2014 CALIFORNIA MULTI-SPECIES GRAZING/BROWSING ACADEMY

September 12-14, 2014

UC Cooperative Extension Office, Auburn, CA

Cost: $160

The purpose of the California Multi-Species Grazing/Browsing Academy is to teach, demonstrate and provide practical experience in using sheep and goats to reduce fuel loads, control invasive plants, utilize forage for grazing and browsing, and develop saleable product for a profit. The California Multi-Species Grazing/Browsing Academy will be a three day course emphasizing the practical application of research based grazing and browsing principles using sheep and goats.

Target audiences are ranchers, land managers and agency personnel who manage livestock on privately owned or public pasture and rangeland. Participants learn by actually applying the principles taught in range and pasture with live sheep and goats. Topics to be covered include: grazing/browsing principles, ecology, fencing, nutrition, supplementation, grazing/browsing planning, contract grazing/browsing, and much more.

Registration information is included in this newsletter and on-line at http://ucanr.edu/sites/Roger_Livestock/Multi-Species_Academy/

Sign up today for this exciting course.
Drought Update - May 30, 2014
Roger Ingram
County Director and Farm Advisor,
Placer and Nevada Counties

NEVER FEED YOUR WAY OUT OF A DROUGHT!

California is still in a big-time drought situation. Placer and Nevada Counties were blessed with more precipitation than some other parts of California, improving the situation from bleak to having some forage available to graze. You have several questions I strongly urge you to consider over the next month:

- How much forage (supply) do I have?
- How much do I need (demand) and still be able to leave adequate residual though November?
- If I have more demand than supply, what am I going to do about it (culling policy)?
- If I have to sell animals, how will I manage cash flow and any tax implications?
- How will I graze the supply that I have (grazing planning)?
- What do I need to consider about nutrition for my herd such as supplementation, livestock water, and poisonous plants?

Another option to answering the above questions would be to depend on an El Niño for next winter. There are small, medium, and large El Niños. If it ends up medium to large, maybe that is an okay option. I do not trust that option. I want to have my business and property structured to deal with a small or no El Niño.

Forage Supply and Rainfall
The UCANR Sierra Foothill Research and Extension Center (SFREC) has been doing monthly forage clipping since 1979. There is also a California Irrigation Management Information System (CIMIS) weather station recording data. There is a CIMIS station in the Auburn area as well.

Rainfall
Here is a table that shows the annual rainfall at SFREC from January - December.

<table>
<thead>
<tr>
<th>SFREC Rainfall</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>2012 (in)</td>
<td>4.82</td>
<td>1.39</td>
<td>8.15</td>
<td>4.62</td>
<td>0.04</td>
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<td>1.65</td>
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<td>13.36</td>
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</table>
Here is a table that shows the annual rainfall at Auburn from January - December.

<table>
<thead>
<tr>
<th>Auburn Rainfall</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
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<th>Oct</th>
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<th>Dec</th>
<th>Total</th>
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<tr>
<td>2012 (in)</td>
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<td>1.56</td>
<td>9.82</td>
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We can look closer by using tables of a rolling twelve-month amount of rainfall. For example, the twelve-month amount of rain through March 2014 would be the amount of rain from April-December of 2013 plus the amount from January-March 2014.

SFREC rolling twelve-month amount of rainfall.

<table>
<thead>
<tr>
<th>SFREC</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
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<tr>
<td>2014 12 Month</td>
<td>8.62</td>
<td>15.13</td>
<td>18.62</td>
<td>17.5</td>
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Auburn's rolling twelve-month amount of rainfall.

<table>
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<tr>
<th>Auburn</th>
<th>Jan</th>
<th>Feb</th>
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<tr>
<td>2013 12 Month</td>
<td>32.24</td>
<td>31.22</td>
<td>23.56</td>
<td>20.71</td>
<td>20.48</td>
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The change in rainfall amount was dramatic from 2012 to 2013. The excellent fall of 2012 further masked the low rainfall amounts that occurred winter/spring 2013. We have already had substantially more rainfall in 2014 than we had the entire year of 2013. However, the twelve-month totals show we are behind 4.41 inches of rain from this time last year at SFREC. Auburn has almost caught up, but still behind by 0.35 inches.

In 2013, the rolling twelve-month rainfall total dropped from 21.75 inches in May to 8.4 inches in December at SFREC. In Auburn, it dropped from 20.48 inches in May to 6.48 inches by December. The same thing could happen again.

Please note the differences in the two locations, which are about 30 miles apart as the crow flies. Please install a rain gauge on your property to know how much rainfall your ranch receives.
Forage Supply

Here is a comparison of the 2013-14 SFREC forage clipping compared to their average.

SFREC was at 77% of normal as of May 20. These clippings accurately measure total production. Precipitation at SFREC was 56% of normal (16.63 in vs. 29.5 in). SFREC received 75% of the rainfall between February and May. Precipitation at the Auburn CIMIS station was 77% of normal (20.13 vs 26.2 in.) The Auburn station received 66.5% of its rain between February and May.

Low to non-existent rains coupled with a cold early December temperatures combined to create very little forage growth through January. One thing I noticed this year was where areas had been grazed in January and February seemed to recover more slowly. It would not surprise me if area ranches would be somewhere between 20-40% less forage at the end of the growing season on annual range (around May 15).

Think about Fall

You should be thinking now about the amount of residual dry matter (RDM) you want to leave in the fall. RDM is defined as the dry plant material remaining from the previous year’s growth. I would suggest leaving a minimum 800-1,000 of RDM for the Placer and Nevada County area. This ensures adequate cover for rangelands as we move into the 2014-15 forage year (October 2014 - September 2015).

Residual dry matter provides the following benefits to the range:

- Favorable micro-environments for early seedling growth
- Soil protection against erosion
- Soil organic matter
- Source of low quality forage for livestock

You can view RDM as providing the needed cover or blanket to protect the soil from erosion, feed the billions of soil microbes below the surface of the soil, provide more favorable germination conditions, and provide feed for animals on a maintenance diet with appropriate needed protein supplementation to feed the microbes in the rumen. If you do not reduce animal numbers, you will reduce RDM to low levels and create bare soil.

How Much Forage Do I Have?

You need to know how much forage you have to get your herd through next fall - at least through the end of November to give you a 30-day drought reserve. Here are a couple of ideas for determining the amount of forage you have.

FORAGE CLIPPING

Steps for measuring forage production: Once you have the average production you can compare the production to a known forage production average for your area. For example, the average forage production at the Sierra Research and Extension Center is 2944 lbs/ac.

Step 1: Pre-weigh empty bags.

Weigh an empty paper bag in grams and write the weight on the bag. This weight will be important for calculations later. Alternatively, you can zero
the gram scale while weighing the empty bag. The weight with the filled bag of forage will now be the actual weight without having to subtract out the bag weight.

**Step 2: Toss hoop or square foot frame and clip forage.**
Randomly toss the hoop or frame and let it land flat on the ground. Clip plants within the hoop to ground level, making sure to sort out all litter, roots or soil. Also discard all weeds or other plants that are not forage species. Clip at least eight to ten hoops or frames per paddock to insure reliable forage production estimates.

**Step 3: Weigh clippings.**
Place forage clippings in bags and weigh with gram scale. Weights should be marked on each bag. This will be the green weight, which will include water in the forage.

**Step 4: Dry the sample.**
You would next dry the sample in a drying oven, placing it in the sun, or in a microwave. If using a microwave oven, place a small cup of water inside to prevent the forage from burning!

**Step 5: Weigh clipping again.**
Weigh with gram scale a second time. Weights should be marked on each bag. This will be the dry weight, with little to no water left in the forage.

**Step 5: Complete calculations.**
Complete the following worksheet using the weights recorded on the sacks and a calculator.

### ESTIMATING CARRYING CAPACITY

Several people use and teach the method described in this paper for estimating carrying capacity. I learned it from Dr. Stan Parsons at his *Ranching For Profit School*. It is best applied near the end of the growing season when little additional growth is expected.

**PROCEDURE:**

1. Pace off an area you think has enough forage to feed an animal for one day. Try to keep your paces one yard long. (This works best with four people, one to stand at each of the paced area. If you don’t have enough people you can tap stakes in at the corners.)
2. If the area looks too small, everyone should take a step back. If the area is too big take a step in.
3. Multiply the length of the area (in yards) by the width. This gives you the area required by one animal for one day in square yards.

4. Divide the square yards per acre (4840) by the square yards required per animal per day. The result is the number of stock one acre can support for one day (Stock Days per Acre, SDA).

\[ \frac{10 \times 10}{4840 \text{ Sq. Yards/Acre}} = \frac{100 \text{ Sq. Yards}}{4840 \text{ Sq. Yards/Acre}} = 48.4 \text{ SDA} \]

5. Multiply SDA by the number of acres in the paddock. The result is stock days per paddock. For example, if the above square is representative of a 12 acre paddock, then:

\[ 48.4 \text{ SDA} \times 12 \text{ acres} = 580 \text{ SD in the paddock} \]

6. Since the quantity of forage produced may vary within each paddock, you may have to average several estimates to come up with a reliable assessment of the SD per paddock.

By adding the stock days for each paddock on the ranch you can determine the total days of grazing available on the property.

**TEST YOUR ESTIMATE**

You’ll be surprised at how quickly you can accurately evaluate the carrying capacity of pastures. However, your estimates are likely to be off a bit when you try this for the first time. Putting stock in a small paddock to graze can test the accuracy of your estimate.

For example, we estimated that there are 580 stock days of feed available in our 12 acre paddock. If our herd consists of 200 head, there should be almost 3 days of grazing available in the paddock:

\[ \frac{580 \text{ SD}}{200 \text{ stock}} = 2.9 \text{ Days} \]

If we check the paddock at the end of the second day and find we are out of feed, then our estimate was too high (we need to make our square larger next time). If we find there is more feed left than we anticipated at the end of the planned three day graze period, then our estimate was too low (we should make our square smaller next time).

You may want to check your estimates on a small area using some temporary portable electric fencing. With experience, simply monitoring the severity of grazing in the paddocks during the graze period is sufficient.

**DEFINITIONS**

**STOCK DAY (SD):** The amount of forage required to support one animal for one day.

**STOCK DAYS PER ACRE (SDA):** The number of animals that can be supported on one acre for one day.

**Now is the Time to Assess Carrying Capacity (Forage Quantity)**

While this method works best for the end of the growing season on annual forage, it can be used at anytime. For example, if winter has been dry, you could go and walk the paddocks to assess how many stock days you have left.

Measuring carrying capacity using this method will go quickly once you gain experience and confidence in the method. I have used this process to assess carrying capacity in May on part of the Campbell area of the Sierra Foothill Research and Extension Center. The 250-acre Campbell area was being used for a grazing research project. We installed 23 paddocks within the project area in 1996.
Every May, we would assess carrying capacity in all twenty-three paddocks using this method. It would take about two hours to complete the assessment. Once we knew the carrying capacity as expressed in stock days, we were then able to develop a feed budget. The feed budget allowed us to determine how much demand we had on a monthly basis from mid-May through December.

We then compared the stocking rate demand with the carrying capacity supply to determine if we were overstocked, stocked about right, or under-stocked. We knew this in May rather than waiting to see how things would be in September or October. We factored the stock demand for November and December, we had a sixty-day drought reserve.

If we were over or under-stocked, we had time in May to determine the best course of action rather than hoping things worked out and having to resort to more drastic actions with few alternatives.

Here is an example template you can use to record squares. You can then do the math with a calculator or input into a spreadsheet.

### Estimating Carrying Capacity Sample

<table>
<thead>
<tr>
<th>Paddock</th>
<th>Length (yards)</th>
<th>Width (yards)</th>
<th>Area Size of square (square yards)</th>
<th>SDA Stock Days per Acre</th>
<th>Paddock Paddock size (acres)</th>
<th>SD/Paddock Stock Days</th>
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How Much Do I Need?
The next step after determining carrying capacity is to develop a feed budget. This is a monthly step of how many animals you have in each class and their daily demand. We can multiply number of head X daily demand X days in a month to determine monthly demand. You would do this for June, July, August, September, October, and November, a total of 183 days. Using the above table, we would hope that we have at least 21,594 stock days of standing feed out there for our herd. If we find our herd needs 35,594 stock days, we would be 10,000 stock days short and need to reduce demand by 46.3% (10,000 stock days short / 21,594 stock days of standing feed X 100).

While reducing demand by 46.3% is easy to write on paper, I understand how painful a decision that can be. The earlier you make this decision; the more grass is conserved for the remainder of the herd. The market has remained strong throughout this current drought due to low cattle numbers. This is good news on the selling end. However, there is never a free lunch. More income received in a year can have tax consequences if not managed properly. There are a couple of options available for you. You will need to sit down with an accountant to be sure you understand these options. More information can be found at this link:


Culling Policy
If you reach the decision point to destock, what is the hierarchy that you will use to cull?

Here are some suggestions:
- **Wean early** – I realize this does not have anything to do with culling. Weaning early will help you dramatically reduce stocking rate as a dry cow has a much lower nutrient demand than a lactating one.
- **Cull Old Stock** – The tendency is to keep breeding females around as long as they keep producing offspring. This would be the time to go through the herd, check for teeth, bad udders, eye and feet problems, and any temperament issues. An older animal will generally struggle more to stay in good body condition.
- **Cull Unproductive Breeding Animals** – Anything that does not produce any offspring should be culled. No second chances when forage is scarce.
- **Retain Few if any Replacements** – Weaned females have a high nutrient demand due to maintenance, growth, and reproduction. If the feed resources are scarce, you probably cannot afford to keep replacement-breeding females.
- **Improve Herd Genetics** – Drought could provide an excellent opportunity to improve the uniformity of the herd and cull anything that does not fit your vision of the type of animal you want in your herd.

Annual Rangeland Protein Supplementation
The dry brown residual still has some grazing value for maintaining animals (but not for growth). By this time of year, crude protein levels will have dropped to less than 8%. This is lower than a dry ruminant breeding female needs. You will need to supplement with a protein tub or block to get more nitrogen consumed by the ruminant. The supplement is feeding the microbes in the rumen that have a protein and energy requirement. If forage is short of protein, less nitrogen is consumed and the protein requirement of the microbe is not met resulting in less of them. Microbes in the rumen break down the consumed cellulose and re-form it into microbial protein and volatile fatty acids (energy). High population of microbes means more rapid emptying of the rumen and increased
consumption. Less of them result in a full rumen for a longer period of time, increased time ruminating, and less consumption of forage.

Protein supplementation could be accomplished in a variety of ways. This includes: hay, protein tubs or blocks, and alternative feeds. Glenn Nader discussed this topic at the January 2014 Drought Conference held at the Sierra Research and Extension Center. His presentation and others can be found at this link:

http://sfrec.ucanr.edu/Outreach_-_Education/Workshops_and_Field_Days/

Look at the bottom of the page for drought information.

UCCE Farm Advisor Glenn Nader discusses alternative feeds at the January 29 SFREC Drought Conference.

Critical Date
This is the date whereby if you have not received rain, you will start to destock. Based on conversations with ranchers, the critical date is either never or maybe June 1st. I might suggest that the critical date is sooner than June. April 1st could be a starting point for selecting a critical date and you could fine tune over time from there. Remember, the earlier you begin to destock, the less severe you have to cull, there is more forage for the remaining herd, and you will hit the market before other people do meaning you will get a higher price. In today’s cattle market, most classes of stock have a high value. There is more of a struggle in the sheep market.

Small ruminants will most likely provide greater flexibility provided you have the means to transport stock, are experienced with portable electric fencing, and have appropriate guardian animals. This is due to the high demand for property owners wanting to reduce fuel loads from annual vegetation and brush on your property. You still need to adhere to the never feed your way out of a drought principal because you need to evaluate the impact of increased fuel and labor costs to haul, set up fence, and check on animals.

Grazing Planning
This newsletter has provided three big steps:
1. Determine carrying capacity
2. Develop feed budget with at least a 30-day drought reserve to determine stocking rate.
   If you have irrigated pasture, you may want to develop a worst-case scenario of irrigation season ending September 15 to assess the impact of a shortened season.
3. Implement culling policy to match stocking rate to carrying capacity.

You will then need to develop a grazing plan to determine what paddocks will get grazed when and how much rest you will provide between grazing. You will need a chart to be able to plan the grazing. You can find grazing charts here:

- http://holisticmanagement.org/free-downloads/
- Grazing planning software: http://holisticmanagement.org/store/multimedia/
- Basic grazing chart: http://onpasture.com/2013/03/19/get-your-grazing-chart-here/
Tips for mapping your paddocks: [http://landandlivestock.wordpress.com/2013/11/14/creating-your-grazing-chart-mapping-your-pastures/](http://landandlivestock.wordpress.com/2013/11/14/creating-your-grazing-chart-mapping-your-pastures/). You may find Google Earth easier for drawing fence lines, water lines, etc.

The next thing to do would be to determine any big management considerations and draw those on the chart. For example as shown below, you would draw a line straight down June 20\(^{th}\) (you can use colored pencils if you want to differentiate the management considerations). If you were fall calving, you would draw a three-sided box from October 1 – November 30 (this is my example with a 60-day calving season. You would use your own dates). Other considerations might be poisonous plants, availability of stock water, and a host of other factors. These factors determine if a paddock is available or not. If a paddock is available for more than half a month, count it as available. If it is not available, draw a line through time period it is not available.

From there, you can then draw out the grazing. Each line represents one day. Be sure to use a pencil, as you will most likely need to change some things. One big consideration is where to start. I might suggest using a big management consideration as a starting point. Using my example above, I would start at the first paddock I want to be calving in on October 1. From there, you could either work backwards or start in whatever day you do this in June and know that you want to be in a certain paddock by October 1. I would suggest an additional two

![Grazing Chart Example](image)

Above is a filled out grazing chart looks like in Argentina. You can input the number of paddocks and paddock size in the second and third columns. The first column is called estimated SDA’s (stock days per acre) available (non-growing). While not shown here, this is where you could input your SDA’s from estimating your carrying capacity. If that seems too confusing, just input paddock number and size.
things: have a map of the property with the paddocks laid out and have a plan with everyone involved with the grazing. The biggest value to laying out the grazing plan will be thinking and discussing how you plan to graze.

After that, implement the grazing. You would draw the actual grazing in pen on the same chart. This way the grazing plan can be both a plan and a log at the same time. You can record other things on the chart including rainfall, body condition scores, stocking rate per month, and much more. The big thing is planning the grazing. Add in the other things as the process becomes more comfortable. Please email or call if you have questions.

UPCOMING EVENTS

Contact Roger Ingram at (530) 889-7385 or rsingram@ucanr.edu to register or if you have questions. Check website for updated information at ceplacer.ucdavis.edu

Drought and Water Status Update Meeting with NID and PCWA
Tuesday, June 24, 2014
6:00 PM

Placer County Planning Commission Room
Community Development Resource Agency
3091 County Center Drive (located at corner of Bell Road and Richardson Dr)

Pasture Walk
Thursday, June 26, 2014
Bruin Ranch
Curtola Road, Auburn, CA
6:30—8:00 PM

Pasture walk and discussion on carrying capacity, stocking rate, body condition scoring, nutrition and supplementation, maintain adequate residual for the fall.

Elster Ranch Farm Tour featuring K-Line Irrigation and Grazing Management
Tuesday, July 22, 2014
24999 Elster Place, Grass Valley, CA
6:00 - 8:00 PM

Topics covered include: demonstration of K-Line irrigation system, monitoring soil moisture, and grazing management for the summer.

Sheep Husbandry and Preparing Ewes for Breeding Workshop
Thursday, August 14, 2014
Oak Hill Ranch
Auburn, CA

Topics covered include: body condition scoring, giving shots, trimming feet, livestock handling, flushing, ewe nutrition, ram selection and management, and body condition scoring.

California Multi-Species Academy
September 12-14, 2014
UC Cooperative Extension Office
11477 E Ave, Auburn, CA

Registration information is included in the newsletter.

Roger Ingram
County Director, Placer and Nevada Counties
Livestock & Natural Resources Advisor
2014 California Multi-Species Grazing / Browsing Academy
Registration Form

Date: September 12—14, 2014 - Registration closes September 5, 2014

Cost: $160.00 (includes meals, and course materials)
NO WALK-IN REGISTRATIONS DUE TO SET-UP NEEDED FOR HANDS-ON ACTIVITIES

Register: Complete this form, mail with your check payable to University of California-Regents, to:
Roger Ingram
California Multi-Species Grazing Academy
11477 E Ave.
Auburn, CA 95603
OR, visit our website: http://ceplacer.ucdavis.edu and follow the links.

Location: Auburn, CA

First Name ___________________________________________ Last Name __________________________
Address: ____________________________________________
City ___________________________ State/Zip __________________________
Email: ___________________________________________ Phone Number: __________________________

What types of animals do you graze or manage?
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

How many head: ___________________________ On how many acres: ___________________________

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