



Ranch Roundup

C O O P E R A T I V E E X T E N S I O N

MODOC COUNTY UC COOPERATIVE EXTENSION OFFICE UPDATE

Steve Orloff, UCCE Modoc/Siskiyou, County Director

There have been some changes recently in the Cooperative Extension Office in Modoc County. Missy Merrill-Davies is currently on leave. The University of California Cooperative Extension and UC Agriculture and Natural Resource leaders remain committed to providing programs in Modoc County and are currently working to develop ways to provide programming in both the short- and long-term. During this interim period, Don Lancaster (Former County Director and Farm Advisor) has agreed to work with me as County Director to provide local administrative leadership and oversight of our programs. Don will be working part time and will be in the office periodically depending on his schedule. Don is a wealth of information on issues related to agriculture and natural resources in Modoc County and is available for consultation. He can be reached at 530-640-0891. Livestock program priorities are being discussed with UC ANR Associate Vice-President Bill Frost and local academic advisors David Lile, Larry Forero and other UCCE staff, as appropriate. In the short term, neighboring Livestock and Range Advisor David Lile will be available for phone consultations. David's phone numbers are (530) 251-8133 (Office) and 251-6672 (cell). Don Lancaster and Rob Wilson (Intermountain Research and Extension Center Director/Farm Advisor) will be available to address plant science related inquiries. I am available, as well, to offer programmatic expertise (alfalfa, pastures and cereal crops are my specialty) and to be an overall administrative contact (530) 842-2711.

AN OVERVIEW OF SOME OF THE CURRENT AND PLANNED ACTIVITIES IN MODOC COUNTY

Medusahead The invasive annual grass Medusahead is a significant concern to Modoc County ranchers and wildlife managers alike. UC researchers plan to continue and expand efforts to find solutions to this troublesome weed in Modoc County. Josh Davy, Farm Advisor in Tehama County, is the lead investigator on two studies he initiated in cooperation with Missy Merrill-Davies. In one study the value of nitrogen fertilization to increase the palatability of Medusahead and encourage the growth of desirable species is being evaluated. In the second study the effect of seeding different desirable species with potential to out-compete Medusahead is being studied. Both of these projects are continuing.

Post-Fire Reseeding and Invasive Species Prevention A new Director for the Sierra Foothill Research and Extension Center (SFREC) was recently hired. His name is Jeremy James and he comes to us from the Eastern Oregon area (Burns) so he is familiar with ecosystems like Modoc County. In addition to serving as the Director of SFREC, Jeremy has a partial appointment as a Range Specialist and plans to conduct projects in Modoc County. According to Jeremy, out of control wildfire and invasive plants pose a continuous and mounting threat to the long-term health and productivity of intermountain rangeland in California. While reestablishing desired species is a key step in restoring function of these systems following these disturbances, seeding intermountain rangeland is an expensive and high risk practice susceptible to failure. Jeremy, together with UC Co-

OVERVIEW OF CURRENT AND PLANNED PROJECTS-CONTINUED

operative Extension colleagues will be using network of sites in eastern California (including Modoc County), eastern Oregon and central Nevada, to examine the causes of seeding failures and identifying management tools and strategies that may help improve outcomes of these seeding efforts. To date UCCE has found that in most seedings on average over 80% of the seeds germinate but only about 10% of these germinated seeds emerge above the soil surface. Current work is focused on identifying the causes of this large mortality and developing tools and strategies that overcome or minimize factors killing seedlings of desired plants.

Medusahead Forum Jeremy James will be leading up a Medusahead forum at SFREC on November 5th. He is making plans to conduct a similar forum or workshop in Modoc County over the winter.



Photo Monitoring Program With support from the Modoc County Resource Advisory Council (RAC) and Modoc County Cattlemen, Missy Merrill-Davies developed a program for producers to monitor their own rangelands with the assistance of GPS-enabled cameras. The camera records both the location and date the photo is taken providing essential documentation for an effective photo monitoring program. Producers can continue to check out a camera from the Cooperative Extension Office by contacting the Office Manager Cheryl Kunert.

USFS Meadow Condition in Grazing Allotments. In 1999, at the request of the livestock industry, the US Forest Service Region 5 Range Program initiated a region-wide, long-term meadow condition and trend monitoring program. The primary purpose of the program is to 1) document meadow conditions as new riparian grazing standards and guidelines were coming into use at that time; and 2) examine long-term trends in meadow condition following implementation of these riparian standard and guidelines. The program currently includes 618 permanent meadow vegetation monitoring sites established in key meadows across Region 5, over 40 monitoring sites exist on the Modoc National Forest. In 2012, US Forest Service Region 5 and UCCE/UC Davis established a partnership to conduct the first comprehensive analysis of this unique dataset. Ken Tate (UCCE Rangeland Watershed Specialist), Leslie Roche (UC Davis Postdoctoral Researcher) and David Lile (Lassen County Farm Advisor) are working closely with USFS range staff and permittees to use these data to examine 1) meadow conditions and trends; and 2) relationships between meadow conditions and trends, livestock management, weather and environmental drivers. Analysis of data from across the whole region, including Modoc and Lassen National Forest allotments will occur this winter. More information and preliminary results can be found at: http://rangelandwatersheds.ucdavis.edu/main/projects/sierra_nevada_meadows_overview.html

California Rangeland Stewardship Project. California's rangelands encompass a variety of diverse agricultural land resources. Science and management on these working landscapes have focused on agricultural production, with the goal of securing the nation's food supply. There has also been growing interest in the broad range of other benefits provided by rangelands, such as clean water and biodiversity. Balancing multiple goals on working rangelands in an economically realistic

manner is a central challenge facing many ranchers, rangeland managers, policy makers, and researchers. Through interviews with ranchers, researchers plan to:

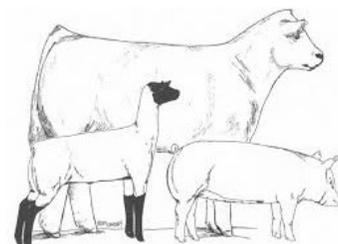
- link decision-making to agricultural and ecological outcomes,
- connect research and policy with how decisions get made on-the-ground,
- merge management and scientific knowledge to identify adaptive strategies for multiple goals,
- compile the knowledge and expertise of experienced ranchers and rangeland managers.

Researchers Leslie Roche and Ken Tate from UC Davis have already conducted 35 interviews with ranchers from San Luis Obispo to Lassen County in the last few months. Their goal is to interview over 60 ranchers. They are very interested in interviewing interested ranchers in Modoc County. Interviews will take approximately 2-4 hours and focus on questions about enterprise goals and challenges, management strategies, and general operation characteristics. All interviews are confidential, and the researchers will travel to Modoc County to conduct the interviews. If you are interested in the cooperating on the project contact Leslie Roche at lmroche@ucdavis.edu or by phone at 530-902-2547.

Foothill Abortion Vaccine Project Jeff Stott, Professor at the school of Veterinary Medicine at UC Davis is continuing his work on the development a vaccine for Foothill Abortion. Results are showing the vaccine to be incredibly effective and Dr. Stott is now in the second round of field studies working with several ranches in Modoc County and other areas of California. He is working on the final process, including a production license, before going into the production phase for the vaccine.

Cattle Health Meeting A Cattle Health meeting is planned for this winter in cooperation with Livestock Advisors Larry Forero and Josh Davy. This meeting is a cooperative effort and is held at several locations throughout far northern California.

Junior Livestock Advisor Update Susan Stokke, the 4-H Program Representative for Modoc County is stepping down as the Advisor to the Junior Livestock Show (JLS). This is a personal decision Ms. Stokke reached following this year's show. The JLS Advisor position is separate from her role as the 4-H Program Representative (a position financially supported by the University of California and Modoc County). Alturas Rotary sponsors the show (and the sale) and the salary for the JLS Advisor position is supported through an increase in the sales commission from 5% to 7%. The Junior Livestock Show itself is planned, organized and conducted by the 4-H and FFA members that comprise the Junior Show Board. This represents a tremendous opportunity for leadership growth and development of these young people and is a goal that Alturas Rotary Clubs has fostered through their sponsorship of the show and in partnership with 4-H and FFA for more than 65 years. Susan Stokke will continue to be involved in JLS in an advisory capacity to the JLS Board, just as FFA and Rotary Club advisors have functioned.



FOOTHILL ABORTION VACCINE STATUS UPDATE

Julie Finzel, Livestock and Natural Resources Advisor, UCCE Kern, Tulare and Kings Counties

Not long after I started with UC Cooperative Extension I presented an update on the status of the foothill abortion vaccine UC Davis and the University of Nevada, Reno are working to manufacture and make available commercially. At that time, I explained that previously some specialty vaccines, like the one for Anaplasmosis, were licensed through the California Department of Food and Agricul-

(Continued on page 4)

(Continued from page 3)

ture. However, CDFA is no longer licensing new, specialty vaccines, so researchers must work with the U.S. Department of Agriculture to get the foothill abortion vaccine licensed.

USDA requirements are more stringent than CDFA requirements and both the vaccine researchers and the staff at USDA are charting new territory as they work to certify the safety and efficacy of a vaccine as unique as the foothill abortion vaccine. Currently the vaccine is still in the field testing phase where cattle herds are monitored for both potential negative reactions to the vaccine and the efficacy of the vaccine according to USDA standards and guidelines. The vaccine has proved 100% effective to date. There is no projected date when the vaccine could be available for use.

Some of the challenges the vaccine researchers are facing include a facility where the vaccine could be manufactured. They have been using a facility at UC Davis, however, that facility would need renovations to be able to support commercial production of the vaccine.

Researchers are aware of some of the challenges producers would face when using the vaccine specifically, the vaccine must be transported and stored in liquid nitrogen and the cost of purchasing the vaccine could be high due to the process used to manufacture the vaccine. The cost of manufacturing the vaccine is expected to be high because it is a live vaccine that cannot be cultured in a dish, but must be cultured in a special mouse that does not have a functioning immune system. Immunodeficient mice are expensive and they must be euthanized so that the infective agent can be harvested from their spleen.

Work is being done to develop a recombinant vaccine through genomic research. In a recombinant vaccine, the genomic sequence of the infective agent, in this case a bacterium, is determined. Next, the genes actually being expressed during infection are identified and used to make a vaccine. A recombinant vaccine would be far less sensitive to temperature and would not require immunodeficient mice in the manufacturing process making the finished product much more cost-effective and practical for on ranch use.

More information on managing the occurrence of foothill abortion through the timing of pasture use can be found in the July/August 2013 issue of the CCA magazine.

FALL MANAGEMENT OF PASTURES AND GRASS HAY FIELDS IN DROUGHT YEARS

Steve Orloff, Farm Advisor, UCCE Siskiyou

As everyone is painfully aware, this has been a difficult year to adequately irrigate crops. Significantly below average rainfall has resulted in reduced surface water supplies and groundwater recharge. To make matters worse we have experienced several below average rainfall years recently and until recently this has been a fairly hot summer. For these reasons many growers are running short of irrigation water or have already been forced to quit irrigating their pasture or grass hay fields.

Dealing with a water shortage in alfalfa is easier than it is with most irrigated grass species. Alfalfa is relatively drought tolerant. It has a deep taproot so it is better able to access deep soil moisture, and when moisture levels are extremely low alfalfa goes into a "drought-induced dormancy". The plant typically recovers fully and resumes growth when sufficient water becomes available. In contrast, some grasses are not as resilient and plant vigor and density can suffer after an extended drought period.

(Continued on page 5)

What is the best way to deal with a water shortage for your pasture or grass hay field and what can be done to minimize the negative effects of deficit irrigation?

Steve Fransen, Forage Grass Specialist with Washington State University, has some advice for how to manage irrigated pastures and grass hay fields under drought conditions. Steve points out that the calendar for grass plants actually starts in the fall. This is when root growth is initiated and new growing points (or meristematic tissue) are formed. This sets the stage for forage production potential for the following year. Root shedding in grasses typically occurs from late June until early September when the roots begin to regenerate. If you dig grass plants in fall and carefully rinse them with water you should observe the new white roots. Then over the winter root shedding occurs again (roots turn from white to tan to brown to black as they decompose) until new roots are formed again in spring.

The plant crown or stubble is extremely important for grass survival. That is where the plant stores sugars and carbohydrates for respiration and subsequent plant growth. Most legumes store the majority of their sugars in the tap root and crown. In contrast, around 85 to 90% of the stored grass sugars are in the stubble internodes—only a small amount of sugar is stored in the roots. If grass plants do not have adequate stubble for carbohydrate storage, plant mortality can occur. It may be tempting in a water-short year like this to get as much as you can out of a pasture and graze it to the ground. However, even though the stubble may appear brown and dead, it is not. It is simply dormant and the sugars and starches can be remobilized and used for respiration and plant growth. Therefore, it is important NOT to graze the bottom 3-4 inches of the grasses because their storage function is critical for next year's production. So, what happens if the plants are grazed too close?

- The newly forming tillers can be starved of important sugars and starches
- The plant is more exposed and less protected from extreme weather
- Root formation is curtailed
- New tillers the following spring grow slower with fewer roots to support them

So even though it may be tempting to graze drought- stressed pasture close to the ground to greater utilize the available forage, this practice is a mistake in the long- term and is likely affect future productivity. You are best off to leave 3- 4 inches ungrazed from fall throughout the winter even if that plant material appears dead.

Producers need to maintain the cows somewhere for fall and winter, and it is difficult to impossible to prevent the cows from grazing the stubble below 3- 4 inches if they are fed on a pasture. Therefore, it is best to designate a small part of the property as a "sacrifice area" to house the animals so they will not consume too much of the stubble. This area can be a small pasture, dry range, dry lot, or a corral area. In effect, this area is "sacrificed" to protect your pasture from over- use at critical times.

The fertility status of the field is another factor to consider to help revive grasses after drought stress. Fall is a good time to fertilize pastures, including moisture- stressed pastures, with phosphorus and potassium. Oftentimes producers don't consider the phosphorus and potassium needs of grasses and think only about nitrogen fertilization in spring. Grasses need adequate phosphorus and potassium, and fall is a good time to make an application because these nutrients are needed for the development of new roots and growing points (meristematic tissue). Right now in early September is an ideal time. If growers apply P and/or K now they do not have to reapply these elements in the spring. An application of P or K now is not at risk of leaching from winter rains because these nutrients don't leach as do nitrogen or sulfur. It is fine to fertilize with these nutrients even when you don't have irrigation water or can't rely on rainfall for immediate incorporation, as these nutrients do not volatilize like nitrogen can from some fertilizer sources. Test soils now to determine whether your pasture is deficient in phosphorus or potas-

(Continued on page 6)

sium.

While it is important to fertilize with P (and K if needed) in the fall, excessive rates of nitrogen at this time are discouraged because it can make plants more susceptible to winter injury. Nitrogen encourages growth and excessive N prevents plants from adequately preparing for winter by "hardening off" and accumulating proline (an antifreeze-like compound). As N application is increased there is a decrease in stored sugars in grasses. This increases the chances of winterkill.

In conclusion, there is no simple surefire way to improve pasture productivity in drought conditions. Adequate soil moisture is important for maximum productivity. However, to maximize the likelihood of a full recovery, it is important to leave 3-4 inches of stubble ungrazed and to fertilize with P and K in the fall if needed. In addition, it may be necessary to over-seed clovers in late February or March, as they are often killed after an extended drought period in the summer.

CEREAL LEAF BEETLE FOUND IN KLAMATH BASIN: WILL IT AFFECT YOUR OPERATION?

Steve Orloff, Farm Advisor, UCCE Siskiyou

Many of you have probably heard about the recent positive identification of the Cereal Leaf Beetle (CLB) in the Klamath Basin. The cereal leaf beetle was first found in Klamath County on the 21st of July and then later in Tulelake on August 1st. It was observed in several commercial grain fields in both the Modoc and Siskiyou County portions of the Klamath Basin. I subsequently surveyed fields in the Scott Valley (grain, Timothy and orchardgrass fields) and did not find the pest. While most grain fields were too mature to readily find CLB, I did find a late planted field that was still completely green and I did not find any cereal leaf beetles. After the Klamath Basin find, Joe Moreo, Modoc County Agricultural Department, surveyed other agricultural areas of Modoc County and did not find the pest. Similarly, fields in Butte Valley were surveyed by the Siskiyou County Agricultural Department and they did not find CLB there as well.

You're likely wondering what is the significance of CLB being found in the Klamath Basin for your operation. First, quarantine actions for movement of grain and grass hay within California have not been completely decided but should be shortly. The current plan for this year is that quarantine actions may be imposed for the Klamath Basin and not for Modoc and Siskiyou Counties as a whole. What form those quarantine actions might take is yet unknown but may involve holding the grain for 30 days before moving out of the area. This would not be too onerous in most situations. Grass hay is subject to inspection but no further restrictions will be imposed on grass hay prior to movement out of the area. Details on how the inspection will occur are currently being ironed out. Alfalfa hay will not be impacted because it is not a host for the CLB but alfalfa grass mixtures could be affected.

While CLB was only detected in the Klamath Basin this year this does not mean that the other areas of Modoc and Siskiyou Counties are home free. It is very likely that CLB will spread into these other areas as well. Cereal leaf beetle was first found in Oregon in 1999 but has now spread throughout most of the state where grain is grown. The rest of Siskiyou and Modoc counties will likely become infested as well—it is just a matter of time because climatic conditions are favorable for the establishment of this pest.

Cereal leaf beetle has a wide host range of grass species. It prefers spring seeded small grains, especially wheat barley and oats. However, it will also feed on orchardgrass, timothy, annual and perennial ryegrass and fescue. Adult cereal leaf beetles may also feed on the leaves of corn, sorghum and sudangrass.

(Continued on page 7)

Cereal leaf beetle, *Oulema melanopus*, is distinctive—the adults are a relatively small (about ¼” long and 1/16” wide) brightly colored insect of the beetle family (see figure 1). The outside wings and head are metallic blue-black. The legs and prothorax or “neck area” are orange-red. This coloration makes them relatively easy to identify in the field. The larvae or immature stage of the beetle are slug-like with orangish -yellow bodies and a dark brown head.



Figure 1. Adult cereal leaf beetle.

The larvae cause the most damage. Their feeding causes transparent slits in the leaf blade, as they consume all the green leaf material down to the lower cuticle (Figure 2). The result is long narrow transparent “windowpanes” in the leaf. With severe damage, the field can take on a frosted appearance. The adults also feed on the foliage but rarely cause economic damage. The eggs are typically laid singly or in groups of two to three placed end to end in short chains on the upper leaf surface near the base of the leaf. They are about 3/16” long, cylindrical in shape with rounded ends with a yellow to burnt orange color (Figure 3).



Figure 2. Slug-like larvae cause windowpane like slits in the leaves.



Figure 3. Cylindrical, burnt orange eggs laid on top of the leaf blade single or in chains of 2 to 3 eggs.

In the long run, biological control will likely be the solution to this new problem. The beneficial insects will never completely eradicate CLB, but within a few years after the parasitic wasps are established, pest levels will generally drop below levels that cause economic damage. Parasitic wasps that attack either the eggs or the larvae have been released in Oregon. The egg parasite has performed well in the eastern US but has failed to become established in Oregon and other parts of the West. However, the larvae parasite (*Tetrastichus julis*) has become well established (high parasitization rate) in areas where it has been released in Oregon and insecticide treatments are generally no longer needed. Plans are in place to release the larvae parasite in the Klamath Basin next year—it is too late for releases this year.

(Continued on page 8)

(Continued from page 7)

When CLB invades an area and before biological control can be effective, it may be necessary to treat infestations with an insecticide. In the absence of natural enemies, damage to small grain crops can be significant. An average of one larva per flag leaf has been found to cause a 300 to 360 pound yield loss per acre. However, in heavily infested fields yield losses as high as 55 percent in spring wheat and 23 percent in winter wheat have been reported. Fields with this level of infestation have a frosted, withered appearance. Studies in Union County, Oregon showed wheat yield was reduced 13 percent in untreated plots in 2004 and 21 percent in 2005. Overall, the effect of CLB on winter wheat is less than the effect on spring wheat. The effect of CLB on winter wheat grain yield in 2004 was variable (3% to 18%) depending on overall crop vigor in relation to CLB population.

Treatment thresholds have been established for cereal crops. In most states the treatment threshold before the boot stage is three eggs and/or larvae per plant. Once the flag leaf emerges, CLB feeding is usually restricted to the flag leaf where damage can significantly reduce grain yield and quality. Therefore, the treatment threshold drops at the boot stage to only one larva per flag leaf. The results from the Oregon study mentioned above suggested that flag leaf threshold levels may actually be lower than 1 larva per flag leaf for spring wheat but is adequate for winter wheat.

A well irrigated and vigorously growing crop is less susceptible to severe damage from CLB. While other grass crops, such as those used for pasture or hay crops, are considered hosts for the CLB, treatment with an insecticide is generally not needed.

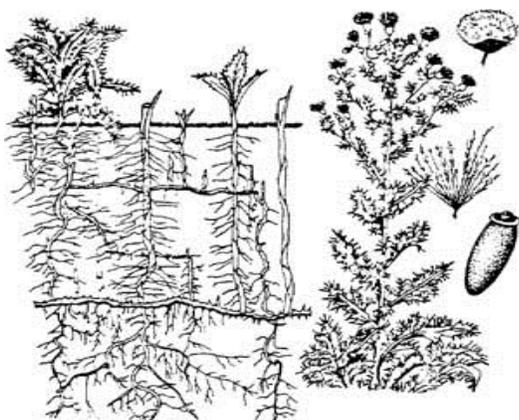
After this background information, let's return to the title of this article **Cereal leaf beetle found in Klamath Basin: Will it affect your operation?** The CLB so far has only been found in the Klamath Basin and not in other areas of Modoc and Siskiyou Counties. However, considering the spread throughout the western states, it is likely that CLB will eventually spread to the rest of these counties. This pest can cause significant injury and it is likely that some grain fields will need to be treated until beneficial insects (primarily the larval parasite) become well established. This will likely take years, but initial larval parasite releases are planned for next year. In the meantime, use economic thresholds to determine whether treatment is justified. One of the most significant questions remaining regarding how cereal leaf beetle might affect your operation depends on what quarantine restrictions are put in place regarding the movement of grass hay from infested areas to other areas of California. Hopefully, this will be decided soon and that the restrictions are not too onerous for producers.

TIPS FOR CONTROLLING THISTLES

Rob Wilson, IREC Director/Farm Advisor

The thistle species can become a farmer or rancher's worst enemy. If thistles are left untreated, they tend to form large, dense infestations in a short period of time. In pastures, thistles compete with desirable forage species and decrease land potentials for livestock production. Thistle's sharp spines make them unpalatable to livestock and wildlife once they reach maturity. In croplands and orchards, Canada thistle can become a problematic weed. The only known beneficial use for thistles is their nectar source for honeybees.

(Continued on page 9)



Canada Thistle, *Cirsium arvense* (L.)



Musk Thistle, *Carduus nutans* (L.)

A good way to tell Canada thistle from biennial thistles is to pull the unidentified plant out of the ground and look for long, interconnected, creeping roots (Canada thistle) or a large, tap root (biennial thistle). Some biennial thistles can produce over 5,000 seeds per plant, so make sure to prevent seed production each year.

Thistles found in northeastern California can basically be broken into two groups: biennial thistles and perennial thistles. Biennial thistles, such as musk, scotch, and bull thistle, complete their lifecycle in two years. Biennial thistles reproduce exclusively by seed, making eliminating seed production the major control target. Likewise, it's foolish to spray or kill biennial thistles after they've flowered since the plants have already produced seed. Perennial thistles, such as Canada thistle, live for several years reproducing by seed and creeping roots. The major control target for perennial thistles is decreasing seed production and suppressing root growth/propagation.

Controlling large thistle patches is a long, tedious task often taking several years. On the other hand, controlling small thistle patches is relatively easy. This fact makes it extremely important to buy weed-free seed and clean your vehicles/ implements after travelling in weed infested areas. You should also scout your fields each year in order to find small thistle infestations. Regardless of thistle population size, those people who have successfully controlled thistles have done so through diligent observation and re-treatment of existing patches.

Herbicides are probably the best control method for killing thistles. Biennial thistles are most sensitive to herbicides when they are small rosettes (April and May). Colorado State University research showed that when herbicides were applied to bolting musk thistle, 43% to 65% of the plants were controlled, but when applied to musk thistle rosettes, 90% to 100% were controlled. Recent UC research in Modoc County investigating Scotch Thistle control with herbicides showed Milestone or 2,4-D + Banvel worked best when applied at the rosette stage compared to treatment at the bolting or flowering stage.

The best time to treat Canada thistle is in the fall when rosettes are greening up or the early summer when plants are in bud to flowering stage. In numerous trials conducted in Northeast California over the last 10 years delaying herbicide application until the flower-bud or flowering stage gave better control than treating Canada thistle in the rosette or bolting stage. In most of Modoc County, flowering occurs between late June and mid-August.

(Continued on page 10)

(Continued from page 9)

The reason why delaying herbicide application until flowering works well for controlling Canada thistle is related to its biology. Canada thistle spreads mainly by vegetative buds on the roots. For this reason, the goal is to suppress the weeds' root system and herbicide applications at flowering maximize herbicide translocation down to the roots. If Canada thistle is found in pastures or mowed areas where it is cut before flowering, treat the re-growth with herbicide in late summer or fall.

Research has shown that Milestone, Transline, dicamba (Banvel), and Telar are some of the best herbicides (registered in California) for biennial thistle control. For Canada thistle control, Milestone or Transline are the best herbicide options. Most studies have shown that Milestone is somewhat more effective than Transline on Canada thistle, but that Transline is safer to seedling grasses if an application is needed soon after reseeding a perennial grass. Both herbicides can reduce Canada thistle populations by at least 85% one year after treatment when applied at the correct timing. Glyphosate (Roundup) and 2,4-D can also be used to control thistles. Milestone, Transline, Banvel, Telar, and 2,4-D selectively control certain broadleaf weeds while leaving most grasses un-affected. Glyphosate is a non-selective, contact herbicide and kills most plants. In a rangeland setting, glyphosate only should be used for complete vegetation control since re-invasion by other noxious weeds typically occurs after glyphosate treatments. With any herbicide application, it is extremely important to follow all label directions and restrictions. The label can help you determine which rate to use, what the grazing or re-cropping restrictions are, what the possible environmental concerns might be, and what target and non-target plants might be affected. You should also obtain an operator ID and notify your local Ag. Commissioner when spraying restricted use pesticides.

Repeated mowing between the bolting and bud stage is considered an effective control practice for Canada thistle, but mowing is not effective for controlling biennial thistles. Many studies have shown mowing three to four times per year for a three-year period greatly reduces Canada thistle populations. Mowing a couple times a year followed by a fall herbicide application is a great strategy and consistently enhances herbicide control of Canada thistle. It is important not to skip mowing times because Canada thistle can rebound quickly. Disking or cultivation is effective at controlling biennial thistles, although seeds left in the soil can germinate for many years. Cultivating Canada thistle is not effective, unless Canada thistle is cultivated at 20- day intervals for one to two years to exhaust the carbohydrate reserves in the roots. Hand-pulling biennial thistles can be a good strategy for controlling small patches before the thistles flower. Hand-pulling Canada thistle is not recommended since Canada thistle roots re-sprout from below the soil surface.

With any control strategy, you should monitor the site to look for new weed infestations after you achieve control. It's also important to re-seed the site with competitive plants if a healthy residual plant community is lacking to prevent thistle re-invasion. Feel free to call the Farm Advisor office in Tulelake 530-667-5117 to discuss site specific management strategies.

CALIFORNIA COW-CALF WELFARE ASSESSMENT



The University of California–Davis has developed a welfare assessment tool for cow-calf operations and is seeking volunteers to participate in our study. The assessment will address current management practices specific to animal welfare and will include an on farm visit to observe handling techniques. Participating producers will help us critique the assessment design and test the feasibility of the on-site visit.

We want to hear your story!

- ◆ We are seeking 10 cow-calf operations to volunteer in a test welfare assessment study
- ◆ Volunteers will be able to tell us about their operation by completing a survey
- ◆ We will arrange a date when two UC Davis personnel can visit the farm to observe an animal handling event
- ◆ Information collected will be completely confidential

For more information, or to volunteer for the study, contact:

Gabrielle Simon
Department of Animal Science
(517)526-2474
gsimon@ucdavis.edu

Dr. Cassandra Tucker, PhD
Department of Animal Science
(530)754-5750
cbtucker@ucdavis.edu

Dr. Bruce Hoar, DVM, PhD
School of Veterinary Medicine
(530)574-8554
brhoar@ucdavis.edu



WE ARE ON THE WEB
CEMODOC.UCANR.EDU

**COOPERATIVE
EXTENSION**

Modoc County UCCE
202 West 4th Street
Alturas, CA 96101

Steve Orloff,
County Director
sborloff@ucanr.edu

Non-Profit Organization
U.S. Postage Paid
Alturas, California
Permit # 22

It is the policy of the University of California (UC) and the UC Division of Agriculture & Natural Resources not to engage in discrimination against or harassment of any person in any of its programs or activities (Complete nondiscrimination policy statement can be found at <http://ucanr.edu/sites/anrstaff/files/169224.pdf>)
Inquiries regarding ANR's nondiscrimination policies may be directed to Linda Marie Manton, Affirmative Action Contact, University of California, Davis, Agriculture and Natural Resources, One Shields Avenue, Davis, CA 95616, (530) 752-0495.

INSIDE THIS ISSUE:

Modoc County UC Cooperative Extension Office Update	1
Overview of Current and Planned Activities in Modoc County	1-3
Foothill Abortion Vaccine Status Update	3-4
Fall Management of Pastures and Grass Hay Fields in Drought Years	4-6
Cereal Leaf Beetle Found in Klamath Basin: Will it Affect Your Operation?	6-8
Tips for Controlling Thistles	8-10
California Cow-Calf Welfare Assessment	11