



Livestock, Range & Watershed

Division of Agriculture & Natural Resources

Counties of San Luis Obispo and Monterey

350 N. Main Street
Templeton, CA 93465
(805) 434-4106 PHONE
(805) 434-4881 FAX

Winter 2008

Inside this issue:

- **Announcements**
- **Cattle Health**
- **Drought in Oak Woodlands**
- **Drought and Acorns**
- **Cattle Distribution**
- **Drought and Grazing**

Announcements

Royce Larsen, Watershed and Natural Resource Advisor, will be on sabbatical leave from December 15, 2007 – December 31, 2008. I will be at Utah State University, working with Dr. Fred Provenza on the BEHAVE (Behavioral Education for Humans, Animals, Vegetation, and Ecosystems) program. This will be a great opportunity to learn more about animal behavior and how they behave in the environment, and most importantly, how we can alter their behavior. In my absence, Amy Breschini (805) 781-5946, 350 N. Main Street, Suite B, Templeton, CA 93465, can be reached for any urgent questions or business. Amy is a research assistant for our office. She will be able to re-direct questions to the appropriate person within the university.

November 7, 2007 Bill Tietje and Royce Larsen sponsored a workshop on Drought. The following articles in this newsletter are some of the highlights we discussed during that workshop. If you are interested in all of the handouts for that workshop please contact Bill Tietje by phone at (805) 781-5938, or contact him at 2156 Sierra Way, Suite C. San Luis Obispo, CA 93401.

Cattle Health

John Maas, DVM, MS, DACVN, DACVIM Extension Veterinarian at UC Davis spoke on managing beef cattle health in oak woodlands of San Luis Obispo County during the drought management workshop.

There are three very important cattle health problems in this area's Oak woodlands that you need to be aware of and do preventive action to avoid losses. One is a reproductive disease: Foothill Abortion, a second is anaplasmosis which can result in acute death loss, and the third is copper deficiency.

Drought conditions can increase the severity or chances of livestock contracting these diseases. Also, one needs to be careful bringing livestock into this area if they are purchased elsewhere to replace those that are sold due to drought.

A 12 page handout is available from Dr. Maas covering these diseases. To obtain this handout please contact Bill Tietje by phone (805) 781-5938, or contact him at 2156 Sierra Way, Suite C. San Luis Obispo, CA 93401.

Drought in Oak Woodlands

Bill Tietje, IHRMP, UC Berkeley

Tree Response to Drought

The Cooperative Extension Master Gardeners receive many calls, especially after a dry winter followed by a hot summer like the past one, about the effects of the dry conditions on the native trees. This fall there has been an especially large number of questions about the browning and loss of leaves on many blue oak and coast live oak trees. A caller asks, "are the trees dying . . . do they have some strange disease that will spread to the other trees? What can I do?"

In the late summer or early fall of dry years, oak trees may lose many or all of their leaves. Leaves transpire water and so the early loss of leaves is a mechanism that the trees have for shutting down or limiting water loss. It's called "water-deficit-induced leaf drop". The trees will most likely leaf out normally in the spring. If we don't receive significant rainfall in the next month or so, and you have an individual tree or so that you can water, then a late fall or early winter irrigation may be advised. Move a hose around under the drip line of the tree for a day or two, such that the water can percolate deep into the soil. If the dry conditions continue through this winter and spring, you should do irrigation under the tree in spring to bring the soil moisture level to that of a normal rainfall year. The trees are *not likely* to have a disease, and removal would be an inappropriate response.

Drought is quite common on the central coast, at least if you define it as less than average rainfall. In our Mediterranean climate, somewhere around 2/3 of the years are below average in rainfall. What that means is that the native trees are for the most part pretty used to a dry year or two and will survive. Where possible, and if the dry conditions continue, a deep irrigation under an oak tree will help to invigorate it.

Drought and SOD

The spread of the Sudden Oak Death Disease (SOD) and its absence in San Luis Obispo County may be related to drought or dry years. As you know, thousands of oak and tanoak trees have been killed in coastal forests of California by SOD. The disease is caused by an exotic fungal pathogen, *Phytophthora ramorum*, which causes a lethal canker in some trees. The pathogen is similar to the fungus that caused the Irish potato famine during the mid-1600s. It apparently is native to China and probably came into California in the early 1990s on nursery stock, probably rhododendrons. The foliage of 10 to 90% of the trees in a woodland or forest can turn from a healthy green color to brown over a period only a month or two.

Many native plants will host SOD. A few of the hosts—called canker hosts—are trees. In these, the disease attacks the cambium, eventually girdling and killing the tree. Other hosts—foliar hosts—are generally not killed by the disease, but are thought to play a role in its spread. For example, California

bay laurel, a foliar host, is always in close association with diseased oak trees in coastal oak forests.

How may drought or dry weather affect the spread of SOD? There is less build-up of spores on California bay leaves during a dry spring. Bay trees also drop leaves earlier in dry years, and so there are fewer infected leaves. In contrast, sustained spring rainfall builds up the populations of spores on bay leaves and leaves are retained on a tree longer. Compared to coastal counties to the north, San Luis Obispo County has little sustained spring rainfall. On the other hand, coastal counties to the north, where SOD occurs, frequently receive that kind of weather. The dryer weather of San Luis Obispo County is probably less favorable for the establishment of SOD.

Drought and Acorns

Walt Koenig, Hastings UC Natural History Reserve.

Acorn production in many of California's most abundant and widespread species, including valley, blue, and to a lesser extent coast live oaks, tends to be higher when rainfall is less. Basically, more rainfall (particularly in the spring when trees are flowering) tends to adversely affect pollen flow and fertilization (oak trees are wind pollinated) in a way that depresses the acorn crop. So throughout much of California, acorn production is better in dry years. Interesting is the possibility that a really extreme year (like an El Niño) could synchronize the acorn crop statewide, and thus populations of wildlife that depend on it.

Improving Livestock Distribution During The Dry Season

Mel George, UC Davis

Reducing the impact of grazing livestock on water quality, aquatic and riparian habitat, and biodiversity is a continuing goal for livestock producers, natural resource managers, and conservation groups. Environmental impacts of grazing livestock are frequently the result of poor livestock distribution. Management practices that alter livestock distribution on the landscape by attracting them away from environmentally sensitive areas can effectively reduce these impacts. However, policy makers, regulators and land

managers are often uncertain about the effectiveness of livestock distribution practices and therefore gravitate to the certainty of excluding livestock by fencing or lease termination. This can devastate the economic viability of rangeland livestock enterprises, reducing their competitive ability and adversely impacting the economy of rural communities. Furthermore, livestock exclusion limits our ability to use grazing to manage wildlife habitat, fire fuel loads and weed infestations. It is crucial that managers, regulators and community watershed groups understand how livestock can be predictably and effectively redistributed so that they do not have undesirable effects in grazed watersheds.

Three studies in California visually and statistically document the effectiveness of nutrient supplement placement for changing livestock distribution. Global positioning technology was used to determine beef cow positions during these studies. The first study, in the Sierra Nevada foothills, demonstrated that use of riparian patches could be reduced with strategic placement of dehydrated molasses supplement during the dry season. A later study on an adjacent ranch found that during the dry season supplement placement effectively redistributed livestock by attracting them into a zone that extended out to about 600 m (1969 ft) from the supplement. In a third study on a coastal ranch in San Luis Obispo County nutrient supplements were used to successfully attract beef cows into a previously avoided forest adjacent to a grazed grassland. These studies were conducted by Neil McDougald, Wayne Jensen, and Royce Larsen, who are Farm Advisors in Madera, Santa Barbara and San Luis Obispo Counties, in collaboration with Mel George who is the Rangeland Management Specialist from UC Davis.

The results of these studies demonstrate that strategic placement of supplement can be an effective tool for altering livestock distribution during the dry season. When green forage is adequate, the supplement sites are less attractive. When supplement is placed in rangeland pastures or allotments, cattle not only congregate at the supplement site but they graze and rest in adjacent areas within 600 m of the supplement site. Supplements can reduce grazing in riparian patches and can attract cattle away from areas around stockwater troughs. In these studies, cattle were attracted more than 1.3 km (0.8 mi) from stock

water. The results of the studies reported here and elsewhere in the west support the effectiveness of supplement placement for changing livestock distribution. Integration of supplement placement practices into best management practices and into the prescribed grazing practices in USDA NRCS Field Office Technical Guide is supported by this research. Livestock producers can easily test the utility of supplement placement by closely observing livestock grazing locations or measuring changes forage standing crop before and after supplement placement.

For more information please contact the Rangeland Watershed Program, California Rangeland Research and Information Center at: <http://californiarangeland.ucdavis.edu/>

Drought and Grazing

*Royce Larsen, UC Cooperative Extension
Karl Striby, USDA-NRCS*

We are currently experiencing a severe drought on the Central Coast. We are not alone as many of the states in the west and south east are also experiencing severe drought conditions. Drought conditions create havoc with management of ranches. Opposite of drought years is flooding conditions. There is no such thing as an average year, which makes management decisions very difficult. We have to live with wet years and dry years.

The 2006 –2007 water year was the lowest recorded rainfall at the San Luis Obispo Cal Poly site since 1869, and only received 6.03 inches, see figure 1. This site receives an average of 22 inches per year. The highest this location ever recorded was 54.6 inches in 1969.

The situation is slightly different north of the grade. The lowest rainfall recorded in downtown Paso Robles was 4.8 inches in 1898, see figure 2. There was 6.3 inches in Paso Robles this last year, slightly above San Luis Obispo. The highest recorded in Paso Robles was 31.3 inches in 1969, the year of the big flood. Since 1969 there has been a downward trend in precipitation for San Luis Obispo County.

Many refer to the average of an area for making management plans. However, the average rainfall in San Luis Obispo County is not a very good indicator for planning ranch activities like forage production, cattle numbers, and other

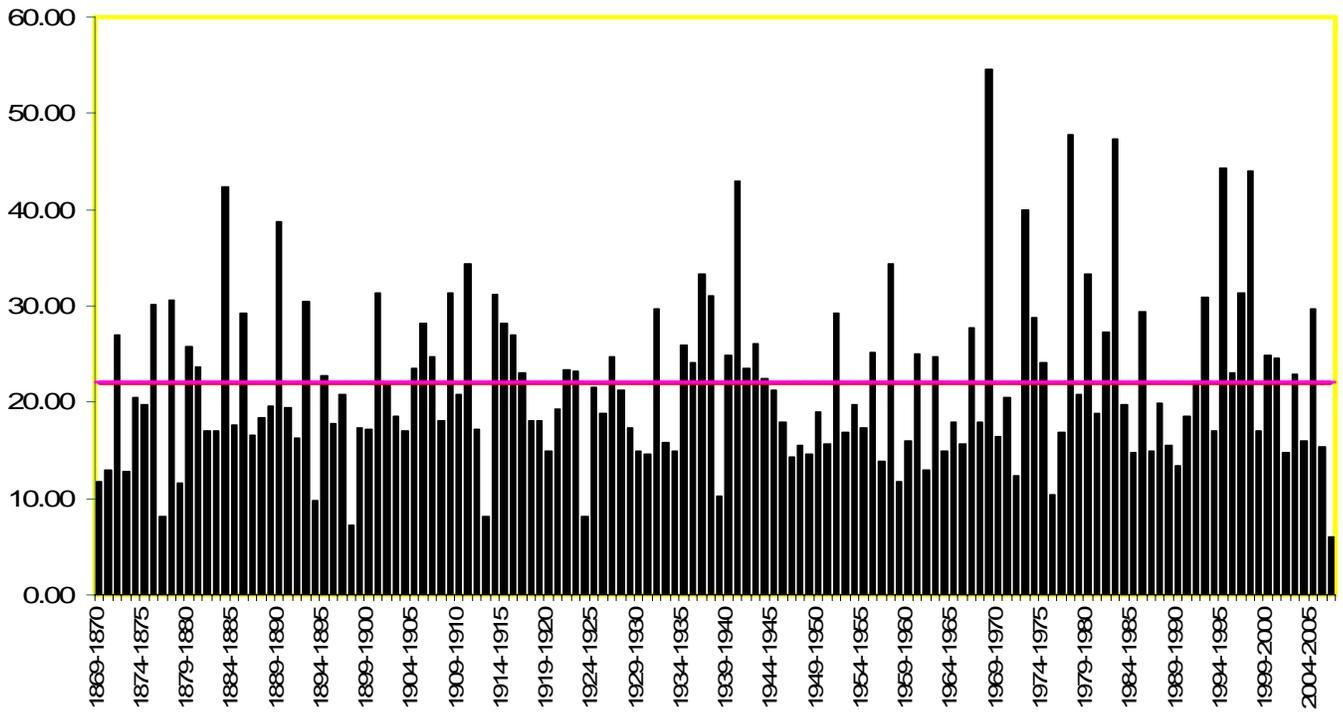


Figure 1. Rainfall records at the San Luis Obispo Cal Poly site, from 1869 to present. Data is based on water year July 1 – June 30. Average precipitation is 22 in/yr. Five years of missing data, 1960-1961, 1961-1962, 1963-1964, 1964-1965 and 1986-1987 were estimated. Data is from the Public Works Dept, San Luis Obispo County.

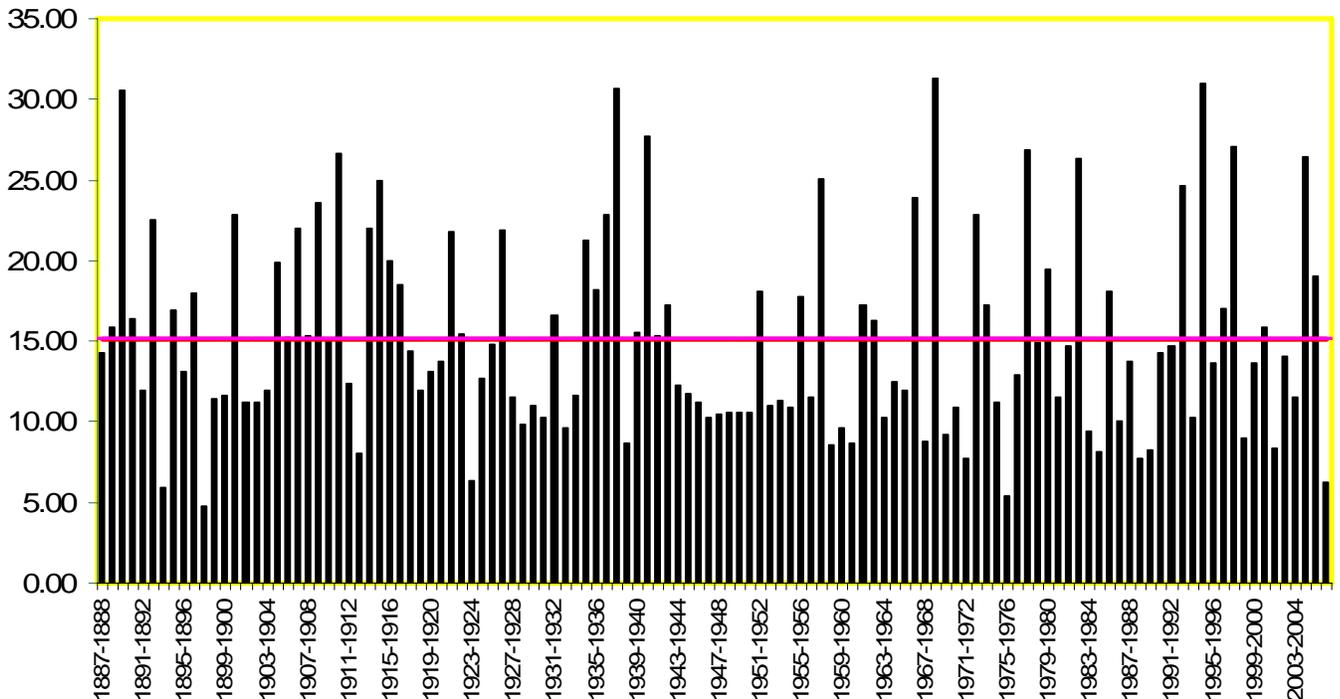


Figure 2. Rainfall records at the downtown Paso Robles site, from 1887 to present. Data is based on water year July 1 – June 30. Average precipitation is 15 in/yr. Two years of missing data, 1903-1904 and 1986-1987 were estimated. Data is from the Public Works Dept, San Luis Obispo County.

agricultural crops. For example, the San Luis Obispo Cal Poly site has an average of 22 inches per year. But 6 out of 10 years are below average. This means that the few years that are above average are usually very wet years, which raises the average. For more practical purposes, the years that are below the average determine what and how much forage can be produced on the ranch, and the number of cattle that can be grazed on a sustainable basis. This pattern holds up across most of the county, with the exception of the Carrizo Plains. The pattern for the Carrizo Plains is 7 out of 10 years are below average precipitation.

There have been worse droughts than the one we are experiencing. The great drought of 1862–1865 wreaked havoc on the state and the cattle industry. Half of the cattle in the state died as a result of this long drought, and large numbers of cattlemen were forced out of business forever changing the way the ranching industry did business in California. Another severe drought that made the news occurred in 1976, with 10.4 inches of rainfall at the San Luis Obispo Cal Poly site. We have had droughts similar to 1976 eight times since 1869, or approximately once every 17 years. But none of these have lasted for three years in duration like the 1862-1865 drought did. However, droughts that are less severe than the one we are currently experiencing do occur often and can still create hardships for the ranching industry. For example,

the drought of 2002 led to feed shortages for many cattlemen in San Luis Obispo County, especially in the eastern part of the county. Based on 137 years of rainfall data, we can expect a drought that creates feed shortages about every six years on average.

Karl Striby (USDA-NRCS) and I have been measuring forage production in San Luis Obispo County since 2000. We have 10 sites that are monitored each year across the county located at Cambria, Morro Bay, Adelaida, Creston, Shandon, Huasna, Camatta Creek, Bitterwater Road, North of Soda Lake, and south Carrizo Plains. The best forage production year we measured was the 2005-2006 growing season, with an average of 5800 lbs/ac production. This last year was the worst we have measured, with an average of 1900 lbs/ac production. This meant there was very little feed available to livestock this year, especially if any residual dry matter remained for soil protection and the enhancement of growth this coming year. Many livestock producers literally survived on the leftovers of the previous year's growth. Some areas in the eastern portion of the county did not even germinate and grow this last year. Many cattle have already been sold or moved, or are being fed supplemental feed, because of this drought. It would be absolutely devastating to the ranching industry to have another year of drought like this year.



Royce Larsen

**Watershed/Natural Resource Advisor
San Luis Obispo and Monterey Counties**



Wayne Jensen

**Livestock & Natural Resources Farm Advisor
San Luis Obispo and Santa Barbara Counties**

Note: Trade names may be used to simplify the information presented. No endorsement is intended nor is criticism implied of similar products not mentioned.

The University of California prohibits discrimination against or harassment of any person on the basis of race, color, national origin, religion, sex, physical or mental disability, medical condition (cancer-related or genetic characteristics), ancestry, marital status, age, sexual orientation, citizenship, or status as a covered veteran (covered veterans are special disabled veterans, recently separated veterans, Vietnam era veterans, or any other veterans who served on active duty during a war or in a campaign or expedition for which a campaign badge has been authorized) in any of its programs or activities or with respect to any of its employment policies, practices, or procedures. University policy is intended to be consistent with the provisions of applicable State and Federal laws. Inquiries regarding the University's equal employment opportunity policies may be directed to the Affirmative Action/Staff Personnel Services Director, University of California, Agriculture and Natural Resources, 300 Lakeside Drive, 6th Floor, Oakland, CA 94612-3550, (510) 987-0096.