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News Briefs

Need support for flood damage or livestock losses?

USDA Farm Service Agency has a variety of programs available, including their Livestock Indemnity Program (LIP) and their Emergency Assistance for Livestock (ELAP).

[Read more about the FSA disaster assistance programs here.](#)

California Cover Cropping Survey

If you manage any systems that could incorporate cover crops, such as hay fields, irrigated pasture, field crops, orchards, and/or vineyards, please consider sharing your thoughts!

Do you have an opinion on cover crops? Tell us what you know and help define UC Cooperative Extension’s research priorities. We will also share an anonymous report on the survey with funding agencies like CDFA to help inform their funding strategies in the future.

The survey takes about 12 minutes and will provide valuable information from different cropping systems throughout the state.

Make sure your voice is heard.

[Click here to take the survey.](#)

Questions? Contact Hope Zabronsky at hزابronsky@ucanr.edu or Konrad Mathesius at kpmathesius@ucanr.edu

Resources from June 2023 Blue Oak Field Day

If you couldn't make it to the Blue Oak Field Day on June 3, but are curious about oak monitoring, we've got you covered!

The field day included several local speakers:

Billy Freeman with the **Sierra Foothill Conservancy**, who talked about the history of the McKenzie Preserve and their goals to maintain a healthy oak woodland. They are currently monitoring blue oaks to compare sites in two adjacent pastures, with two different grazing management histories.

Sokaina Alkhafaji with the **National Ecological Observatory Network (NEON)** shared the detailed monitoring protocols that NEON uses at locations all across the US for their long-term monitoring. Some of these protocols have been adapted at the McKenzie Preserve to monitor the oaks in the adjacent pastures.

Rebecca Ozeran with **UC Cooperative Extension** in Fresno and Madera Counties shared a set of low-cost, low-time commitment monitoring methods that are being tested in Madera, San Benito, and Tulare Counties. The goal for these methods is to make oak monitoring easy and accessible, while still providing useful information to make management decisions.

Nick Ampersee and Eva Lopez with the **US Geological Survey** talked about their work monitoring oaks and other trees in Sequoia-Kings Canyon National Park. They have been recording tree mortality and diagnosing causes of death, such as fungal pathogens, for several years.

During hands-on demos of some of the monitoring methods, participants shared their experiences with oaks from as far north as Chico and as far south as the Tehachapis.

Various resources discussed at the field day include:

California Agriculture journal: you can search for articles on oak research. Many articles describe regeneration, drought impacts, herbivory, and related topics.

Regenerating Rangeland Oaks in California: a free handbook with specific practices to improve oak regeneration on land you manage.

A field guide to insects and diseases of California oaks: this is a book that our guest speakers Nick and Eva shared with us.

Detailed terrestrial plant protocols and more information are available from NEON. Data from various sites across the US, including at the San Joaquin Experimental Range in Madera County, are publicly accessible to anyone who wants to view or download them.

NEON's Phenology protocols and data and **Vegetation Structure protocols and data** are also available for anyone to access.



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Livestock & Natural Resources Newsletter

Oaks continued

The UCCE monitoring protocol is still in development. Right now, on-the-ground monitoring happens once in the **Spring** (May-June) and once in the **Fall** (September-October) at three sites.

Spring monitoring protocol summary

Observe mature tree **vigor and mortality**. Vigor is scored based on how much live canopy is present, from a score of 0 (dead) through 4 (more than 90% live canopy).

Search for **seedlings** beneath mature tree canopies. Map new seedlings (distance and compass direction from the nearest mature, tagged tree) and relocate known seedlings. Measure heights, record any visible browse damage.

Install or reinstall **trail camera(s)**. Collect images, replace batteries as needed. *Trail cameras are aimed at a single tree, to capture time-lapse images of the tree developing new leaves, developing acorns, and dropping leaves.*

Measure **canopy area** (*not annually* – in Year 1, then every 5 years or so). This involves finding the longest radius from the trunk to the edge of the canopy, then measuring a perpendicular radius. Canopy area = $\text{Pi} \times \text{Radius 1} \times \text{Radius 2}$.

Fall monitoring protocol summary

Count **acorns**. Counts are extrapolated based on all acorns you can see in the canopy during a short observation period (e.g. 30 seconds).

Measure **shoot growth** and relocate pipe cleaners to the ends of the branches. *Pipe cleaners are used as a non-invasive, reusable method to mark specific branches to revisit each year.*

Relocate any **seedlings** to document survival, height, and any browse damage.

Install or reinstall **trail camera(s)**. Collect trail camera images, replace batteries as needed.

Measure mature tree **DBH and height** (*not annually* – in Year 1, then every 10 years) for all mature trees.

If there are oaks that you care about, consider starting a monitoring protocol of your own! It can be as simple as taking annual photos of the trees you want to monitor, as intensive as the NEON protocols, or any combination of methods in between.

Before monitoring, think about the question you want to answer. You might want to know, are young oaks surviving and growing into mature trees over time? You might also be curious about how the weather impacts acorn production, or whether wildlife are benefiting from your oaks. There are many possible reasons to monitor, and many options to monitor what matters to you!

We are happy to share more details about the monitoring we are doing, as well as a list of materials needed if you would like to test out our methods with your oaks. Contact Rebecca at rkozeran@ucanr.edu for more information.



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Buying Livestock Drugs in California

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Originally written July 12, 2023

A livestock producer recently contacted UCCE regarding a problem he was having getting livestock dewormers shipped to a California address from out-of-state online retailers. Three different online retailers told him that they don't have a license to ship the products to California. This was a headscratcher since the same retailers have previously shipped the same products to California.

The problem triggered an exploration into the regulation of livestock drugs in California, which is helpful to understand the issue encountered with the online retailers.

Below is a brief description of how livestock drugs are regulated in California, with many references to lists published by the California Department of Food and Agriculture (CDFA), and a final suggestion on what to do if you encounter the same denial to sell a dewormer or other livestock drug.

The Basics of California Livestock Drug Regulations

When you buy livestock drugs from a store or an online retailer you usually don't know or need to know the regulatory process that permits such transactions, unless you are buying an antimicrobial drug that requires a prescription. Drugs that don't require a prescription are classified as either a "livestock drug" or a "restricted livestock drug." Here are the different livestock drug classifications and their corresponding regulations:

1. **Livestock Drug** – does not have any restrictions to sell or purchase
2. **Restricted Livestock Drug** – the drug retailer is required to have an approved retailer license issued by CDFA to sell the drug in California
3. **Restricted Livestock Drug, Rx** – the retailer has the same requirement as with a Restricted Livestock Drug and the buyer must have a veterinary prescription to purchase the drug

Some restricted livestock drugs are further classified as Type A VFD (Veterinary Feed Directive) or Type A Non-VFD, but most livestock producers don't need to worry about Type A livestock drugs unless they are a confined animal feeding operation (CAFO).

You can download a complete list of CDFA Approved Livestock Drug Registrations and their classifications [by clicking here](#).

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*Livestock Drugs continued***More on the Drug Classifications**

Most drugs for livestock fall under the “Livestock Drug” classification and include drugs such as antiseptics, topical medications, pain relievers, vitamins, minerals, nutrients, insecticides, and many more.

Drugs in the “Restricted Livestock Drug” category ([click to view a list](#)) include hormones, dewormers, coccidiostats, medicated feed additives and a handful of other drugs. Purchasing “Restricted Livestock Drugs” in California is typically not a problem unless the retailer does not have an approved retailer license with CDFA.

Drugs classified as “Restricted Livestock Drug, Rx” ([click to view a list](#) of these drugs that were available without a prescription prior to 2018 in California) include medically important antimicrobial drugs such as penicillin, oxytetracycline, sulfamethazine and others. These are drugs that require a prescription from your veterinarian to be purchased in the state of California, as mandated by the Livestock: Use of Antimicrobial Drugs law ([FAC § 14400 – 14408](#)). Other livestock drugs, including antimicrobials such as tulathromycin or gamithromycin have always required a prescription and will continue to do so in the future. If you do not have a veterinarian’s prescription, then you must establish a veterinary-client-patient relationship (VCPR) with a veterinarian so that the veterinarian knows you and your livestock operation and has confidence in your animal care practices and ability to properly use and administer the prescription drugs.

**Why Did the Retailers Decline Selling the Dewormer Products?**

While one of the retailers clearly does not have a retailer license to sell restricted livestock drugs in California, the other two retailers do have an approved retailer license. When we contacted the two retailers who do have an approved retailer license, they both indicated that the purchases were denied due to a website error and suggested that the purchaser call their customer service phone number to order the restricted products. Given this response we suspect there may be confusion or glitches among some out-of-state online retailers on selling restricted livestock drugs in California. A contributing factor may be recent changes made across the nation regarding medically important antimicrobials. On June 11, 2023, the US Food and Drug Administration implemented GFI # 263 and all medically important antimicrobials in the nation now require a prescription from a veterinarian. The rest of the country essentially now follows what California has already been practicing since 2018. The drugs that were previously “Restricted Livestock Drugs, Rx” are now Federally labeled as Rx drugs and no longer require a special designation for sale to California residents. It did not, however, change the label status of other “Restricted Livestock Drugs” in California.

If you find yourself in a similar situation in which an online retailer declines the sale of a dewormer product or other restricted livestock drug, you can first check if the retailer has an approved retailer license [using this CDFA Restricted Livestock Drug Licensee list](#). If the retailer is listed as having an approved license then you should call their customer service number to order the product and let them know of the website error so that it can be corrected.

You can find all the referenced lists of restricted livestock drugs, licensed retailers and information about the Livestock Drug Program in California at this CDFA website: cdfa.ca.gov/is/ffldrs/LivestockDrug.html.

Summertime: Blue-green Algae Time

By Gaby Maier, Extension veterinarian for beef cattle herd health & production, UC Davis and Josh Davy, County Director for UC Cooperative Extension, Tehama County

This article was originally written in August 2020.

Blue-green algae, also known as cyanobacteria, can be found in surface water like ponds. These photosynthetic bacteria do not necessarily pose a threat and are actually part of the ecosystem that provides oxygen to other micro-organisms. Under certain conditions, though, a so-called algal bloom may lead to a dramatic increase in their numbers and their subsequent die-off releases toxins into the water. Warm weather, stagnant water, and nitrogen or phosphorus fertilizer runoff are risk factors that can result in these algal blooms. Some slow flowing creeks and rivers can also be impacted – every year the Klamath Rivers seems affected and Clear Lake is known to have had problems as well. Mild winds can push and concentrate blue-green algae on the water's edge. You will see scum, foam, or a mat of algae, or they can look like paint floating on the water surface. Their color can vary between blue, bright green, brown or reddish.



Blue-green algae produce two types of toxins, neurotoxins and hepato-toxins (liver toxins). Both types can lead to sudden death in cattle if they drink water from ponds where blue-green algae were blooming. Dogs playing in or drinking from ponds and other animals have also been affected. Exposed cattle can have bloody diarrhea, be weak or seem confused. Often the only sign is sudden death. Those animals surviving hepatotoxic toxin exposure can develop what is called photosensitization caused by liver damage, a term for describing that their skin is more sensitive to light, where the skin, especially the lighter areas like muzzle, teats, or vulva peels off. Blue-green algae toxicity is in any case a severe problem and ranchers should be on the lookout to avoid their cattle becoming exposed.

When you are suspecting a blue-green algae bloom, the best way to avoid problems is to prevent access to the water source by fencing off the pond and providing a different water source. Toxin levels will increase as the cyanobacteria die. Once the water has cleared up, the best way to assure the water is safe again is to test at the lab. Toxins likely distribute evenly throughout the water so pumping water from the bottom of the pond may not be safe. However, this can be a good method of prevention. Cattle standing in small ponds depositing nutrients can exacerbate conditions and lead to algal blooms. Smaller water bodies are more vulnerable, because a larger volume of water helps dilute the nutrient load, but large lakes and reservoirs are not immune and have been impacted as well. Diverting water from a pond to a water trough and then fencing off the pond can decrease the nutrient load and help prevent algal blooms. The [Natural Resources Conservation Service \(NRCS\)](#) can help cost share with this and other livestock water development projects.

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Algae continued

If you are in doubt whether you have blue-green algae in your pond, there are a few simple tests to distinguish them from normal harmless water plants or other types of algae. Wear gloves for all these tests to avoid contact with toxins. Thrust a stick onto a mat of algae and pick it back up – if it comes back looking like it has been dipped in paint, it is blue-green algae. If it comes back with threadlike algae dangling from it, it is a different type of harmless algae. Another way to check for blue-green algae is to fill a mason jar or other clear container about $\frac{3}{4}$ with water and refrigerate overnight in a secondary container like a clear plastic bag to avoid any contact between the jar and other surfaces. Carefully inspect the next day; if all the algae are at the bottom, they are likely not blue-green algae. If they are floating at the surface, they are likely blue-green algae. These tests are not 100 % accurate but can be helpful in assessing the situation. If you identify blue-green algae in your pond, that does not necessarily mean that they pose a threat at that time. It does mean, however, that you should watch for algal blooms where toxins are released.

Testing at the [CAHFS lab](#) is also possible. The lab offers an algae toxin panel, which is priced at \$605 to test for 4 different toxins (Anatoxin-A, Cylindrospermopsin, Microcystins, Saxitoxins) or \$165 for individual toxins. Testing requires 500 ml (about 1 $\frac{1}{2}$ pints) of water that should be shipped on ice to the lab.

If one or more animals die acutely, it is important to consider a postmortem examination to try to determine if an algal toxin is the cause of death. The liver damage associated with exposure to hepatotoxic blue-green algae is dramatic and this can indicate the need to test for microcystins in water or gastro-intestinal content samples. The neurotoxic blue-green algae toxin does not cause any changes in organs after death, but gut contents can again be tested to help determine a cause of death.

Copper sulfate is a way to treat the water and kill the algae but can lead to high copper levels in the water, which can be harmful to cattle. Sheep are particularly susceptible to copper toxicity. Any treated drinking source should be tested for copper levels prior to allowing sheep to consume the water after a copper sulfate treatment. It is important to follow label directions to ensure enough product is used to be effective, but not an excessive amount that can cause toxicity to animals. Bleach can also be a successful treatment. If a pond is treated it will be necessary to determine the volume of the pond, so the proper amount of product is applied. UC ANR publication [8681](#) demonstrates a method for measuring pond volume. In addition, rapid die-off of algae can lead to large amounts of toxins being released into the water making it unsafe even though it appears clear. For this reason, and to ensure ample time for the product to work, livestock should be excluded from the treated water source until the treatment period is over.

More sophisticated technical solutions are available but come with a price tag. Devices that emit ultrasound waves prohibit microscopic algae from floating to the water surface where algae need to spend time for photosynthesis, which is the plants' way of turning sunlight into energy. Blue-green algae will not survive without that energy source. Full systems adapt the emitted ultrasound frequencies according to an algorithm and monitor water quality in real-time alerting the user to any changes in algae levels. The advantages of this system are that the algal cells are not lysed and do not release their toxins into the water and no chemicals must be used that could be potentially harmful to non-target species. A ballpark figure is about \$1,200 / surface acre for larger water bodies. Smaller, less sophisticated units are also available. The disadvantage of this system is that it is less effective in shallow water below 3-4 feet.

Mechanical aeration and mixing are other ways to decrease blue-green algae but require an electrical power source and systems maintenance. Mixing is more effective for deeper water bodies (> 45 ft). Another thing to keep in mind is that cyanobacteria have been around for billions of years and know a thing or two about evolution. They can adapt to their environment, so whatever you do to control them it's important to stay a step ahead of them and not rely on the same method over time.