MITIGATING DROUGHT ON CALIFORNIA RANGELAND

University of California

Sierra Foothill Research and Extension Center

Jan 29th 2014

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Mitigating Drought

University of California Sierra Foothill Research and Extension Center

Jan 29 2014

8279 Scott Forbes Rd. Browns Valley, CA

9:00-9:10	Welcome and introduction to the day	*Jeremy James UC SFREC*
	Optimizing pasture	
9:10-9:15	General principles of drought response	*Glenn Nader UCCE Yuba, Sutter, Butte County*
9:15-9:30	The last 30 years of rainfall and rangeland forage production	*Larry Forero, UCCE Shasta and Trinity County*
9:30-9:45	Using and storing annual feed on rangeland and alternatives to annual feed	*Josh Davy, UCCE Tehama, Colusa, Glenn County*
9:45-10:00	Optimizing irrigation and fertilization on irrigated pasture	*Larry Forero, UCCE Shasta and Trinity County*
10:00-10:15	Grazing management principles during drought conditions	*Roger Ingram, UCCE Nevada, Placer County*
10:15-10:30	Discussion	
	Field talks	
10:30-11:30	Animal health and making culling decisions	*Dr. Nancy Martin, Veterinarian*
	Feeding and nutritional aspects of roughage supplementation	*Glenn Nader UCCE Yuba, Sutter, Butte County*
11:30-12:30	**Lunch**	
	Optimizing supplemental feed	
12:30-12:45	How and when to supplement and economics of supplementation	*Dr. Jim Oltjen, Dept. Animal Science, UC Davis*
12:45-1:00	Alternative protein supplementation	*Dr. Roberto Sainz, Dept. Animal Science, UC Davis*
1:00-1:15	Roughage supplementation, feeding corn to spare hay	*Glenn Nader, UCCE Yuba, Sutter, Butte County*
1:15-1:40	Discussion	
	Risk Management and Economics	
1:40-2:00	Government/NAP, Emergency feed, Low interest loans	*Justin Oldfield, California Cattlemen's Association*
2:00-2:20	Lack of Rain Fall Insurance	*Matt Griffith & Jim Vann Ranch Protection* ranchprotection.com
2:20-2:40	What did ranchers learn from the 1970s drought?	*Wally Roney, Rancher Tehama and Butte County*
2:40-3:00	Cow-calf Economics	*Glenn Nader, UCCE Yuba, Sutter, Butte County*
3:00-3:20	Wrap up and assessment	

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See the annual rangeland management series: http://anrcatalog.ucdavis.edu/

What do we have for quality? Right now, dry and leached stage

Stage of maturity	Crude protein (%)			TDN (%)		
	Annual grass	Filaree	Bur clover	Annual grass	Filaree	Bur clover
Early vegetative	18	27	28	77	97	91
Late vegetative	15	25	27	74	94	89
Early flowering	15	22	26	72	91	86
Late flowering	10	16	22	67	84	80
Mature	6	10	19	61	72	72
Dry	5	7	18	58	69	69
Dry, leached	3	5	17	58	67	67

What does the cow need?

Nutrient	Stage of production				
	Period 1: calving (45 days)	Period 2: breeding (45 days)	Period 3: early gestation (90 days)	Period 4: mid gestation (90 days)	Period 5: late gestation (90 days)
Dry matter (lb)	20.60	21.00	19.50	18.10	19.60
Protein (lb/day)	2.50	2.60	2.00	1.30	1.60
TDN (lb)	13.80	14.00	11.50	8.80	10.50
Calcium (g/day)	36.00	38.00	25.00	15.00	23.00
Phosphorus (g/day)	25.00	27.00	20.00	15.00	18.00
Vitamin A (x 1,000 IU)	37.00	38.00	36.00	25.00	31.00

Source: National Research Council 1984.

What can we do to help manage low quality dry forage?

Increase the clover content cheaply with rose clover and possibly vetch

- Increases quality of dry feed
- Lack of green season palatability helps
- Requires little or no phosphorus
- Very low seeding rate
- Fix nitrogen during green season to increase surrounding grass quality and quantity

- **Obtain some estimate of what you have and build a supplement to complement it**
- **Wean calves early to lower quality demands**
- **Consider better grass forages when applicable**
- **Don't sacrifice RDM for when it does rain. Drylot feed cattle if necessary to preserve RDM**

To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products not mentioned.

Grazing Management Principles During Drought

Roger Ingram, UCCE County Director / Farm Advisor, Placer / Nevada

1. **Never Feed Your Way Out of a Drought** – It will bankrupt you economically, financially, and ecologically.
2. **Develop a Drought Plan** – For now, you are in crisis management. When the crisis passes and it starts raining again, sit down and develop a drought plan.
3. **Ecological Considerations** – **Residual dry matter** provides mulch that enhances seed germination, cover to minimize soil erosion, organic matter to the soil that helps feed soil microbes, and is a source of livestock feed. You will need to plan to make sure you leave adequate residual dry matter in the fall to maintain the many benefits it provides. **Your grazing strategy should be take half, leave half** to ensure adequate residual and to maintain root growth. **If you create increased bare ground**, you risk soil erosion, water running instead of soaking in, and reduced organic matter to feed soil microbes. This will result in making desirable plant communities unhealthy or having them shift to an undesirable plant community.
4. **Match Stocking Rate to Changes in Carrying Capacity on an Annual and Seasonal Basis** – Carrying capacity is the supply of forage that is dependent on the amount of rain we receive. Stocking rate is demand we place on supply and needs to flexible. The forage situation seems to point to low carrying capacity, which indicates a need to reduce numbers sooner rather than later. You must determine your critical date by which you will start to reduce numbers if you have not received rain.
5. **Increase the rest period** – Plants need a longer recovery period during drought. If you do not allow adequate recovery, you will overgraze and increase the likelihood of more bare ground.
6. **Combine Herds** – Combining herds will increase the number of paddocks resting and increase stock density, which will improve the uniformity of utilization.
7. **Get More Intensive** – Animals will eat more than their nutrient requirement on the first day of the graze period. You can subdivide existing paddocks with temporary electric fence to allocate what they need to meet their nutrient requirement.
8. **Poisonous Plants** – Animals will start to eat plants the normally avoid or consume more of a specific plant that can become toxic when consumed in high amounts. Contact your UCCE Farm Advisor for more information
9. **Develop Livestock Water** – You may need to consider buying a storage tank, poly pipe to run above ground, and a solar pump. You may need to haul water. Consider long-term livestock water development for the future.
10. **Planning** – Be sure to develop grazing plans and stock flows to help you make decisions regarding the drought. Planning and discussing options with others can help in reducing the influence of emotion on decision-making.

Optimizing Supplemental Feed

How and when to supplement and economics of supplementation

Jim Oltjen
Extension Specialist
Department of Animal Science
UC Davis

Options during drought

- Buy feed
- Sell animals
- Monitor water (drinking and/or irrigation)
- Transport to better grazing

How to decide

- Long term ranch income
- Save the ranch and forage base
- Save best genetics
- Income tax consequences

SFREC Supplementation Research

- Not supplementing is not a viable option
- Must at least supplement the thinner cows
- Both older and younger cows have more difficulty maintaining condition
- Pregnancy rate decreases in older cows
- Weaning weights decrease with age after cows are about 5 years old
- Cull older cows, feed younger and thinner ones you keep

Alternative protein supplementation

Roberto D. Sainz

Animal Science Dept.

UC Davis

Presented at **Mitigating Drought**

University of California Sierra Foothill Research and Extension Center

January 29, 2014

1. The normal forage year is divided into the inadequate green, adequate green and inadequate dry seasons

2. The breeding/calving season is set to match maximum cow + calf nutritional requirements to maximum pasture availability

3. Residual dry matter standards aim to preserve the recovery capacity of rangeland forages

4. This year is abnormal – may bypass both green seasons!

5. Number one drought management strategy is to destock - YOU CANNOT FEED YOUR WAY OUT OF A DROUGHT (without going broke).

6. Dry range and straws (e.g., rice, wheat) supply fiber (for energy) but lack protein and some minerals.

7. Alternative supplements containing non-protein nitrogen (urea) and minerals can supply the missing nutrients in a cost-effective manner, IF THERE IS SUFFICIENT LOW-QUALITY FEED.

Use of Alternative feedstuffs in Your Beef Operation

Glenn Nader, UCCE Farm Advisor – Yuba/Sutter/Butte Counties
ganader@ucanr.edu

Concentrated Energy Sources

Average Values (%)	Dry Matter	Crude Protein	TDN	Crude Fiber	Ash
Rice Bran	91	14	76	12	14.8
Almond hulls	91	4.2	54	17	6.6
Canola meal	88	36	63	10.6	6.3
Walnut meal	93	17.1	67	27	4.9
Safflower meal	92	23.9	55	34	4.3
Pinto beans	90	25.2	83	4.5	4.8

***Source** –By-Products and Unusual Feedstuffs in Livestock Rations. Western Regional Extension Publication No. 39, October 1980. 22 pages*

Roughages

During droughts or when dry matter is limited, rice straw and corn stover (baled corn stocks) have been used as low quality forage. It is recommended that before purchasing either of these products that a laboratory analysis should be conducted for crude protein and Acid Detergent Fiber (ADF). This allows the producer to select a product of the higher nutrient value that will decrease supplement costs to meet cattle needs.

	Crude Protein	ADF	Ash
Corn Stover	5.9	46	5.8
Rice Straw	4.5	48	16.6
Wheat Straw	3.6	52	7.2
Lima Bean Straw	7.6	39	9.3
Kidney Bean Straw	9.9	43	10.4

Source - By-Products and Unusual Feedstuffs in Livestock Rations Western Regional Extension Publication, No. 39

Rice Straw

A survey of over 70 harvested rice straw stacks found that they vary greatly in protein **(2- 7%)** and ADF **(44 to 55%)**. Forage value criteria for rice straw for beef cattle is suggested to be: Crude Protein of 4.5% , or higher , ADF of 50 % or lower and Moisture of 12% or lower.

Corn Stover or Baled Corn Stocks

An Oregon State study on corn stover is reported below and illustrates the variability of that product.

Corn Stover Analysis Results

	DM	CP	TDN	NO3-N
1	85.8	3.7	53.4	
2	82.1	4.5	52.5	1270
3	84.6	5.1	54.3	1560
4	77.8	5.2	49.8	750
5	84.8	3.9	55.2	705
Average	**83.02**	**4.48**	**53.04**	**1071**

all results are reported on a Dry Matter basis

Feeding of corn stover is best utilized by placing bales in feeders. Nitrates can be a problem in corn stover, especially if non protein nitrogen supplements are being fed. Analysis for nitrates may also allow for prudent management of feed for the safety of the cattle.

Overview of PRF/Lack of Rainfall Insurance

The PRF program (Pasture, Rangeland, Forage) has been available in limited parts of the country since 2007. In 2011 the program was extended to all counties in California (it has been available in Oregon and Texas since 2007). PRF is part of the federal crop insurance program where the ***RMA (Risk Management Agency) subsidizes over half the premium***.

PRF will pay your operation when ***actual rainfall*** during a two month time frame comes in below the ***historical average***. Your ranch ***does not*** have to experience a "drought" in order for the program to trigger, PRF will pay you based on the severity of the below average rainfall during an interval (two month time frame) up to policy limits.

You can choose to place coverage during the following months (intervals) if available. You can't insure any single month twice.

1 Jan/Feb	2 Feb/March	3 March/April	4 April/May	5 May/June	6 June/July

7 July/Aug	8 Aug/Sept	9 Sept/Oct	10 Oct/Nov	11 Nov/Dec

If you are familiar with the FSA Disaster Payment Program (NAP) I've outlined the **general** differences between the two programs below. It is possible to take both programs (NAP and PRF) and receive the full indemnity from each program when triggered.

Feature	NAP- FSA Disaster Payment Program	PRF - Pasture, Rangeland, Forage
Area Rainfall is determined	Countywide	12 X 12 Mile Grids the National Weather Service has been tracking precipitation since 1948.
When a Payment is triggered?	50% or more damage, typically determined by an FSA committee or individual.	Depending on your coverage level PRF will pay when actual rainfall comes in less than 85% of the historical average for that interval.
Extent of Lack of Rainfall	Drought conditions must persist during the entire season	Each interval (2 month time frame) acts like a "mini insurance" period. So after the end of the interval the policy pays or it doesn't.
Payment	Payments are made 10 to 14 months after the drought conditions start	Payment is made 60 days after interval is finished.

PRF Insurance Program in Action!!

Below are 3 different locations from across California and how the program would have worked over the last 20 years base on **10,000 acres** at 85% of normal rainfall coverage.

Lassen County Location

Grid # 24638 Susanville	Over 10 Years	Over 15 Years	Over 20 Years
Insurance Cost	$ 153,200.00	$ 229,700.00	$ 303,400.00
Total Claim Amount	$ 504,500.00	$ 664,800.00	$ 784,000.00
Net Indemnity	**$ 351,300.00**	**$ 345,100.00**	**$ 480,600.00**
Average Net Indemnity Per Year	$ 35,130.00	$ 29,006.00	$ 24,030.00

Stanislaus County Location

Grid # 20735 Patterson Area	Over 10 Years	Over 15 Years	Over 20 Years
Insurance Cost	$ 226,000.00	$ 339,000.00	$ 452,000.00
Total Claim Amount	$ 535,900.00	$ 651,200.00	$ 797,100.00
Net Indemnity	**$ 309,900.00**	**$ 312,200.00**	**$ 345,100.00**
Average Net Indemnity Per Year	$ 30,990.00	$ 20,813.00	$ 17,255.00

San Luis Obispo County Location

Grid # 18639 Shandon Area	Over 10 Years	Over 15 Years	Over 20 Years
Insurance Cost	$ 276,800.00	$ 415,200.00	$ 553,600.00
Total Claim Amount	$ 628,200.00	$ 911,700.00	$ 1,079,200.00
Net Indemnity	**$ 351,400.00**	**$ 496,500.00**	**$ 525,500.00**
Average Net Indemnity Per Year	$ 35,100.00	$ 33,100.00	$ 26,300.00

This program works and will help offset the additional costs that you will have during a below average rainfall year. We can insure BLM and Forest Service Allotments in this program as well as private or leased property.

Jim Vann
(530) 218-3379
jimv@wsrins.com

Matt Griffith
(530) 570-3333
matthewdgriffith@hotmail.com

Drought Economics

Glenn Nader – UC Livestock and Natural Resources Advisor

ganader@ucanr.edu

Possible Actions

1. Early weaning (30-90 days, but as early as 6 weeks)
   For more information on early weaning calves go to
   http://aces.nmsu.edu/drought/documents/evaluating-early-weaning_6_6_13.pdf
2. Destock
   a. Replacement heifers and open cows
   b. Cows down in condition
   c. Broken mouth cows
   d. Bottom producers (late calving, WWT)

3. Purchase Feed Resources
   a. Hay supplement on range
   b. Dry lot feeding
   c. Lease feed out of the area (trucking)

4. Price Drought Insurance

Taxes are Crucial

Sales of animals due to reduced feed caused by a drought will present potentially large tax liabilities. It is important to maintain as much of the equity from these sales to rebuild the herd after the drought. There are two provisions in the tax code that address the ability of livestock owners to exercise deferment of taxes.

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 US 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.

For more information go:

National Cattlemen's Beef Association, 2011, 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/qaondroughtaxmay07.pdf

JC Hobbs. 2010. Weather Related Sales of Livestock. Oklahoma State Univ.
http://ruraltax.org/files/uploads/Livestock%20Sales%20(RTE%202010-09).pdf

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.