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Managing Smutgrass in Irrigated Pastures

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Smutgrass (*Sporobolus indicus*) is a weedy tufted perennial grass. It is native to tropical America. It occurs as a weed in many different areas, but is most problematic in pastures and turf in the southern and western United States. Smutgrass is well adapted to the warm summer temperatures of the Sacramento Valley, particularly in irrigated areas. It's name is derived from a black fungus that often develop in its seed head in humid areas. At first glance, smutgrass may appear to be a desirable bunchgrass, however, its palatability is very low. Even in rotational grazing situations, cattle generally avoid smutgrass.

Understanding the biology of smutgrass is important to managing this pest:

1. Smutgrass is a warm season perennial—it remains dormant in the winter, actively grows and produces seed during the warm summer months.
2. The plant can produce up to 45,000 seeds per year.
3. Because the seeds are very small, they are easily distributed by animals, wind, and water.
4. Fruits become sticky with a gelatinous mucilage when moistened. This accounts for a adaptability in irrigated areas.
5. Seed germination on undisturbed soil is about 9%. Germination rate can increase up to 94% if the soil surface is disturbed.
6. Seeds can survive in the soil for more than 2 years.

Mature tall fescue also grows in clumps and can resemble smutgrass from a distance. However, smutgrass has a very distinct spike-like inflorescence (see photo above) that is not obviously branched. This characteristic makes it easy to distinguish smutgrass from other irrigated pasture grasses.

Initial infestations with smutgrass in pastures generally occur when the soil has been disturbed and moisture is available. To prevent infestation, it is critical to manage such areas and prevent establishment.

The tools available to manage smutgrass include:

1. Burning
   A. Burning can reduce old leaf and stem biomass of smutgrass and clean up the pasture if a rancher plans to graze the smutgrass the following spring. However, researchers at University of Florida found burning alone was not an effective measure in the control of this weed.
2. Mechanical
   A. Research has shown that while repeated mowing can decrease the diameter of individual plants, the density of plants increased. When mowing was discontinued, smutgrass eventually returned to its previous density.
   B. Mechanical attempts to remove the plant can lead to soil disturbance, which can have the reverse effect and increase in the infestation.

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3. Biological Control
   A. There have been no biological control efforts for this weed in the US.
4. Grazing Management
   A. Although not studied, it may be possible to manage smutgrass through careful grazing practices. A well established pasture with ample canopy cover can reduce bare ground areas from receiving necessary sunlight for germination and establishment of smutgrass (i.e. don't graze pastures too low, as this will reduce competition with more desirable species).
5. Chemical
   A. Glyphosate products (Roundup®, etc.) are very effective for spot treatment of smutgrass if the plant is actively growing. Control of smutgrass with herbicides is lower during the late fall, winter and early spring seasons, when plants are not actively growing. Because glyphosate is a non-selective herbicide, treated areas should be reseeded with desirable grasses and/or clover to prevent reinfestation. For more information on control and identification contact your local Farm Advisor's office.

Product	Rate	Water	Timing	Application
Round-up	2% Glyphosate	98%	Mid spring-Mid-Fall	Spray or wick foliage to wet

When herbicides are used, it is important to read and follow all label instructions—understanding the label improves efficacy and assures the product is being applied safely. Some products require an Operator ID number. If you have any questions about this, call your local Agriculture Commissioner's office.

Table summarizes the products outlined above.

Product	Operator ID	Restricted Materials Permit	Notice of Intent	Use Report
Round-up	**Yes**	**No**	**No**	**Yes**

References:
DiTomaso, J.M. and E.A. Healy. 2007. Weeds of California and Other Western States. Univ. Calif. Agr. Nat. Res. Publ. #3488. Oakland, CA.
Ferrell, J.A., M.B. Adjei, J.J. Mullahey and P. Mislevy. 2006. Smutgrass control in perennial grass pastures, University of Florida.

Drought and Cow Performance

Glenn Nader—UC Farm Advisor

This year's drought is presenting cattle operators with a dilemma of limited feed resources, high feed costs, and elevated pasture rent prices. Many operations will have had cow body condition lower due to the poor feed conditions. As shown in the following table, Rick Funston of University of Nebraska, determines that cow Body Condition Score (BCS) at calving has a direct correlation to pregnancy rate, the time it takes to rebreed (calving interval) and weaning weight of females.

Relationship of Body Condition Score (BCS) to Beef Cow Performance and Income[a]

BCS[b]	Pregnancy rate, %	Calving interval, days	Calf wean wt, lb	Calf Price $/cwt	$/cow exposed[c]
3	43	414	374	96	154
4	61	381	460	86	241
5	86	364	514	81	358
6	93	364	514	81	387

[a] Kunkle et al., 1994.

[b] 1=emaciated; 9=obese.

[c] Income per calf x pregnancy rate.

As shown above, performance and income are markedly compromised in cows that calve in a body condition score lower than 5. Given the feed costs it may be in the best interest to consider selling cows and address the capital gain tax challenge than keep too many cows in poorer feed conditions and let body condition decrease. □

Unprecedented Change, New Challenges and Opportunities

Dan Drake, Livestock Farm Advisor

The "old days" are now just two years ago. Dramatic changes in feed and fuel costs have occurred in just the past two years. Grain prices are much higher as are prices for hay. How much have those prices increased ration costs and do they dictate fundamental changes in the rations for the cow herd? In an attempt to answer those questions rations from the "old days" were compared to those with current prices.

For this comparison fall calving cows wintering on hay were considered. Prices and quality of common hay and grain were used. The rations were based on grain hay that was home grown and thus priced at a cost to get it in front of the cows. Other hays and grains were priced f.o.b. the farm plus $25 per ton transportation. This information was used in a least cost computer ration program to unbiasedly select a ration that met the animals requirements at the least cost. In this comparison the only change was the price of feeds; using prices from the "old days" and today's. The assumptions and prices are shown in Tables 1-3

Surprisingly, the computer selected almost the identical rations even though the prices for each component were drastically higher in 2008. For this comparison, 2008 prices were entered using standard price reports and what local growers are receiving. This suggests that, universally, buyers have made adjustments to the commodity prices and the same balance between feedstuffs (hay and grain) exists but at a much higher level.

Table 1. Lactating cow nutrient requirements.

Cow Requirements	DM Basis	As Fed
Daily intake, lbs.	24.9	28
Crude protein, %	8.8	
TDN, %	56	
Calcium, %	0.25	
Phosphorus, %	0.17	

Table 2. Nutrient analysis and cost of feeds considered in the least cost ration.

			"Old Days"	2008
Feeds Available	**TDN, %**	**CP, %**	**$/ton**	**$/ton**
	100% DM Basis		**As Fed Basis**	
Grain hay, soft dough	55	6	70	155
Grain hay, boot	60	9.5	80	180
Grain hay, flowering	55	7.5	75	170
Alfalfa, Util	54	14	90	180
Alfalfa, Fair	57	17	105	190
Alfalfa, Good	59	19	120	200
Alfalfa, Prem	61	21	135	210
Alfalfa, Supreme	64	23	150	220
Grain (Wheat)	89	10.8	125	250
Corn, Flaked	88	10	120	270
Molasses	72	5.8	80	
Urea	0	281		350

Table 3. Least cost ration satisfying animal requirements (Table 1) and available feeds (Table 2).

Selected Least Cost Ration	"Old Days"	2008
	As Fed Basis	
Grain hay, boot, lb/day	15.4	16.1
Grain hay, soft dough	9.3	9.9
Alfalfa, Util	2.9	1.7
Urea		0.02
Daily cost/cow	***$1.07***	***$2.39***
Ration cost, $/ton	$77	$172

Not surprisingly the daily feed costs have gone up dramatically. Perhaps the extent is surprising, daily feed costs for cows have more than doubled from $1.07 to $2.39 per cow per day. The increase certainly takes your breath away, may be your profit as well.

The increases in feed costs present new challenges. Based on the feeds used in this ration, the "value" or "opportunity value" of other feeds can be estimated (Table 4). If feeds could be obtained for less than the "Value" shown in the table then they would lower feed costs. There may be some chance to purchase wheat, rice straw or rice bran for less than shown in Table 4.

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Table 4.

Feed, TDN, CP	"Value"
Alfalfa, Fair 57 17	189
Alfalfa, Good 59 19	195
Alfalfa, Prem 61 21	200
Alfalfa, Supreme 64 23	210
Almond hulls 45 1.7	140
Corn stover 50 5.9	148
Corn, Flaked 88 10	237
Grain (Wheat) 89 10.8	238
Grain hay, flowering 55 7.5	167
Molasses 72 5.8	172
Rice bran w/ germ	208
Rice straw	136
Triticale grain 84 18.9	240
Wheat straw	138

Other responses and comments I have heard (from a variety of sources) suggest several possible changes to cope with these increased costs.

1. Increase grazed forages to reduce hay feeding.
2. Shrink cow herds to provide carryover or "standing" forage for more months into the winter.
3. Ship cows to warmer climates for grass.
4. Grow more alternate feeds that provide quality forage into the fall and early spring.
5. Consider more alternate, non-traditional preserved feeds and by-product feeds.
6. Shift to spring calving.
7. Reduce cow size and/or reduce milking potential to lower feed requirements.
8. Institute higher intensity and rotational grazing to encourage greater carrying capacity.
9. Rent/lease more grazing ground.
10. Fertilize to get more forage from the same ground and water.
11. Wean earlier so calves get the better feed. Use less than pairs and find a low quality forage for the dry cows. (Couple this with item 4 below).

These 11 items focus on the cost side and the feed side. Other possibilities may include factors to increase the output side (without increasing the inputs as much). These might include:

1. More hardware. This might be an additional water tank and piping, or fencing, to help distribution of cattle on rangeland and thus increase grazing. Producers that have purchased hay, may want to purchase used haying equipment. Dairymen have been purchasing new haying equipment and there might be a large supply of used haying equipment. The higher costs of hay may, over several years justify investing in fixed costs.,

2. Increase breeding management. A simple 2 breed rotational breeding system, instead of just using a single breed of bulls, has typically shown an overall increase of 25 percent in output. This can be done while maintaining any popular color for marketing premiums. Perhaps even go to a 2 breed rotation system that also uses terminal sires to maximize output while still raising your own replacements.
3. Adopt new management practices such as age and source verification, natural, etc. to receive higher prices.

4. Reduce cow herd and run more of your own raised stockers. The "stockers" provide additional flexibility for poor forage-growth years, may be synchronized better with seasonal forage growth. In addition, some experts suggest feedlots will seek heavier weight cattle to reduce days on feed. Calves up to about 900 pounds can be placed in feedlots for short turn-around feeding. Some of these "experts" even suggest the typical price difference between light and heavy calves may be inverted in the future, giving additional incentive to keep weaned calves on grass longer.

5. Anticipate market changes. Recently the emphasis has been on quality beef, beef for the higher end. With advancing food costs, consumers may become more price-conscious to lower their food bill. Thus, beef below Prime and Choice grades may become more attractive. At the same time, if and when export markets expand, the spread between Choice and Select may become even greater. Competition globally will increase and interact with U.S. and export markets.

6. The current production/finishing systems have been based on relatively cheap grain. Corn at $8 or even $5 a bushel is far different from $2 corn, so expect changes in the feeding industry. Cattle are more flexible in their grain requirements than competing meat products and, even today, grain represents only a fraction of the total energy requirements to produce beef.

Probably every ranch is already doing at least some of these items to some degree, and not all are feasible on every ranch. □

USDA-FSA Critical Deadlines

Joe Gassaway, County Executive Director & USDA Farm Service Agency, Redding, CA

There have been numerous inquires from livestock operators about the availability of government programs to assist with the forage shortfall. Depending upon what county(s) you operate in, there could be federal assistance available. The new farm bill will change the way we do business. Take a moment to review the deadlines outlined below.

The Farm Service Agency is announcing critical program deadlines for your calendar. Be sure to contact your local office NOW (phone numbers below) for an appointment or more information.

■ 2008 Disaster Programs - Buy-In Deadline September 16: To be eligible for disaster programs for crops, (trees/ vines/bushes and forage) all of your crops, including forage, must be covered by crop insurance or NAP.

■ 2008 Acreage Reports: For crops other than small grains (wheat, barley, and oats), the acreage report deadline for 2008 has been extended from the earlier date to August 15, 2008.

■ 2008 Direct and Counter-cyclical Program (DCP): County offices are now taking appointments for the 2008 DCP. Sign up must be completed at your local FSA office by September 30, 2008.

■ 2005 - 2007 Crop Disaster Program: FSA is still taking applications for quantity and quality losses of insured or NAP-covered crops. Signup closing has not yet been announced.

Call your FSA office for an appointment:

Shasta 530-226-2568
Trinity 530-226-2568
Lassen 530-257-4127
Modoc 530-233-391
Tehama 530-527-3013
Butte 530-534-011
Glenn 530-934-46692
Sutter/Yuba 530-671-0850
Siskiyou 530-842-6123

Drought Sales of Livestock: Managing the Taxes

Glenn Nader - UC Farm Advisor

Matt Byrne – Calif. Cattlemen's Assoc., Executive Vice President

Drought conditions and a lack of feed in many parts of the state this year have raised many questions about various management options available to reduce the impact on your operation. Weaning calves early, purchasing feed, leasing additional pasture, or reducing herd numbers are some of the options available to you.

It is important to consider the fact that selling animals can trigger capital gains taxes. There are two provisions in the tax code that address the ability of livestock owners who exercise this drought management decision to avoid additional tax liability.

Code Section 451(e)

Allows ranchers whose principal business is agriculture and who use a cash accounting method to postpone reporting the taxable gain on sales of any livestock above the yearly average sales for one year. To qualify the producer's county must have received a federal disaster declaration. Sales related to the drought under this section can qualify even if they occur prior to the declaration.

Code Section 1033(e)

Allows ranchers whose principal business is agriculture and who use any accounting method to postpone, and altogether avoid, paying taxes on the gain from the sale of breeding animals above the yearly average sales if they are replaced within a specified time frame. The time frame varies depending on whether or not your county was declared a federal drought disaster.

In federally declared drought counties, the replacement period ends at the conclusion of the first taxable year after the *first drought-free year* for that county. The 'first drought-free year' is determined based upon the U.S. Drought Monitor at *http://www.drought.unl.edu/dm/monitor.html*. IRS will publish a list each September of the counties for which a drought exists. In counties not declared federal disaster area the replacement period ends *two years* after the close of the tax year in which the involuntary sales occurred.

The information in this article is a guide to help you examine the management options available to you. To ensure that you qualify for tax relief under either of these code sections it is advisable to speak with a tax professional.

References:

National Cattlemen's Beef Association, 2007, Q&A:

Tax Options for Drought Sales of Livestock, National Cattlemen's Beef Association, Washington, D.C. 20004, (202)347-0228
http://www.beefusa.org/uDocs/qaondroughttaxmay07.pdf □

UC Forest Management & Roads Workshops Are Coming Soon to an Area Near You!

Recognizing and Managing Health Forest Ecosystems

Lecture Series:

Have you ever wanted more information on natural resource topics that you keep seeing in the media and elsewhere? What exactly is the relationship between wildfire and forest health? What is "forest sustainability" and "community-based natural resource management?" **If you want the answers to those questions and more**, attend one or more of the sessions in this series, *Recognizing and Managing Healthy Forest Ecosystems*! Join us for one, two or any combination for $5 each evening. This lecture series will begin on August 20 and will meet every Wednesday throughout the fall in downtown Redding from 6:30-8:30 pm.

Backcountry Roads, Pre-Fire Preparedness and What to do after the Fire workshops:

These workshops will help you as a forest landowner manage your forestland property to enhance its health while minimizing risks. We'll cover the aftermath of fire and pre-fire preparedness, the history of the region, your watershed and more in an interactive workshop. This is an opportunity to learn about your property and to ask professionals questions and get answers!

Workshops are planned for Paradise (Forest Ecosystems/Defensible Landscapes) on August 1, Shingletown (Forest Ecosystems/Defensible Landscapes) on August 16, McArthur (Forest Ecosystem) on September 5, Weaverville (Roads) on September 15.

Pre-registration is encouraged for both all of these events because seating is limited, so register at http://groups.ucanr.org/Forest/ and click on "2008 Forest Stewardship Workshops."

For more information:

Contact Sherry Cooper 530-224-4902, slcooper@nature.berkeley.edu or Carol Fall, 530-628-5495 , (530-623-7155 cell), cjfall@ucdavis.edu

Irrigated Pasture Management and Quality – Seasonal changes in quality

Larry Forero *UCCE Advisor Shasta and Trinity*
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Josh Davy *UCCE Program Rep. Tehama, Glenn, Colusa*
Glenn Nader *UCCE Advisor Butte, Yuba, Sutter*

Irrigated pasture is an important component for beef cattle operations in California and is critical for an increasing number of pasture-based dairy producers. Ranchers must balance both forage/grazing management and adherence to water quality regulations. The rising cost of fertilizer and animal transportation coupled with water quality regulations has increased both producer and regulatory focus on irrigated pasture. Higher costs of grain suggest increasing livestock weight gains and from forages may become more important economically. Ranchers are looking for opportunities to increase sustainability (economically as well as environmentally) by increasing stocking rates without adversely affecting individual animal performance.

UC Cooperative Extension initiated a study in the summer of 2007 that looked at a variety of irrigated pasture attributes and analytical tools. Seventeen ranches in mountain (6) and valley (11) regions of Northern California participated in the study. Forage and manure samples were collected from each of the ranches on a 30 day basis beginning in April. Samples were sent to laboratories on both the Davis and Texas A&M campuses for forage quality analysis. Analysis included both standard wet chemistry and newer NIR (near infrared) methods. In addition, air temperature, species composition, forage height and weight, fertilization records, adequacy of irrigation, livestock grazing (in and out dates and number of head), were recorded.

Because of the tremendous amount of data collected for this study, it is impossible to share it all in a single newsletter article. Thus, the focus of this article is to relate the seasonal forage quality (protein and energy) witnessed by traditional sampling and analysis (wet chemistry) in the mountain and valley pastures. In the next newsletter there will be an article comparing the Texas A&M method for estimating forage quality with traditional wet chemistry techniques.

Livestock nutrient needs vary based upon their level of production (i.e. a dry cow needs a lower quality diet than a cow nursing a calf). Table 1 outlines the crude protein and energy requirements of four different classes of livestock. Protein is important for lactation, growth and late gestation fetal development. Energy is necessary for activity, milk production, growth, and is stored as fat.

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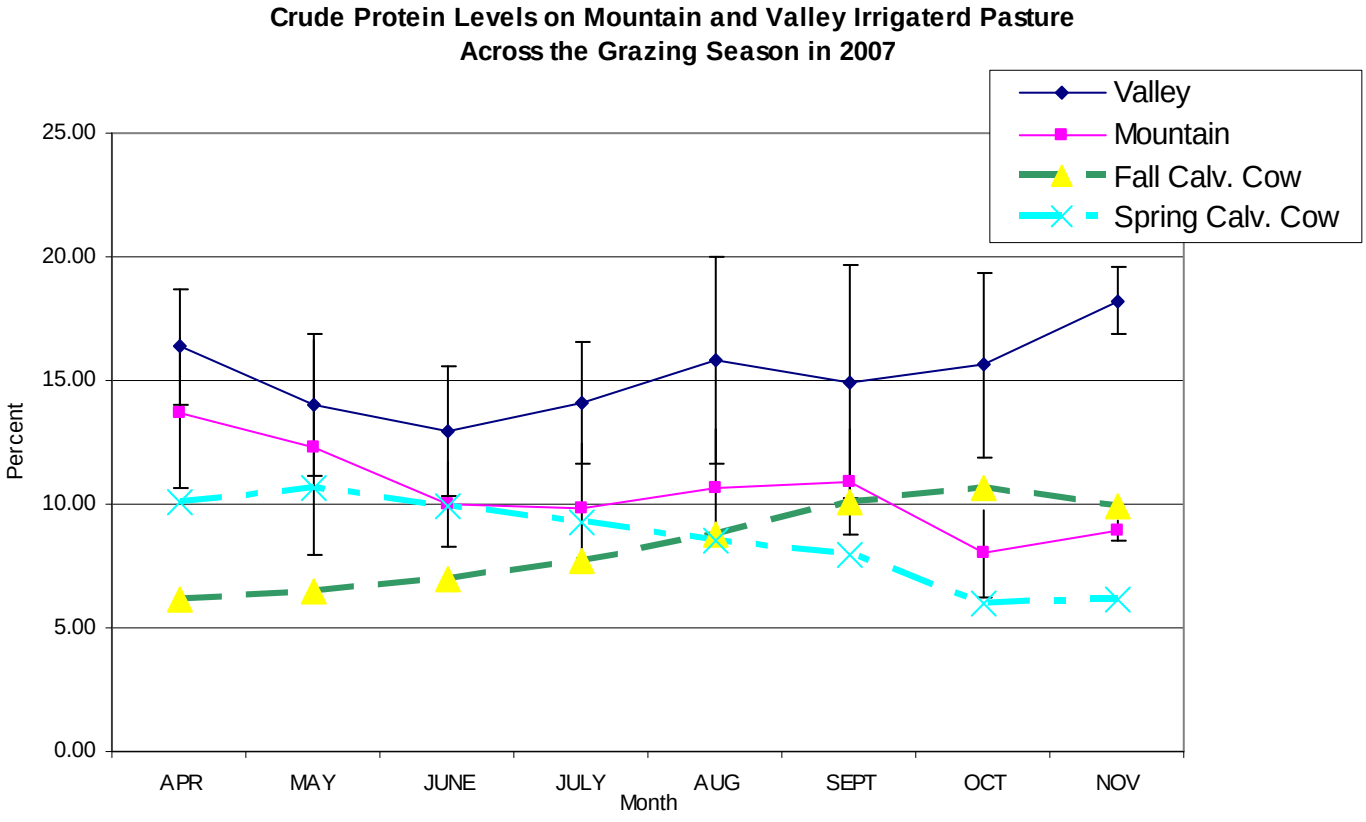
Table 1. Estimated daily intake, protein, and energetic needs by class of cattle (Ensminger, 1990).

Animal	Dry Matter Intake (lb/day)	Crude Protein Requirements (percent)	TDN (Energy) Requirements (percent)
1200 lb dry cow, bred (middle 1/3 gestation)	21	7	49
1200 lb cow, nursing calf (3-4 mo. post partum, avg. milking)	23	9	56
600 lb yearling gaining 1.0 lbs/day	14	9	59
800 lb yearling gaining 1.8 lbs/day	21	8	60

Figure 1 shows average monthly crude protein values (and standard errors denoting the differences in ranches) of clipped forage samples from mountain and valley regions of California. Also included are the protein requirements for both fall and spring calving cows. Mountain crude protein levels tended to be lower than valley levels. The greatest differences are seen at the end of the growing season in the mountain (elevation >2000 feet) areas in October and November.

The average valley pasture exceeded the crude protein requirement for all four classes of livestock throughout the grazing season. Even considering the variation between ranches in protein levels (illustrated by the error bars), protein levels were higher than animal requirements. Crude protein levels in mountain pastures were more problematic. The average mountain pasture exceeded the protein requirement of all classes of cattle except in October and November. However, the mountain pastures showed large variation from ranch to ranch, with some pastures being below animal requirements even during the summer growing season.

Figure 1. Monthly average crude protein by location.



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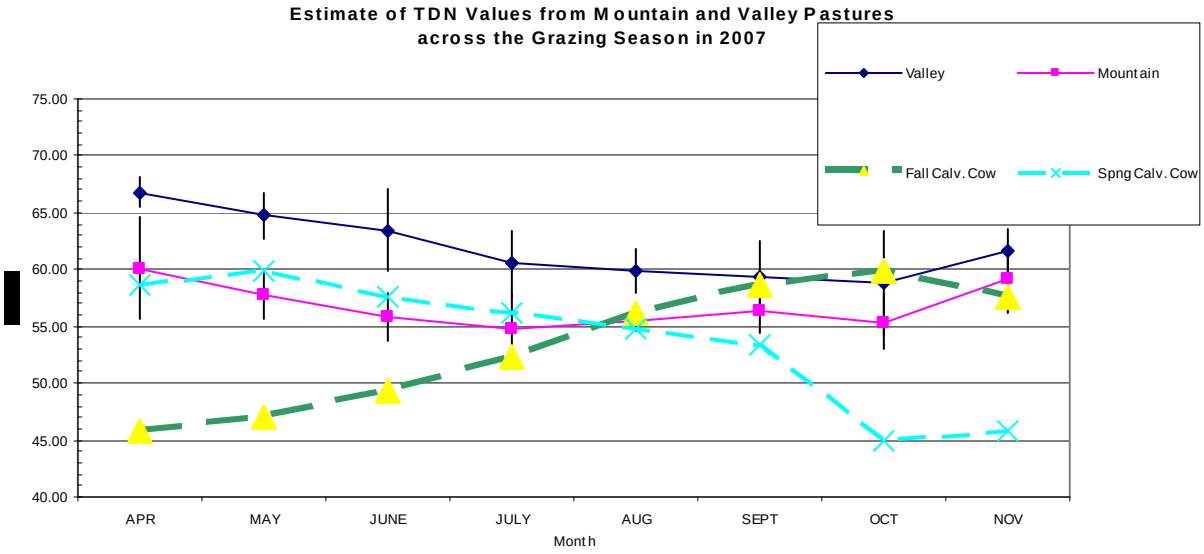
Acid Detergent Fiber (ADF) is frequently used as an indicator of energy in forages. The lower the percent ADF in feed, the higher the digestibility of the feed. Total Digestible Nutrients (TDN) can be estimated from ADF using the equation below. Figure 2 is a graph of the TDN (energy) by month in the mountain and valley sampled pastures compared to the requirements of fall and spring calving cows (error bars denote variation between ranches sampled). Pastures in both mountain and valley areas were adequate in energy for the various classes of livestock.

TDN (%) = 88.9 - (0.779 X %ADF).

Figure 2. Total digestible nutrients by month.

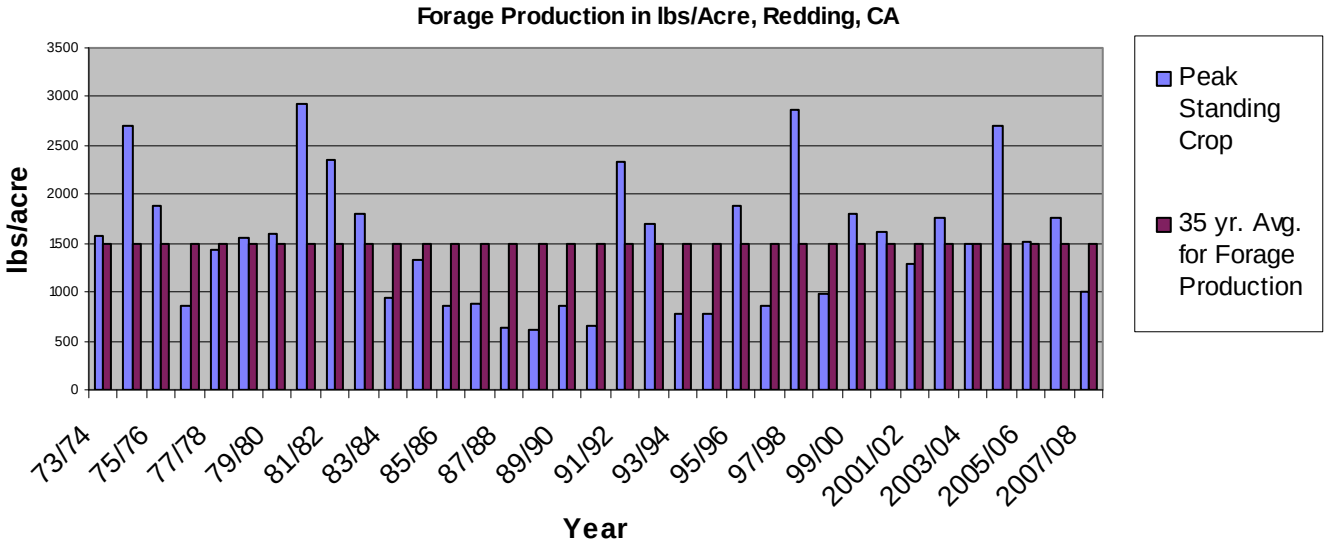


Northern California Winter Pasture

Glenn Nader and Larry Forero, UCCE Livestock Farm Advisors

Forage production on California annual range is highly variable. Long term plot data on a ranch located near the Redding Airport has an average annual production of about 1500 lbs/acre. Figure 1 shows the variation in forage production for over thirty years at the same site. The plot also shows rainfall amounts and the strong correlation between rainfall and production. There are basically four factors that influence forage production—*precipitation*, *temperature*, *soil characteristics* and *Residual Dry Matter* (RDM).

An analysis by M. R. George; et al. (1989) demonstrates the importance of the spring starting date in over all forage production. Adequate precipitation in March and April are necessary for spring forage production. The lack of rain in spring of 2008 resulted in the poor forage production in the northern Sacramento Valley.



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George; et al. also notes the effect precipitation and temperature have on species composition:

1.Forage species composition is usually established by December 1 and is largely determined by the dates of autumn rains and by autumn temperatures.
2.In dry years or years with adequate but poorly distributed rainfall, filaree will generally be the dominate species.
3.High rainfall years and years with late spring rains will result in grass dominated rangeland
4.Early rains coupled with evenly spaced adequate rain fall generally provide good clover years.

Depth of soil, fertility and aspect can influence annual forage production as well. Deeper soils with good water holding capacity can help buffer low rainfall amounts or poor distribution of rainfall. Nitrogen is frequently limited on annual grasslands however, it is seldom cost effective to fertilize annual rangelands. South sides dry out more quickly than north slopes and since moisture is usually the limiting factor, production is less on southern facing slopes.

Leaving adequate feed at the end of the grazing season provides the soil protection from erosion as well as providing protection for the newly germinating annual forage plants in the fall. It may also help facilitate percolation of rainfall into the soil, reducing runoff and increasing soil moisture.

M. R. George; et al. (1984) noted that lower levels of RDM encourage less productive grasses (silver hair grass, nit grass, little quaking grass) as well as filaree and turkey mullein. Leaving higher amounts of RDM at the end of the season encourages desirable species like soft chess and wild oats.

While the variation of the annual grassland can be a challenge to work with, there are some things a producer can do if they anticipate a drought.

1. Consider early weaning of calves. This strategy can reduce pressure on the pasture by 25-35 percent. Additionally, this practice will reduce the cow's nutritional demand by 30-40 percent.
2. Identify the late calving, unsound and poor producing cows then cull them from the herd.
3. Purchase supplemental feedstuffs and group animals to feed depending on their different nutritional needs (i.e., first calf heifers, dry cows, lactating cows or by body condition).
4. Leasing of additional grazing ground.
5. Move the cow herd to a dry lot for full feeding.

References: George M.R. et al. 1984. Annual Grassland Forage Productivity. University of California Division of Agriculture and Natural Resources. Leaflet 21378

George M.R. et al. 1982. Guidelines for Residue Management on Annual Range University of California Division of Agriculture and Natural Resources. Leaflet 21327
George M.R. et al. 2001. Annual Range Forage Production. University of California Division of Agriculture and Natural Resources. Publication 8018.
Biswell, H.H. 1956. Ecology of California Grasslands.
J. Range Manage. 9:19-24. □

Publications which may be of interest to you:

- Irrigated Pasture Production in the Central Valley of California. 2007. (ANR Publication 21628.)

  This publication can be obtained through your cooperative extension office.

- Cow Calf Cost Study—Sacramento Valley. 2008. www.coststudies.ucdavis.edu

2008 Scholarship Recipients:

Walt Johnson Scholarship
⇒ Jackie McArthur Fall River

Ron Knight Scholarships
⇒ Adam Andreini Red Bluff
⇒ Brent Bickley Corning
⇒ Jamie Carter Flournoy
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This newsletter contains articles written by University of California Farm Advisors, Specialists, and Program Representatives. Our aim is to provide the ranching community in the Sacramento Valley with science based information. We welcome your feedback and encourage you to call or email us.

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