



# LIVESTOCK AND NATURAL RESOURCES



Publication Number 31-613 (Fall 1997)

## YOU NEED FOOTPRINTS IN YOUR PADDOCKS

**I**n July 1997, I had the opportunity to go to the islands of Hawaii and Maui to give a couple of presentations on livestock handling.

While there, I was exposed to the impacts of *hang loose* grazing versus rotating, a grass fed beef enterprise, Hawaii Beef Producers Cooperative, three ranches, and a tasting of livestock products. These are the topics we will explore in this publication.

I highly recommend going to the big island of Hawaii. There are 11 different climatic zones on the island. You can go from a six inch to a 100 inch rainfall zone within a matter of miles. The changes



in vegetation can be quite dramatic.

Management and Systems Ecology.

### Burt Smith

Prior to exploring the topics listed above, I want to tell you about a guy named Burt Smith. Burt is a Ph.D. Extension Specialist in Pasture and Livestock Management at the University of Hawaii. He is also the one of the authors of ***Intensive Grazing Management: Forage, Animals, Men, Profits.***

Burt not only teaches people about grazing — he does it! He spent 13 years as owner-operator of a diversified farm and dairy in Northwestern Utah, a cattle ranch in Central Nevada, and a diversified farm in Central Kentucky. Burt has degrees in Mathematics, Biology, and Range

Given that varied background, Burt brings a unique perspective in his approach to the job. Rather than reinforcing the status quo, he has always been at the forefront of testing, evaluating, and implementing new ideas and technologies. His efforts have led to the adoption of controlled grazing on many of the ranches on the islands. Burt has also developed expertise in the area of animal behavior.

I learned a tremendous amount being around Burt and thank him for inviting me over and showing me different ranches in the area. These efforts greatly enriched my trip to Hawaii.

## The Land

During some parts of the year on Hawaii, you can snow ski in the morning and snorkel in the afternoon. Large ranches on the island run all the way from the beach to over 5,000 feet in elevation. Rainfall totals fluctuate between six inches to over 80 inches.

Forage quantity and quality will vary with the changes in rainfall and the type of grasses that grow. For example, one predominant grass is an introduced species called Pangola. This grass can produce a lot, but you have to harvest it quickly, or the quality declines rapidly. Grazing planning and constant evaluation is important if you want to be successful.

## It's Not A Rotation

Burt took me to an area that showed a revealing side-by-side comparison between two ranches. Both ranches were implementing controlled grazing. Over a seven year period, the average stocking rate between the two ranches was approximately the same. In other words, the same amount of forage had been removed.

Look at the picture tbelow left. *Do you notice a*



*difference between the left and right hand sides of the fence line?* The stuff on the left hand side is grass. The lack of stuff on the right hand side is weeds and bare soil. Both ranches are moving cattle from paddock to paddock. What could account for the difference?

**The way the grazing was implemented is the big difference.** The ranch on the right hand side rotated. So many days grazing in a paddock, move to the next one, graze, move, etc. If the calendar says it's time to move, we do it and go to the adjacent paddock. The other ranch based their decisions on what the land was telling them.

At the California Grazing Academy, Dave Pratt emphasizes the importance of your footsteps in your pastures.

If we rotate, we may base our move on the height of the grass. You think, *"I don't want to take any more grass out of here . . . I'd better move the cattle."* If this is the way you make decisions about when to move, trouble may be around the corner.

The severity of use in a paddock tells us if we are understocked or overstocked.

But it does not tell us anything about the most important aspect of controlled grazing — the management of time.

Graziers have three questions to answer and

three places to make footprints when they move stock (*for more information, see article, A Look at Footprints, on page 3*).

## Look Behind

To assess the growth rate of pastures and determine the rest period you'll need to provide.

## Look Ahead

To see if the paddock is ready for livestock (*did it get enough rest?*).

## Where the Livestock Are

To see if your stocking rate is appropriate.

Using footsteps and looking down, the other ranch saw the land saying something different than rotate. During this seven year period, Hawaii experienced a drought — the worst in 65 years. Much of the landscape closer to the ocean was covered by heavy brush called lantana.

Interspersed in between the lantana was green panic grass and a legume called glycine. Normally, the cattle would not move into the lantana to graze. Once the drought hit, there was less feed. The cattle became hungry. They went into the lantana to get to the feed.

Once they were moved out, everything had been eaten down to the ground. Two small rainstorms came later and everything started blooming and growing. The temptation was great to get the cattle back in and graze.

*(Continued on page 3)*

(Continued from page 2)

The ranch manager used footsteps (see photo top right) to evaluate the recovery rate in this paddock. As he looked down, he became concerned that if he grazed the regrowth, it would hurt the root systems.

By leaving the regrowth and deferring grazing, the root system became established and began to store nutrients. After the moisture was gone from the two rain showers, the plants became dormant. Resting the plants also allowed a build up of the seed bank.

On the other ranch, it was time to rotate. *What's the big deal about roots anyway?* We're supposed to graze! The regrowth was grazed, plants were put in a weakened state, and no seed bank was developed.

The drought ended. It started to rain. By deferring grazing, once the moisture came, the grass and legumes were ready to take off. They took off so aggressively that they crowded out the lantana (see photo on bottom left).

On the other side (see photo bottom right), recovery was slow. Less productive

plants came in. Earlier, I said the average stocking rate for the two paddocks was the same. This ranch's stocking rate seven years ago was twice as high as the other. By the end of the seven years, it was half as much.

The ranch that had deferred grazing maintained a static stocking rate during the seven years. They are now looking to increase the stocking rate.

Not only is there anecdotal evidence of the impacts of increased rest, there is transect data and photos. This ranch has a monitoring program. Burt Smith gathered transect data. The table on the following page summarizes that data.

The ranch that deferred grazing had more grass and legumes and less forbs. They also had more desirable and less undesirable species.

Amazing how one decision led to so many benefits. There was increased forage production, more roots which increased organic matter in the



soil, and grass provided cover for the soil. The soil surface was loose and friable (see right below).

Grazing is both an art and a science. This is what makes it so hard to implement because the key is flexibility. We tend to react better to a connect the dots kind of approach. We aren't challenged to think.

Perhaps a better term than controlled grazing is one coined by others as



(Continued from page 3)

**Management Intensive Grazing.**

The key is the management. As you can see, your decisions can have a dramatic effect. The key to effective decision-making starts with your footsteps out in the pasture. Start walking!

# A LOOK AT FOOTPRINTS

Controlled graziers have **three questions to answer** and **three places to make footprints** when they move stock from one paddock to another.

**How can we tell how fast our pastures are growing?**



It's simple. We need to make some footprints in the pastures stock have already grazed. If the paddocks stock left a week or two ago have significant regrowth (*a couple of inches*), plan on using relatively short rest periods (*30 to 45 days*). If we don't see much regrowth, we need to plan for longer rest periods (*60 to 120 days*).

**Look Behind**

**What rest period will I need?**

Ranchers using controlled grazing know that the single most important principle of controlled grazing is **adjust the rest period as the growth/recovery rate of pastures changes: slower growth, longer rests.**

**Look Ahead**

**Has this paddock had enough rest?**

The second place to make footprints is the paddock we plan to graze next. We need to make sure the pasture is ready. If it is short of feed, the pasture probably hasn't had enough rest.

To get more rest we may need to keep the cattle where they are a bit longer. Moving livestock in before the pasture is ready may launch us into a vicious cycle of *chasing the grass*. Once in the cycle, the cows will find less and less grass waiting for them each time they move.

	Deferred Grazing Site	Rotation Grazing Site
Total Unused	1.26	13.79
Total Grasses	55.45	47.43
Total Legumes	40.28	9.74
Total Forbs	20.22	46.51
Total Woody	3.16	5.88
<b>Key Species</b>		
Fire Weed (U)	3.79	15.26
Green Panic Grass (D)	20.7	0.18
Pitted Beard Grass (U)	23.54	36.4
Glycine (D)	18.01	0.37
Plantain (U)	5.37	18.2

*U = Undesirable D = Desirable*

The rest period and the graze period are dependent on each other. To shorten the rest period, we shorten the time stock remain in each paddock. To lengthen the rest period, we need to increase the length of time stock stay in

each paddock.

So, as growth rates changes, we will need to adjust the rest **and** graze periods. That means that before we make decisions about the graze period, we have to know how much rest our pastures need.. and that means we need to know how fast our pastures are growing.

**Where the Livestock Are**

(Continued from page 4)

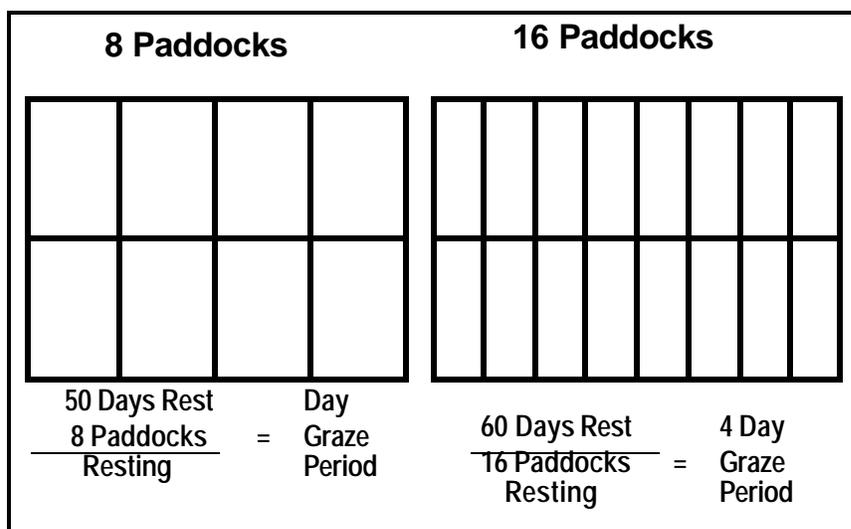
**Is the stocking rate right?**

Controlled graziers try to keep the graze periods short (*consistent with the required rest*) to keep animal performance high. Increasing the graze period is one way to lengthen the rest period, but there is a better alternative — increase the number of pastures.

By subdividing fields we can maintain or increase the rest period while maintaining or shortening the graze period.

For example, if we have eight pastures and need a 50 day rest, our graze periods will be seven days long. If we divide each of those pastures in half (*16 pastures*), we can rest paddocks for 60 days with only four day graze periods.

**There is more to controlled grazing than moving animals from one paddock to another.**



**Acknowledgements**

I would like to thank Rick Habein of Habein Livestock, Carl "Soot" Bredhoff of Kahuku Ranch, Richard and Florence Schultz of Dalieco Ranch, Bill Oakes of Kahua Ranch, and Kona Specialty Meats for taking time to show me their operations.

I would also like to thank Greg Friel of Haleakala Ranch for having me give a presentation.

**UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION**  
 11477 E Avenue (Building 306, DeWitt Center) Auburn, California 95603  
**(530) 889-7385** • FAX (530) 889-7397 • **E-Mail:** ceplacer@ucdavis.edu

**Roger Ingram**  
 Farm Advisor/Pasture & Livestock

The University of California, in accordance with applicable Federal and State law and University policy, does not discriminate on the basis of race, color, national origin, religion, sex, disability, age, medical condition (cancer-related), ancestry, marital status, citizenship, sexual orientation, or status as a Vietnam-era veteran or special disabled veteran. Inquiries regarding the University's nondiscrimination policies may be directed to the Affirmative Action Director, University of California, Agriculture and Natural Resources, 1111 Franklin, 6th Floor, Oakland, California 94607-5200. (510) 987-0096.

United States Department of Agriculture, University of California, Placer and Nevada Counties cooperating.