

# The Roundup

Livestock and Range  
Newsletter  
Kern, Tulare, and Kings

University of California  
Agriculture and Natural Resources

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Happy Fall Everyone!

As I write this newsletter, the past few days have been cool and actually feel like fall. Of course, the weather app says we're going to heat up again soon, but that's to be expected in the Central Valley. I hope this newsletter finds everyone well and that calving season and lambing season are off to a good start.

Here at UCCE, I survived my first almond harvest. You're probably thinking, what's a livestock Advisor doing harvesting almonds? Good question. I mentioned this in my spring newsletter, but I am leading a team of researchers looking at food safety concerns and conducting a financial analysis of the use of sheep to graze cover crops and weeds in almond orchards. We just completed our first year of data collection and I am looking forward to analyzing our preliminary findings and sharing results at upcoming conferences.

I also promised a report on forage production across Kern and Tulare counties. Given the above average rainfall and the cool spring, it should come as no surprise that a lot of grass grew this year. The rangelands of Kern and Tulare counties really showed off and production was above average at all sites I sampled.

We had a very successful Range Camp this year. We accept campers from across California and Hawaii until we reach our max of 25. We had 22 campers this year and the smaller camp combined with great icebreakers and team building activities created a really tight-knit group by the close of camp. Campers learned about range ecology, ranch economics, soils, plant identification, wildlife, fire ecology and more. Campers were treated to a visit and discussion time with a local rancher and a beach BBQ. Competition for top camper was stiff and we will be sending some excellent delegates to the High School Youth Forum at the annual Society for Range Management meeting, held in Spokane, Washington in 2025.

Recently, I led a team that developed a webpage focused on serving small acreage landowners. It has lots of great information on home hardening, weed and pest management, livestock management and more! If you know someone who might be interested, please share! <https://ucanr.edu/sites/smacreage/>

Thanks for reading everyone. As always, don't hesitate to contact me with questions or comments. I hope you enjoy this edition of The Roundup.

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# HIGHLY PATHOGENIC AVIAN INFLUENZA (HPAI) H5N1 DETECTED IN CALIFORNIA DAIRIES - What Ranchers Need to Know

By Dr. Gaby Maier, Extension Beef Specialist, UC Davis

**What happened?** The California Department of Food and Agriculture (CDFA) announced in a press release on August 30th, 2024 that highly pathogenic avian influenza (HPAI) was detected in three dairies in the Central Valley. The outbreak of this flu virus in dairy cattle was first reported in the Texas panhandle in the spring of this year after several dairy herds had cows become sick with an unidentified illness. The affected cows were lethargic, had a fever, some had clear nasal discharge, diarrhea or dry feces, dropped in feed consumption and milk production, and most remarkably shed thick, colostrum-like milk. Most of the affected cows recovered after a couple of weeks, but their milk production did not reach the same levels as before they became ill. Veterinarians were unable to determine the cause of these outbreaks for some time, but dead birds on the dairies and cats with neurological signs finally raised the suspicion for avian flu. Cats and other mammals often become neurological when infected with HPAI and cats on dairies become infected when drinking raw milk. Samples collected from affected cows indeed came back positive for HPAI and since then, dairy herds in multiple states across the U.S. have tested positive for the virus. For a current and historical overview of affected states go to the United States Department of Agriculture (USDA) dashboard. As of September 3rd, 2024, a total of 14 states have diagnosed cases in 197 herds.

**How did this virus get into dairy cattle?** It is now believed that the virus spilled over from birds to dairy cattle in a single event, i.e. one cow was infected in Texas through bird droppings or a dead bird, and the virus has since spread from cow to cow only. Flu viruses change often, which is why we need a new flu vaccine in people every year. When a host such as a bird gets infected with two types of flu viruses at the same time, the viruses can reassort their genetic material. By random chance events, the newly assorted virus is now capable of infecting a new host, in this case cattle.

**How has the virus spread between cattle so quickly?** HPAI is shed in large numbers in the milk, even before cows show clinical signs of disease. It is very likely that the virus spreads between cows on a dairy through milking machines. The virus is also shed in small amounts in urine, nasal secretions, and saliva. In a study where dairy heifers were experimentally exposed to the virus via an inhalation mask, heifers only had a temporary increase in nasal discharge without any other clinical signs. However, the same researchers infected the udder of lactating cows experimentally through the teat canal and were able to reproduce the same disease symptoms seen on the affected dairies: abnormal milk, decreased feed intake, watery diarrhea or dry feces, a significant drop in milk production and clear nasal discharge. A preliminary version of this study is available online. Even though there are quarantines and movement restrictions in place for herds where HPAI is found, the rapid spread of the disease shows how interconnected the cattle industry is and how fast and far pathogens can travel. The virus has also been spread from cows to domestic poultry, which are susceptible to HPAI. When HPAI is found in domestic poultry, the typical outcome is that all birds are euthanized. For all these reasons, biosecurity is of utmost importance to curb the spread of HPAI among cattle and poultry.

**Is there a risk to people?** So far, only a few cases of avian influenza have been reported in dairy workers, none in California yet, and all have had mild symptoms and have recovered. Humans luckily do not appear to be the main target species of this type of avian flu virus even when directly

exposed to infected cows, but personal protective equipment (PPE) is highly recommended for those working on dairies. Human safety is paramount, and the USDA offers financial support for affected premises to purchase PPE, such as gloves, goggles, and masks for farm workers. Early on, it was also determined that pasteurization inactivates HPAI virus, so the milk supply stays safe. The USDA is also confident that the meat supply is safe and will be adding H5N1 monitoring in dairy cows at slaughter to its program later in September. It is, however, not recommended for people to consume raw milk as milk appears to be the main vehicle for transmission and may not be safe to drink.

**What happens now in California?** The staff at the Animal Health branch at CDFA had been preparing for the moment when HPAI would be detected in a California dairy herd. Factsheets and regulations are posted on a dedicated website. Lactating dairy cattle moving interstate from California require a Certificate of Veterinary Inspection and a negative HPAI test within seven days of movement. All dairies are urged to increase their biosecurity including cleaning and disinfection of vehicles to transport cattle, restriction of worker movement between dairies and poultry facilities, limiting visitor access to premises, wild bird deterrence, etc. All lactating cattle shown at fairs must have a negative PCR test for the virus from a milk sample within seven days before arriving at the fair. Enhanced biosecurity for dairy cattle at fairs has also been outlined in a factsheet.

**Is there a vaccine?** There is no vaccine for cattle yet, but several pharmaceutical companies are working on the development of such vaccines. The USDA is also conducting research into a vaccine. If or when a vaccine for cattle will become available is still unknown today, but the flurry of activity is a promising sign.

**What do beef ranchers need to consider?** No beef cattle have been found to be infected with HPAI to date. Spread within a beef herd would likely be limited because cows aren't being milked. However, beef cows are likely not immune to the virus. Therefore, biosecurity should also be on ranchers' minds, especially for those who have contact with dairy cattle or domestic poultry. You do not want to become a fomite. The biosecurity training provided by the Beef Quality Assurance program is a good starting point to learn how to prevent spread between cattle or between cattle and poultry. Chapter 3 in the BQA manual is full of good information. For example, a trailer that is used to transport cattle from multiple herds should be thoroughly cleaned and disinfected between loads. Changing clothes and washing boots between visiting different herds should also be practiced. Limiting visitors to the ranch and keeping a visitor log is also encouraged.

The avian influenza outbreak in California dairy cattle is a stark reminder of the unpredictable nature of viral diseases and their ability to cross species barriers. It is important to follow the science, listen to guidance from experts, understand that sometimes things change, and we need to adapt with the change. We have successfully overcome Covid19 – we will also get through avian flu in dairy cows. Keep checking the CDFA website to stay informed on the development of this new cattle disease.

## **BOREL FIRE RESOURCES AND LIVESTOCK PASS UPDATE**

The Borel Fire is reported as the largest fire in the history of Kern County at 59,000 acres. I recently co-hosted a workshop with Amy Rocha from the Natural Resources Conservation District (NRCS) and my colleague, Mandeep Riar (Restoration Ecology and Weed Science). Topics presented at the workshop include the Burned Area Erosion Report (BAER), home hardening principles, and weed management post-fire. UCANR has really great fire resources available at: <https://ucanr.edu/sites/fire/>.

The United States Department of Agriculture (USDA) Farm Services Agency (FSA) and NRCS have a number of programs available to help serve landowners after a fire or other natural disaster. NRCS has the EQIP program open to landowners and agricultural producers while the FSA has programs targeted at agricultural producers. Programs include:

- Non-insured Crop Disaster Assistance Program (NAP)
- Emergency Conservation Program (ECP)
- Livestock Forage Disaster Program (LFP)
- Emergency Assistance for Livestock, Honeybee and Farm-raised Fish Program (ELAP)

NRCS has a very informative website with information about post-fire erosion control and best practices. Most importantly, please consider if action is necessary; sometimes no action is the best decision.

<https://www.nrcs.usda.gov/conservation-basics/conservation-by-state/california/post-fire-disaster-assistance>

Kern County Fire Department attended the workshop and shared that a Livestock Pass was used during the Borel Fire. Livestock passes assist commercial livestock producers wishing to gain access behind roadblocks in emergency situations. If anyone does not have a Livestock Pass and is interested in getting one, the program is administered through the Ag Commissioner’s office. Requirements for the Livestock Pass vary by county. To qualify in Kern County the minimum number of livestock is 50 head and in Tulare County the minimum number of livestock is 25 head. In-person trainings were previously held in Kern and Tulare counties. If there is interest, KCFD has agreed to host another in-person training. Please contact me if you are interested in an in-person training for the Livestock Pass.

### GOLD-SPOTTED OAK BORER

The Gold-Spotted Oak Borer (GSOB) is a beetle attacking oak trees in southern California. This beetle is quite small measuring 10 mm long by 2 mm wide (slightly larger than a grain of rice) and can be identified by the six gold spots on their forewings. GSOB feeds on the cambium of the tree, zigzagging across the tree in no particular pattern. Over time the tree is no longer able to effectively move nutrients causing the tree to starve to death. GSOB tends to concentrate in the lower portions of the main stem and sometimes in large limbs of the tree.



There are three classifications of oaks: white oaks, red oaks and intermediate oaks. GSOB attacks red oak species which include Coast Live Oak, Canyon Live Oak, and Black Oak. Native to Arizona, it is believed GSOB came to California in infested firewood. It is estimated the GSOB has killed more than 80,000 trees since it was found in California in 2004. Oaks that are affected by GSOB tend to die quickly, within two to three years. Infested trees may have “D-shaped” exit holes, 3 mm in size. They may also display bark staining and associated woodpecker damage. Current research suggests that once a tree shows signs of GSOB infestation, it may already be too late to save the tree.



Trees can be treated with pesticide to kill the beetle. Trunks can also be tarped to try and contain the beetle and prevent infestation. Researchers are looking for a natural predator that might be considered as a biological control method in California. Currently, the only way to control the spread of GSOB is to cut down dead and dying trees and burn or very finely chip (2.5 mm) the wood. Recent research suggests small numbers of GSOB larvae may survive even when the wood is burned.

GSOB is a pest to be aware of in Kern and Tulare counties because it has expanded rapidly in southern California and it is possible this beetle may expand its host trees to oaks in the other two categories; white and intermediate. You can do your part to slow the spread of GSOB by not moving firewood and reporting any potential GSOB infested trees.

For more information, visit the links below:

[https://www.youtube.com/watch?v=fdwfwr\\_6tCY&t=269s](https://www.youtube.com/watch?v=fdwfwr_6tCY&t=269s)

<https://ipm.ucanr.edu/PMG/PESTNOTES/pn74163.html>

<https://cirs.ucr.edu/invasive-species/goldspotted-oak-borer>

## WHEN IS IT GOING TO RAIN?

I once had a rancher ask me, very seriously, “When is it going to rain?” Man, if I had the answer to that question, I would be rich! Unfortunately, I do not have a crystal ball and I am not a meteorologist. A quick look at the National Weather Service Climate Prediction Center map indicates that temperatures might be slightly warmer than average, but current models aren’t really predicting rainfall levels yet. However, it does say, “La Nina is favored to develop and persist...”. Time will tell what this means for California. <https://www.cpc.ncep.noaa.gov/products/predictions/30day/>

While I do not have a crystal ball, I have spent a lot of time on rangelands across Kern and Tulare counties over the past 12 years. During my travels, I have observed a trend that rangelands managed to have 500 pounds of residual dry matter (RDM) or more tend to have less variability in forage production. RDM is the dead, dry grass remaining when the first rain falls (typically measured on or around October 1). It used to be called natural mulch, but this term proved to be confusing, hence the new, rather sciency sounding moniker of RDM. Recommended RDM values vary based on slope and tree canopy cover. Specific recommendations can be found here: <https://anrcatalog.ucanr.edu/pdf/8092.pdf>. For perspective, five-hundred pounds of RDM is about 2.5 inches of standing plant material.

Leaving adequate RDM acts like an insurance policy, increasing the predictability of forage production the following growing season. The cool part is, it makes sense financially too. A paper published in 1970 summarized the economics of RDM. On average, sites where adequate RDM was maintained produced 1,500 more pounds per acre, even in drought years. With the current cost of hay (\$250/ton; \$0.13/lb), it would cost \$195 per acre to replace the forage lost. Multiplied by an easy number like 1,000 acres, that’s a total cost of \$1,950 to replace forage. For more information, or if you have questions, please don’t hesitate to call or email me.

## BUYING AND FEEDING SAFE HAY IN CALIFORNIA

From time to time, there are reports of hay contaminated with weeds. A weed is any plant that is not wanted. Some weeds in hay are not desirable but are not dangerous to livestock, while other weeds found in hay can be hazardous to livestock. Examples of weeds to watch for in hay include groundsel and ragwort (*Senecio* spp.), fiddleneck (*Amsinckia* spp.), horsetail and scouring rush (*Equisetum* spp.),



bindweed, (*Convolvulus* spp.), milkweed (*Asclepias* spp.), and lupine (*Lupinus* spp.). This is not a complete list.



Symptoms of exposure to groundsel, ragwort, and fiddleneck are similar including loss of appetite, constipation or diarrhea, jaundice, and a general dullness. Horses may display neurological signs including head pressing, awkward gait, and chewing or biting. Prolonged exposure can cause liver failure and death. Horsetail and scouring rush contain an enzyme that destroys thiamine in the animal's body. Thiamine is necessary for normal brain function. Symptoms may include lying down and convulsions, especially in lighter weight animals. Bindweed can cause colic and weight loss. Milkweed contains high amounts of toxins, meaning if animals consume only a small amount they may be severely affected. Symptoms usually appear within 2-14 hours of ingestion and include colic and abdominal discomfort, incoordination, weakness, convulsions, and death. Of note, milkweed is not palatable and livestock usually avoid this plant under grazing conditions. Also, milkweed is the primary forage for monarch butterflies and is therefore a critical plant for conserving this iconic species. Ingestion of lupine can cause muscular trembling,

incoordination, and excitement. Not all species of lupine are poisonous; some species provide valuable forage.

If hay is sourced from outside California, weeds may be less familiar making it harder to determine if the hay is safe to feed. Examples of weeds to watch for include buttercup (*Ranunculus* spp.), nightshade (*Solanum* spp.), pigweed (*Amaranthus* spp.), and some species of *Panicum*, including kleingrass and witchgrass (*Panicum* spp.). This is not a complete list.

Animals that consume large amounts of buttercup may show signs of digestive upset including nausea, diarrhea, and colic as well as swelling of the face. In some instances, neurologic symptoms occur such as tremors, seizures, weakness, and paralysis (5). Consumption of nightshade causes depression, loss of appetite, weakness labored respiration, colic, swelling and in rare cases neurologic symptoms. Pigweed ingestion causes symptoms of kidney disease to develop, rapidly leading to weakness, trembling, knuckling of the pasterns, coma and death.

The *Panicum* species present an interesting example of plants that can be good forage but are sometimes problematic in feed. Kleingrass (*Panicum coloratum*) was introduced as a forage species and Witchgrass (*Panicum capillare*) is native to North America. *Panicum* species can cause photosensitization when consumed by livestock because of the presence of steroidal saponins in these grasses. Photosensitization is a sensitivity to light, typically sunlight. Photosensitive animals are uncomfortable when exposed to light and will rub or scratch lighter colored areas; lips and ears tend to show early signs of photosensitization. Exposure to light causes a rash, swelling and sores. Without treatment tissue can become necrotic and slough off. Secondary bacterial infections are a concern. Photosensitization can result in liver damage. Non-ruminant herbivores such as horses are more prone to the toxic effects of *Panicum* grasses. Livestock provided with uncontaminated feed when symptoms appear usually recover quickly. Severe cases or cases of prolonged exposure can be fatal.

In addition, Witchgrass may accumulate nitrates. Plants that accumulate nitrogen (or nitrates) contain more nitrogen than the animal can effectively process and excrete. The condition restricts the animal's ability to move oxygen throughout the body. Symptoms include, but are not limited to, difficulty breathing, abortion, reduced lactation, and discolored urine. Nitrate toxicity can be fatal. *Panicum* species may be especially problematic for grass hay growers because both the weed and the crop are a species of grass, restricting the use of grass specific herbicides in the weed control program.

If hay is sourced from outside California, hay buyers should also be aware of the rare potential for blister beetle contamination. Blister beetles feed on the flowers of legumes (alfalfa is a legume) and if the beetles are present when the hay is cut, they will likely die and end up baled with the hay. Blister beetles contain cantharidin which is released when they are crushed. The amount of cantharidin in a beetle varies based on sex and physiological stage. Fatal doses range from 50 - 250 beetles in a 550 lb horse to 97 - 450 in a 1,100 lb horse. Blister beetles tend to swarm so they will likely be found concentrated in just one or some areas of a bale. There are nearly 400 species of blister beetles found in the U.S.



Livestock owners can protect their animals by carefully inspecting recently purchased hay, especially if the hay is from a new source. It may be difficult for some livestock owners to identify weeds in hay because the plants are dry and pressed/baled. The alternative is to know what hay should look like and when something different is found seek help from a local expert to identify the weed and determine if it is poisonous. Talk to your hay dealer and ask questions. Some questions to ask might include:

- Where is the hay grown?
- What cutting is the hay?
- How was the hay stored?
- What were the weather conditions while the hay was being grown/harvested/baled?
- Does the dealer purchase exclusively from one grower or source from multiple growers?

Assess the hay for proper color (high quality alfalfa is green, lower quality alfalfa is lighter in color) and smell. Hay should smell good, not sour or moldy. Look for seed heads, small beetles, or other contaminants. Following these simple steps will help keep your animals safe and healthy.

1. Fuller, Thomas C., and Elizabeth McClintock. Poisonous Plants of California. Berkeley: U of California, 1986
2. Kingsbury, John M. Poisonous Plants of the United States and Canada. Englewood Cliffs: Cornell, 1964.
3. Aiello, Susan E., et al, eds. The Merck Veterinary Manual. Whitehouse Station: Merck & CO., Inc., 1998.
4. <https://poisonousplants.cvmbs.colostate.edu/search>
5. Burrows, George E. and Ronald J. Tyrl. Toxic Plants of North America. 2<sup>nd</sup> ed. Iowa: Wiley-Blackwell, 2013.
6. <https://livestock.extension.wisc.edu/articles/equine-toxicity-concerns-due-to-blister-beetles/>

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