Poly Plants a New Program

Marc Horney
Assistant Rangeland Professor,
Cal Poly

In September, 2009, the Animal Science department at Cal Poly, SLO hired Marc Horney as a full-time assistant professor to achieve the department's vision of building a program in rangeland resource management. Currently Cal Poly offers one rangeland course, "Principles of Range Management." Spring quarter, Dr. Horney is planning to begin teaching the "Principles" class with a laboratory for the first time in more than a decade, and is preparing new courses in rangeland management which ultimately, he hopes, will allow graduates to meet federal standards for rangeland specialists employed for managing grazing lands, wildlife habitats, and other valuable ecosystems around the western U.S. and the globe. "Cal Poly," he says, "is an ideal place for training students in the many technical disciplines and practical field skills that are necessary for professionals acting in a complex world of competing ideas about the 'best' management approaches on private and public lands. I want our students to spend enough time in the field to have confidence in their ability to identify important things happening on the landscape and know how to capture them with measurements, and spend enough time in the classroom to grasp the many relationships among the things they observe." The vision for teaching about rangeland ecosystems extends well beyond the central coast for Marc, who is continuing his support of a sage-grouse population recovery project in Modoc County, and is intending to establish long-term projects in several other areas as well.

Marc is returning to Cal Poly 20 years after earning his animal science degree there. He spent the bulk of his career working in Cooperative Extension for both Colorado State University and the University of California. He taught as a lecturer for two years at Chico State, and most recently served as the regional rangeland management specialist for USDA-NRCS, covering northern California from his office in Yreka. Marc found his way into the range management profession thanks to John Stechman, who was teaching the rangeland courses at Cal Poly at that time. After Cal Poly, Marc received his Master's degree in ruminant nutrition/range management at Oregon State University, and earned his Ph.D. at the University of Nebraska-Lincoln in ruminant nutrition/range ecology. While he strives for the highest technical proficiency in the application and use of science, he also considers field experience to be indispensible, and is keen on the distinction between what is 'ideal' and what is practical and useful.
"Since I have a background with Cooperative Extension," Marc says, "I am looking forward to many fruitful collaborations on projects and educational programs with CE staff in the years ahead." Marc brought students from his first "Principles" class to the UCCE Oak Field Day in December, and established a first set of rangeland production exclosures at the Walters Ranch this fall with UCCE Watershed Advisor, Royce Larson.

Marc says, "Cooperative Extension Field Days and workshops are great venues for students to meet producers, landowners and managers, and conservation organization staff, and learn what *their* issues are (as opposed to the issues that may be in vogue on campus). That really came out at the Oak Field Day in December. The students were impressed by the people they met there, and the things that they were independently doing and learning. That kicked off a lot of interest among them in finding places where they could participate in conservation and ranch management projects. I think a big challenge may soon be finding enough internship opportunities to meet the demand from students."

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NEW ANTIBIOTIC FORMULATIONS FOR BEEF CATTLE AVAILABLE

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Disease Treatment and Relief of Suffering Combined

Recently, some new products were introduced to aid producers in caring for their cattle. These products are unique in several respects and there will undoubtedly be a number of questions that arise. I will attempt to answer some of the common questions in this column and refer you to your veterinarian for information specific to your herd. The new products are Nuflor Gold® and Resflor Gold®. The products are available from Intervet/Schering-Plough Animal Health. The antibiotic in the products is the same parent compound contained in Nuflor® (florfenicol). In addition, the Resflor Gold® product has a potent anti-inflammatory compound (flunixin meglumine) which controls fever, blunts many of the adverse effects of the animal's inflammatory response, and helps get the animal back on feed much sooner. This compound is the same one that is contained in Banamine®.

What is the amount of antibiotic in the products?

The active antibiotic ingredient (florfenicol) concentration is 300 mg/ml in both the Nuflor Gold® and the Resflor Gold®. This is the same concentration of florfenicol contained in Nuflor® which you may be familiar with already. The solvent in the new products is different, however and this affects the withdrawal times and other aspects of the new products.

What else is different?

The Resflor Gold® product contains the anti-inflammatory compound flunixin, while the Nuflor Gold® does not.

What disease problems are these drugs labeled for?

Nuflor® is labeled for the treatment and control of respiratory disease in beef cattle caused by the common bacterial pathogens and it is also labeled for the treatment of infectious foot rot in cattle. Nuflor Gold® and Resflor Gold® are labeled for the treatment of respiratory disease caused by the common bacterial pathogens plus *Mycoplasma bovis* (a pathogen more frequently diagnosed in recent years). Also, Resflor Gold® is labeled for control of pyrexia (fever).

What are the labeled dosage rates?

The subcutaneous (SQ) dose for all three products is 6 ml/100 pounds of body weight. The Nuflor® product is also labeled for 3 ml/100 pounds when given intramuscularly (IM). The IM dose for Nuflor® is repeated in 48 hours. As per Beef Quality Assurance (BQA) Guidelines, the SQ route should be used whenever possible. The Nuflor Gold® and Resflor Gold® products are for SQ use.

How much drug can be injected per site?

There are some differences between these products in this regard. For Nuflor® and Resflor Gold® the label states 10 ml per site when given SQ. This is the standard BQA recommendation and should be

followed. For Nuflor Gold® up to 15 ml can be given SQ and while this differs from the standard BQA guidelines it is perfectly acceptable for this new product.

Are the withdrawal times the same?

No. The withdrawal time for Nuflor® when given SQ is 38 days and when given IM is 28 days. The withdrawal time for Nuflor Gold® is 44 days and the withdrawal time for Resflor Gold® is 38 days. Depending on the product and route of administration there are 3 different withdrawal times for these products. Remember, the withdrawal time is the time from the last administration of a product until the animal can be sold for slaughter.

What is the advantage of Resflor Gold®?

This unique product is the combination of two drugs: one to fight infection (florfenicol) and one to make the animal feel better (flunixin). The flunixin compound has been available for a number of years as Banamine® and can be used separately, but it must be given intravenously (IV)—which is uncommon in practice. This has led to a number of problems. One is intramuscular use (IM) which is not recommended as the product is very irritating and causes lesions. The other is subcutaneous (SQ) use which results in a prolonged withdrawal time and violative residues of flunixin in some classes of beef products (particularly dairy cows going to slaughter). The combining of the drugs in one product that can be administered SQ with a standardized withdrawal time has resulted in a huge step forward in terms of effective therapy and relief of animal suffering.

What about the Beef Quality Assurance aspects of this product?

As we all know and appreciate, the value of beef has increased tremendously and we no longer have the luxury of being able to tolerate injection site blemishes, abscesses, or toughness of meat due to injected products. The ability to use these products via SQ administration is very important. The Nuflor Gold® product can be used with a higher volume (15 ml) when given SQ and the Resflor Gold® product has the combination of both antibiotic and anti-inflammatory compounds. However, these products reinforce the need for veterinarians and beef producers to carefully read and follow the label directions for use as they are markedly different for each of the products.

Are there any disadvantages associated with the use of this product?

No product is perfect and the use of any product must take into account the potential advantages and disadvantages. These products (Nuflor®, Nuflor Gold®, and Resflor Gold®) tend to be fairly viscous (thick) and at lower temperatures this becomes more of a problem. Intervet/Schering Plough Animal Health is working on practical solutions to these issues. These solutions include devices to keep the products warm and special needles for injection of the products. As always, it is suggested that you consult your veterinarian before using these new products or any animal health product.

What's the bottom line?

The bottom line is we have two new products to treat disease and relieve suffering in our cattle. This advance comes with the responsibility to read, understand, and follow the label instructions to prevent violative residues and injection site problems.

Chicago Climate Exchange
Royce Larsen

The Chicago Climate Exchange (CCX) is a voluntary, legally binding integrated trading system which issues tradable Carbon Financial Instrument^{tm} contracts to owners or aggregators for eligible projects for sequestration, destruction or displacement of green house gas emissions. There has been a lot of discussion lately about whether good management practices on rangelands are a good way to sequester CO_2. There has been an ongoing discussion about global warming. One thing that is for sure is that CO_2 concentrations in the atmosphere have increased. Some governments and organizations have been actively involved in paying for good management with the idea of sequestering CO_2 from the atmosphere.

Some have asked the question, does good range management really help sequester CO_2? This is a very good question. There has been a lot of research done in perennial grass ecosystems, but much less done in the annual grasslands of California. So there is a big question concerning the actual potential of rangelands sequestering CO_2. Dr. Anthony O'Geen, from UC Davis, addressed this in an article which is included in this newsletter.

If you have an interest of being paid for good range management on your property you can learn more about the CCX by calling them, or going to their web site. They can be reached at: Chicago Climate Exchange, 190 South LaSalle Street, Suite 1100, Chicago, Illinois 60603. Their website is: www.chicagoclimateexchange.com. Or by calling Nathan Clark at (312) 554-0819 or Stephen McComb at (312) 229-5134.

Soil Organic Carbon Sequestration Potential in California Rangelands

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Rangelands are extensive landscapes occupying almost half of the planet's land base. There is considerable interest regarding carbon credit trading in rangelands because of its large spatial extent, high soil organic carbon stocks common to most grassland soils, and because sustainable rangeland management practices result in a stable carbon pool. Through the greenhouse gas cap-and-trade program the Chicago Climate Exchange offers tradable carbon credits "Offsets" that are developed by implementing carbon mitigation projects. To be eligible to participate in a sustainable rangeland management offset project and qualify for carbon offset credits land owners must demonstrate that they follow a written grazing management plan that includes: 1) A forage-animal balance where utilization does not exceed 50% of annual growth; 2) A prescribed grazing schedule addressing timing and distribution of grazing on the property; and, 3) A contingency plan for drought conditions.

The Chicago Climate Exchange issues standard carbon offset rates for rangeland. The rangeland soil carbon management offset issuance rate for California is 0.16 metric tons CO_2/acre /year. Land owners demonstrating an ability to implement sustainable range management practices are eligible for this credit. There is one stipulation that appears to exist for California; research has shown that oak trees facilitate carbon sequestration and nutrient cycling. According to the Chicago Climate Exchange Offset Protocols, projects must have maintained the tree layer in order to qualify for carbon offsets.

In the future, it is possible that other carbon trading markets may offer the opportunity to receive carbon credits for specific rangeland management practices that sequester carbon. There are two general options to potentially increase carbon storage in rangelands: 1) Increasing above ground woody biomass, which has a residence time of tens to few hundred years; or, 2) Increasing soil organic carbon, which is one of the largest and most stable terrestrial carbon pools on the planet with residence times approaching thousands of years. Significant increases in above ground woody biomass may not be viable because it comes at the expense of forage production and as a result animal carrying capacity. Management practices that increase soil organic carbon are attractive options.

Research results on the effects of grazing on soil organic carbon has been inconclusive because studies have been conducted across a wide range of ecosystems, climatic regimes, management practices and soil types; each combination showing different response. I n general, grazing is believed to have a positive effect on soil organic carbon levels, increasing root biomass and encouraging the incorporation of plant residues into soil via hoof action. On the contrary, heavy grazing is thought to reduce soil organic carbon levels by increasing soil erosion, altering plant community composition and reducing production, which could have additional negative feedbacks such as increased susceptibility to drought and high soil temperatures. A soil temperature increase would result in greater soil organic carbon losses.

There has been a great deal of speculation and propaganda surrounding the potential for carbon sequestration in California rangelands. Skepticism should be exercised when evaluating carbon

sequestration studies because is difficult to detect a management induced change in soil organic carbon because the existing soil carbon pool is large, variability in soil carbon concentration is high, and any carbon increase in response to management tends to be small, occurring over long time periods. As a result, studies that address carbon sequestration in California rangelands soils should be scrutinized for their inclusion of all factors that affect soil organic carbon variability. Soil organic carbon changes dramatically over short distances in California rangelands as a result of hillslope position, vegetation, microclimate, geology and soil properties. Therefore any validation of a carbon increase must also demonstrate a rigorous experimental design spanning a significant amount of time and space.

In summary, the magnitude of soil organic carbon sequestration in California rangelands is not known and likely varies significantly across the state and within specific landscapes. Little is known about the effects of management practices on soil organic carbon sequestration such as perennial grass restoration, hardwood restoration, rangeland improvements, and prescribed grazing. There are UC research studies just beginning to address these issues. For example, a USDA funded project directed by Dr. Ken Tate (UC Rangeland CE Specialist) and a diverse team of scientists will evaluate the effects of broad-scale prescribed grazing treatments on ecosystem services such as carbon sequestration at the Sierra Foothill Research Extension Center.

Royce Larsen
Watershed/Natural Resource Advisor
San Luis Obispo and Monterey Counties

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