



University of California ≈ Cooperative Extension

Sutter/Yuba Counties

142A Garden Highway, Yuba City CA 95991

Tel: (530) 822-7515 ≈ Fax: (530) 673-5368

HERD ROUND THE RANGE



BEEF & RANGE FIELD DAY

UC SIERRA FOOTHILL RESEARCH & EXTENSION CENTER

8279 SCOTT FORBES ROAD, BROWNS VALLEY

APRIL 19, 2007

AGENDA

MORNING MODERATOR – ROGER INGRAM, UCCE LIVESTOCK
ADVISOR PLACER/NEVADA COUNTIES

- 9:30 AM WELCOME AND INTRODUCTIONS, *ART CRAIGMILL, DIRECTOR, SFREC*
- 9:35 AM FISH SPAWNING AND CHANNEL CHANGE PATTERNS ON THE DYNAMIC LOWER YUBA RIVER, *GREG PASTERNAK, LAND AIR WATER RESOURCES, UC DAVIS*
- 9:55 AM WHAT ARE THE EFFECTS OF RAINFALL CHANGE ON RANGELAND PRODUCTIVITY AND SOIL CARBON? *WENDY CHOU, ECOSYSTEMS SCIENCES, UC BERKELEY*
- 10:15 AM EFFECTS OF PRESCRIBED FIRE ON OAK WOODLAND SOIL LANDSCAPES, *TOBY O'GEEN, LAND AIR WATER RESOURCES, UC DAVIS*
- 10:35 AM CALIFORNIA RANGELAND CONSERVATION COALITION PANEL, *TRACY SCHOHR, CCA*
- 11:30 AM TRI-TIP BBQ LUNCH – *SERVED BY THE YUBA-SUTTER COWBELLES & SFREC STAFF*

DURING LUNCH:

CALIFORNIA CATTLEMEN'S ASSOCIATION OFFICERS INDUSTRY UPDATE



Registration:

9:00 - 9:30 am

\$15.00 (Includes proceedings,
refreshments & lunch)



Directions:

From Marysville take Hwy 20 east (14 miles) towards Grass Valley, turn north on Peoria Rd. and follow the signs (5 miles). From Grass Valley, take Hwy 20 west (18 miles) to Peoria Rd.

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If special accommodations are required
please contact SFREC at
(530) 639-8800.

AFTERNOON MODERATOR – GLENN NADER, UCCE LIVESTOCK ADVISOR,
BUTTE/SUTTER/YUBA COUNTIES

- 12:50 PM TRAVEL TO PORTER
- 1:00 PM ENHANCING NATURAL OAK REGENERATION, *DOUG McCREARY (UC BERKELEY-SFREC)*
OAK REGENERATION & GRAZING AND OVERVIEW OF STATE TRANSITION MODEL PLOTS, *STAN HARPOLE, ECOLOGY & EVOLUTIONARY BIOLOGY, UC IRVINE*
- 1:40 PM TRAVEL TO HAWORTH
- 1:55 PM VEGETATIVE BUFFERS AND WETLANDS TO FILTER E. COLI AND OTHER POLLUTANTS IN RUNOFF FROM PASTURE AND RANGELANDS, *KEN TATE, PLANT SCIENCES, UC DAVIS AND ROB ATWILL, SCHOOL OF VETERINARY MEDICINE, UC DAVIS*
- 2:50 PM BLACK RAILS IN THE SIERRA FOOTHILLS: DISTRIBUTION AND HABITAT CHARACTERISTICS, *ORIEN RICHMOND, ECOSYSTEMS SCIENCES, UC BERKELEY*
- 3:10 PM WRAP-UP, *CHARLIE RAGUSE, PROFESSOR EMERITUS, PLANT SCIENCES, UC DAVIS*

FOR MORE INFORMATION ABOUT THE SIERRA FOOTHILL RESEARCH & EXTENSION CENTER, GO TO:
[HTTP://GROUPS.UCANR.ORG/SIERRAFOOTHILL/](http://groups.ucanr.org/sierrafoothill/)

*****NO PRE-REGISTRATION – EVERYONE WILL BE ACCOMMODATED*****

TO FERTILIZE OR NOT TO FERTILIZE...

Larry Forero, Livestock Advisor, UCCE Shasta/Trinity
Dan Drake, Livestock Advisor, UCCE Siskiyou
and Rollie Meyer, CE Soil Specialist, University of California, Davis

Energy costs have increased and with it cost of production of hay and pasture. Many producers are considering not fertilizing this year in an effort to reduce costs.

Before making a decision about fertilizing, review what you know about fertilizers. In Shasta County, the most popular fertilizers are Ammonium Phosphate (16-20-0-15), Urea (46-0-0-0), Ammonium Sulfate (21-0-0-24) and Monoammonium phosphate (11-52-0-0). Table 1 summarizes the percentage of nutrient components in each fertilizer.

Table 1-Percentage of Nutrient Components by Fertilizer Type

Fertilizer	Name	%N	%P ₂ O ₅	%K ₂ O	%S
16-20-0-15	Ammonium Phosphate	16	20	0	15
46-0-0-0	Urea	46	0	0	0
21-0-0-24	Ammonium Sulfate	21	0	0	24
11-52-0-0	Monoammonium Phosphate	11	52	0	0

The ideal pasture for cattle or sheep is a mixture of legumes and grasses. An optimum mixture is probably 25% legumes and 75% grasses. Generally speaking:

- If you have some legumes, but desire more fertilizer with a product containing phosphorus such as ammonium phosphate or monoammonium phosphate.
- If you have some legumes but their leaves are small and appear stunted, they may respond to additions of phosphorus.
- If you do not have legumes, consider overseeding

As a rule, applying nitrogen will stimulate more grass growth. Before making a fertilizer decision, take the time to assess your pastures. There are several ways to assess your pastures. Early in the growing season there is little grass growth so a visual assessment is difficult. It is also difficult to obtain a tissue sample. The tissue samples would be from very immature that would likely have high nitrogen content due to its concentration in a small amount of grass material. Soil tests are practical any time of year.

SOIL SAMPLING

Soil samples are best for nitrogen and potassium. Table 2 lists critical levels. Walk a diagonal across the pasture collecting about 15-20 cores (3/4" in diameter) of soil from the top 6 inches. Avoid collecting samples from areas where there appears to be a plant response from urine or manure. Put the samples in a paper bag. You will need about three cups of soil.

TABLE 2-INTERPRETING SOIL TEST ANALYSIS

Nutrient	If Soil Test is...	Suggested Fertilizer Rate
Phosphorus	< 5 ppm	100 lb P ₂ O ₅ /acre
	5-10 ppm	50 lb P ₂ O ₅ /acre
	10-20 ppm	25 lb P ₂ O ₅ /acre
	>20	none
Potassium	<40 ppm	200 lb K ₂ O/acre
	40-60 ppm	100 lb K ₂ O/acre
	>60 ppm	0-50 lb K ₂ O/acre

To determine the amount of product to use, divide the desired amount of P₂O₅/acre by the percent of P₂O₅ in the product to give the pounds of product per acre. For example, if you wanted to apply 50 lbs of P₂O₅/acre and were going to use ammonium phosphate, divide 50 by .2 to give 250 lbs of product.

Many local producers have been applying Ammonium Phosphate to their pasture annually. This strategy assures the clover is provided phosphorus and sulfur and a limited amount of nitrogen is available to encourage grass growth. A soil test will confirm if phosphorus levels are adequate in which case continuing to apply a phosphorus fertilizer would not make sense.

TISSUE SAMPLING

Plant tissue samples are best for determining nitrogen and sulfur levels. Critical levels are outlined in table 3. Walk a diagonal across the pasture collecting grass blades (from the same species if possible). Avoid collecting samples from areas where there appears to be a plant response from urine or manure. Try not to collect dead or decadent plant samples. Put the samples in a paper bag (not a plastic bags the samples may rot).

TABLE 3-INTERPRETING PLANT TISSUE ANALYSIS

Grasses (tall fescue, orchard grass and other)	Plant Part		Deficient	Critical	Adequate
	Top 4-6 leaves, no stems				
		N%	<2%	2.0-2.8%	>2.8%
		S%	<.10%	0.10-0.15%	>0.15%

Source-Adapted from *Western Fertilizer Handbook, 9th Edition*

Recent fertilizer trials on irrigated fescue and orchardgrass pastures in Lassen, Modoc and Siskiyou Counties that were hayed found a very economical response to nitrogen applications (personal communication with Rob Wilson, Lassen County UCCE). They observed a highly favorable response with the fertilizer was applied in split amounts. That is all the fertilizer was not applied in the spring but split into 2 or 3 applications. Trying to adapt their results to grazed not hayed pastures suggests nitrogen rates of about 100 lbs. of nitrogen per acre would be very economical. In practice if soil phosphorus levels were found adequate, ammonium sulfate might be used to supply nitrogen (and sulfur) but no phosphorus at a rate of 250 lbs per acre in the spring and a second application of 250 about mid season, provided there was adequate water.

Tables 4 and 5 summarize cost on a per unit nitrogen and phosphorus basis. Urea and ammonium sulfate are less expensive sources of nitrogen than ammonium phosphate and monoammonium phosphate at the prices shown. Ammonium sulfate does provide some sulfur which can be deficient on some soils. For a source of phosphorus, monoammonium phosphate is less expensive for each unit of P, even though it is more expensive on a per ton of product basis.

If a field was being considered for fertilizing with 200 lbs of 16-20-0 (ammonium phosphate), the most commonly applied fertilizer in Shasta county on pasture, effectively 32 lbs of N and 40 lbs of P₂O₅ would be applied for a material cost of \$39.90/acre. If nitrogen was the nutrient needed the same amount (32 lb N per acre) could be obtained with 152 lbs of ammonium sulfate at a product cost of \$22.72 per acre. If phosphorus was needed, the same amount of P₂O₅ (40 lb) could be obtained with 77 lbs of monoammonium phosphate at a product cost of \$18.83 per acre. This clearly indicates why soil testing to assess the phosphorus levels is cost effective. If it isn't needed, don't use it.

TABLE 4-COST PER UNIT NITROGEN

Fertilizer	Name	Cost/Ton Spring 2007	\$/Unit N	Cost/Ton Spring 2004
16-20-0-15	Ammonium Phosphate	\$399	\$1.25	\$255
46-0-0-0	Urea	\$499	\$0.54	\$371
21-0-0-24	Ammonium Sulfate	\$299	\$0.71	\$215
11-52-0-0	Monoammonium Phosphate	\$489	\$2.22	\$300

TABLE 5-COST PER UNIT PHOSPHORUS

Fertilizer	Name	Cost/Ton Spring 2007	\$/Unit P	Cost/Ton Spring 2005
16-20-0-15	Ammonium Phosphate	\$399	\$1.00	\$255
11-52-0-0	Monoammonium Phosphate	\$489	\$0.47	\$300

Every article you read and every Farm Advisor you talk to encourages you to test your fields so you can maximize your return on fertilizer investment. Costs for tests are modest. Generally less than \$50 for each. Below are a couple of simple points to help you through the process:

~ If you want to achieve the maximum benefit for the dollars you spend on fertilizer, the field must be amended with the most limiting nutrient. For an irrigated pasture operation it is important to keep in mind the only way you get your money back from fertilization is to:

Grow and harvest more feed through:

- ▶ Increase Stocking Rate
- ▶ Make hay
- ▶ Stockpile feed

~ The intent of this article is to get producers to think carefully about fertilization. What you are currently doing may not provide the biggest bang for the buck. If you are currently providing adequate water (water is not the limiting factor), applying nitrogen will produce more grass with the same amount of water.

Remember:

- ▶ All Fertilizers aren't considered equal for a reason
- ▶ Determine the limiting nutrient through tests and visual examination
- ▶ Think about what you are doing and spend your fertilizer dollars wisely

If you need help finding analytical labs, pulling samples, submitting to an analytical lab and interpreting the results please contact any of the newsletter authors.