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University of California
Agriculture and Natural Resources
Making a Difference for California

Livestock & Range News

TEHAMA, GLENN, COLUSA COUNTIES

November 2020

Foothill Abortion Vaccine Available

Josh Davy—Livestock and Range Advisor Tehama, Glenn, Colusa
Gabriele Maier—DVM, MPVM, DACVPM, PhD School of Veterinary Medicine
Jenna Chandler—EBA Product Manager Hygieia, Biological Laboratory
Jeffrey Stott—UC Veterinary Medicine

The foothill abortion vaccine developed by Dr. Jeff Stott's lab at UC Veterinary Medicine is now available commercially for purchase. Cattle should be healthy, at least six months of age and vaccinated at least 60 days prior to breeding. If cattle are bred sooner than 60 days post vaccination, they will conceive but abortions are likely to occur at 3-4 months gestation. There is a 90-day slaughter withdrawal after vaccination.

Hygieia Biological Laboratories in Woodland is both producing and distributing the vaccine. Obtaining the vaccine requires coordination so preparing at least three weeks in advance is necessary. Cost of the vaccine is roughly $800/30 dose vial ($27/dose) and must be purchased in 30 dose increments. Previous testing has shown the vaccine to be over 98% effective. Immunity is expected to last a minimum of three years in the absence of natural exposure. Thus, natural infection might need to occur during that 3-4 year period for prolonged immunity.

The process requires a three way coordination between the producer, a local veterinarian, and Hygieia. This is a live vaccine that must be kept in liquid nitrogen and thawed correctly to be effective; the vaccine can only be received by a licensed DVM and must be administered by your veterinarian. So the first step is setting up an appointment with your vet to ensure they have the appropriate liquid nitrogen storage and transport capacity (the vaccine must be transported to your ranch in liquid nitrogen) to receive the vaccine. Following confirmation, the producer calls Hygieia to order the vaccine, who then coordinates with your veterinarian to deliver the vaccine to their local clinic the day before cattle are vaccinated. Note the coordination of three different schedules is necessary so flexibility in these early stages is important.

A number of veterinarians have already been trained in how to properly handle and give the vaccine. This training is essential for them to be able to take delivery and administer the vaccine effectively. It may take some extra time before all veterinarians have been individually trained, so patience and early preparation are necessary.

To order the vaccine call Hygieia Biological Laboratories toll free at 1-888-494-4342 or direct at 530-661-1442.

For question regarding the vaccine email Jenna Chandler, Hygieia Biological Laboratories EBA Product Manager, jenna@hygieialabs.com

For a color copy of this announcement visit the website at: http://cetehama.ucanr.edu/
In addition, the website has many UC publications and information on topics such as livestock, range, natural resources, pest control, and other agriculture and crop production areas

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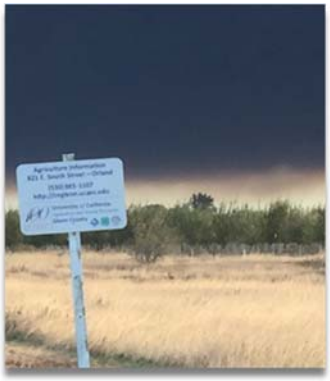
Josh Davy, UC Farm Advisor
Livestock, Range, and Natural Resources,
Tehama County Director

To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products not mentioned.

Wildfire Ash: Impacts on Forage Crops

Cooperative Extension Advisors: Betsy Karle, Josh Davy, Larry Forero, Mariano Galla, David Lile, Dan Macon, John Harper, Jeff Stackhouse, Jennifer Heguy, Nicholas Clark, Tracy Schohr
UC Davis Faculty/Extension Specialist: Deanne Meyer, Ed DePeters, Robert Poppenga, Thomas Young

The Problem: The impacts of wildfire ash deposition on forage crops either grazed or harvested for livestock feed were largely unknown, especially relative to burned structures containing unknown levels of contaminants from household products, vehicles, businesses and residential chemicals. Notable fires during the sampling period were the Carr, Mendocino Complex and Camp Fires in Northern California.



Smoke fills the air in the Sacramento Valley during the Camp Fire- Nov 2018

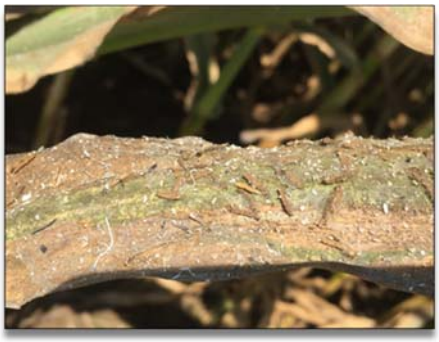
The Study:
During the fire season of 2018, we sampled:

⇒ 26 irrigated pastures
⇒ 20 hay stacks
⇒ 15 corn silage piles

from locations throughout California, either affected or not affected by wildfire ash.
All samples were analyzed for:

Heavy Metals:	Minerals:
Copper	Calcium
Iron	Magnesium
Manganese	Phosphorus
Molybdenum	Potassium
Zinc	Sulfur
Cadmium	
Lead	
Mercury	
Arsenic	

A subset of 37 samples were analyzed for toxicological compounds by gas and liquid chromatography–mass spectrometry organic chemical screens. These screens detect a large number of organic compunds belonging to diverse chemical classes, including pesticides, envirnmental contaminents, drugs and other natural products.



A corn plant in Northern California, covered in ash from a wildfire

The Results:
Toxicological compounds in harvested forage were detected in six of the 37 sampled fields:

- Ethoprop (pasture, hay)
- Caffeine (pasture)
- Linalool (hay)
- 1H-pyrrole-2'5-dione (hay)
- Acetamiprid (silage)

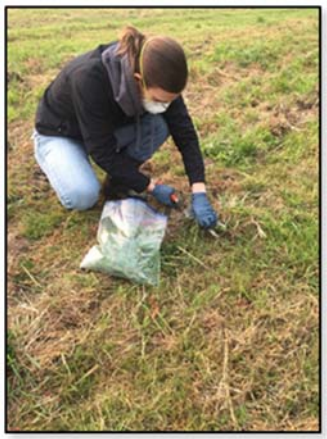
Detection of toxicological compunds was not associated with forage type or geographic location. It is possible that some compunds could be detected due to naturally occuring plant compounds or legacy chemicals.
Lead, mercury, arsenic and cadmium were not detected in any samples. Copper, manganese, zinc, iron, and molybdenum were detected in some samples with most levels falling below the maximum tolerable limit (MTL) for livestock as established by the National Research Council (Table 1).

Table 1: Metal Concentrations

Metal	Range (ppm)	Median (ppm)	Mean (ppm)	Maximum Tolerable Limit for Livestock
Copper	1.4 - 86	4.25	8.5	40
Manganese	3.8 - 500	23	40.8	2,000
Zinc	4.8 – 65	9.6	14.2	500
Iron	14 – 1,900	81	158.3	500
Molybdenum	0 – 2.8	0	0.25	5

"Lead, mercury, arsenic and cadmium were not detected in any samples."

Continued...



To determine the effects of heavy metal levels, we conducted an analysis of variance using factors of forage source (pasture, hay, silage), impact of ash (Yes or No), and their interaction. Copper was not significantly affected by forage type (P = 0.07) (in Table 2 are pasture and silage shown as being statistically different for copper 4.4a and 15.1b?), but was higher in fields not affected by ash (P = 0.03). Zinc was affected by forage source (P < 0.01), but not by the impact of ash (P = 0.32). Manganese was significantly impacted by forage source (P = 0.04), but not by ash (P = 0.12). Iron was impacted by forage source (P = 0.02), but not by the impact of ash (P = 0.19). See Table 2.

Table 2: Metal Concentrations by Forage Source and Impact from Wildfire Ash

	Copper (ppm)	Zinc (ppm)	Manganese (ppm)	Iron (ppm)
Forage Source				
Pasture	4.4 a[1]	12.3 a	62.8 b	94 a
Silage	15.1 b	10.1 a	12.9 a	80.9 a
Hay	7.7 ab	21.9 b	54.0 b	291 b
Impacted by Ash (Y/N)				
Yes	4.9 a	13.6 a	30.6 a	199.0 a
No	13.2 b	15.9 a	55.9 a	111.5 a

[1]Within a column, levels with the same letter are not different at *P* = 0.05

Minerals were detected at generally low levels across all forage types, with only potasium detected a higher levels in several samples (Table 3).

Table 3: Mineral Concentrations

Mineral	Range (%)	Median (%)	Mean (%)	Maximum Tolerable Limit for Livestock (%)
Calcium	0.15 – 1.4	0.37	0.49	1.5
Phosphorus	0.1 – 0.45	0.22	0.22	0.7
Magnesium	0.09 – 0.43	0.25	0.25	0.6
Potassium	0.26 – 3.58	1.71	1.68	2.0
Sulfur	0.09 – 0.44	0.19	0.20	0.4

The Take Home: Though there were some toxic compunds and a few high levels of heavy metals detected in our samples, results were generally unremarkable and did not suggest that wildfire ash was consistently associated with the positive results. The positive samples were randomly distributed and not all from areas affected by wildfire ash. While more detailed and controlled studies could provide additional information, these results indicate that forages affected by wildfire ash deposition are safe for livestock to consume.

How will a Fire Affect Annual Rangeland and What Should You Consider Doing?

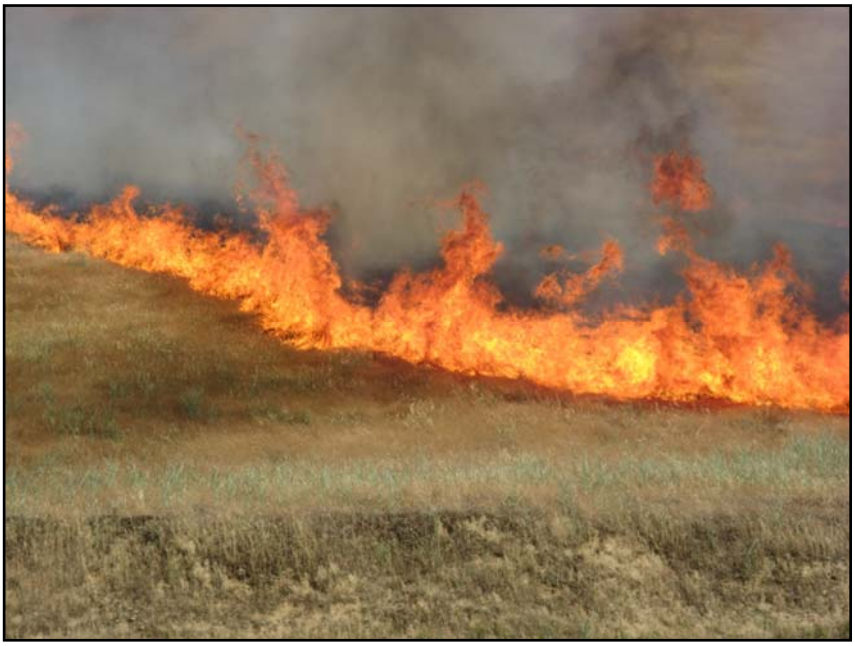
Larry Forero—Livestock, Range and Natural Resources Advisor Shasta, Trinity
Josh Davy—Livestock and Range Advisor Tehama, Glenn, Colusa

A fire on foothill annual rangeland will undoubtedly result in a reduction of grass production for several seasons following the fire. The effect the fire has on the resulting vegetation and production can vary based on the intensity, quality of ground, rainfall, and timing of the fire.

Regardless of most factors, the production year after a dry season fire will result in dominance of filaree due to the lack of cover going into the first rains (excessive cover = grass, little cover = filaree). In measuring the end of season production following a burn almost 50% reduction is possible in the following year, and over 20% the second year (Davy and Dykier, 2017). Losses this high would be mostly expected in better quality soils, and less so on shallow soils. With no grass mulch to conserve moisture, a dry year following a burn may produce little to no usable forage until spring. With hotter fires, such as those with brush, the losses can continue for three years (Frost 1988).

In grass fires the timing of the fire is important. Grass seed on the soil surface isn't affected by fire. With the exception of wild oats (technically slender oat), most seeds don't mature and fall to the soil surface until after June. So burns that occur before July will result in a reduction of grass seeds such as soft chess the next season. On the upside, this timing would control weedy grasses such as medusahead. Wild oats mature and shatter seed in early spring so if a stand of oats was present before the fire this should help in grass returning.

If a stand of wild oats was not present, it is worth considering reseeding desirable grasses in early season fires to provide forage and prevent the rapid reinvasion of weedy grasses. Seeding would best be done immediately prior to fall rains as grass fires don't provide enough ash for seed to settle in to and be adequately covered. Broadcast seeding to early results in birds eating the seed prior to germination. Drilling or covering the seed with a harrow after broadcasting is the most desired method of seeding, but commonly isn't feasible, leaving broadcast (airplane) seeding just prior to rain the most practical option. Grass fires that occur in July and later should have little effect on seed laying on the soil surface, negating much benefit in seeding. Production will still be less due to the lack of soil cover, especially if it's a dry winter.



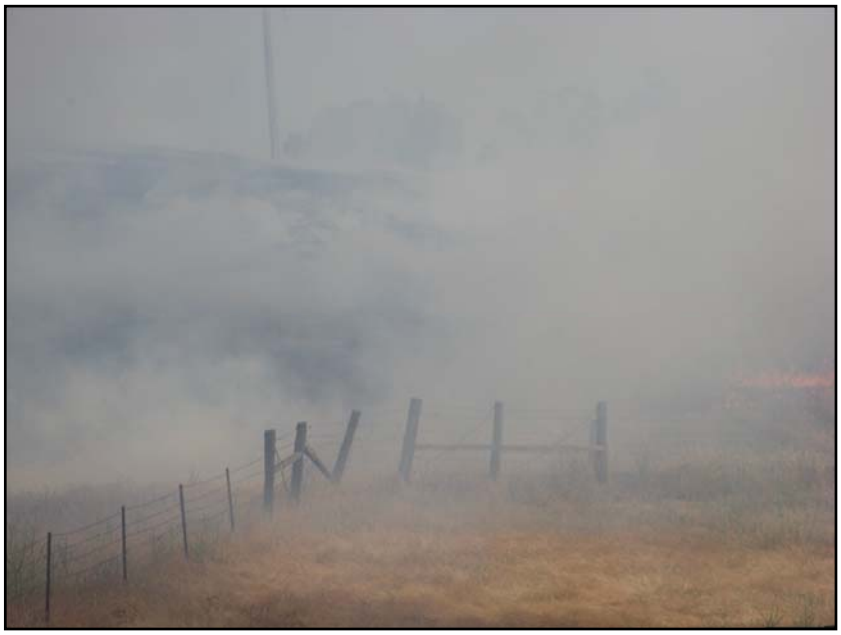
Brush burns get hot enough to affect seed on the soil surface. They're advantage is that they do provide a nutrient rich seed bed and source of cover for seed to fall in to. Reseeding these areas can be successful by dropping seed into the white ash. Because weed competition is usually eliminated by these hot fires, and fertility is high, these seedings have been successful in the past.

If seeding is necessary your local Cooperative Extension office can help in designing the most appropriate mix. Site conditions, management, and rainfall vary between properties which can change appropriate seeding recommendations. It's worth getting this part right otherwise the effort may be wasted.

Continued on the next page...

Soft brome sold as 'Blando' brome is a good choice as an annual grass that works well in most valley/foothill soils. Coastal grass mixes would benefit from annual ryegrass, but it should be viewed as a short term investment in valley foothill areas. Mixes of subterranean clovers with differing maturities are good choices for sites with good soils or dependable rainfall. Mixes containing annual medics may be better choices than sub clover in areas with lower quality soils and rainfall. In high quality valley soils perennial grasses such as 'Flecha' fescue and 'Berber' orchardgrass could be options if they fit management needs.

There is usually assistance from the USDA Farm Service Agency (FSA) and Natural Resource Conservation Service (NRCS) in replacing lost forage, livestock, and fences. When evaluating livestock losses it's important to remember that lameness may not be present for up to two weeks after the fire in some cattle (laminitis). These cattle would not be expected to recover. Reporting losses prior to this time may result in a lower number than is actually present. Check with a local FSA county office to make sure that all production acreage is on file so that it is covered, and that all applicable programs are signed up for. In many cases there are deadlines to file for assistance that are put in place once losses occur. University of California Cooperative Extension publication 9446 "Estimating the Cost of Replacing Forage Losses on Annual Rangeland" can be downloaded free of charge to assist with calculating ranch losses and help reporting to the Farm Service Agency. The Natural Resources Conservation Service offers financial assistance in the form of a cost share (EQIP) for reseeding rangeland. This program is valuable because it provides enough financial help to make the practice economical.



When calculating losses most often the equivalent in hay is considered in monetizing the forage loss value (1 ton of forage lost = the cost of a ton of hay). USDA releases a weekly California Hay Report that can be used to determine the cost of replacement forage. This is usually the most practical method, but there are other costs to consider. With an ongoing forage loss of 50%, turning out the regular number of cattle would eliminate any possibility of new green feed establishing. If cattle are not sold, many would need to be fed in a dry lot. If a daily feeding commitment isn't possible they may need to be hauled to a feed yard. Local feedyard costs are around $3/hd/day for a maintenance ration.

A call to a local marketing rep would be valuable in calculating the best economic plans. Cull cow prices tend to drop in the fall when pregnancy testing causes the supply to go up, and the fire situation may not help that. Acting sooner may be of value if a marketing rep advises that as a way to go. Most counties in California have emergency drought declarations which could help in avoiding capital gains taxes if cattle are replaced at a later date. This also means it would be prudent to discuss options with an accountant.

References:

Davy J.S., K. Dykier. 2017. Longevity of a controlled burn's impacts on species Composition and biomass in Northern California annual rangeland during drought. Range Ecology and Management. 70(6):755-758.

Frost, W. E. 1988. Vegetation changes following a vegetation management program burn in the hardwood rangelands of California. Sacramento: California Department of Forestry and Fire Protection Vegetation Management Program.

Photos by Josh Davy

Tehama County Department of Agriculture Continuing Education for Private Applicators, QAL,QAC,PCA and other License Holders

Tuesday, November 17, 2020
Tehama District Fairgrounds
3.5 hours C.E. Credits

****MEETING WILL BE COVID 19 COMPLIANT AND MAY POTENTIALLY BE CANCELLED IF COUNTY STATUS CHANGES**

7:30 - 8:00	Registration
8:00 - 8:05	Welcome Address from Agricultural Commissioner
8:05 - 9:00	PPE Requirements-Pesticide Label and Laws and Regulations (*Heather Kelly/Tehama Department of Agriculture*)
9:00 - 9:30	Pesticide Labels Weed Control for Orchard Crops (*Brad Hanson/ UCCE*)
9:30 - 10:00	Safety and Regulation for Ag Equipment/ Class A, Class B & Exemptions (*Steve Joiner/ California Highway Patrol*)
10:00 -10:30	Break- Vendor/Trade Show
10:30 -11:30	Pesticide Laws and Regulations at the Legislative Level (*Taylor Roschen/CA Farm Bureau*)
11:30 -12:00	Alternatives to California Restricted Materials for Brush Removal (*Jeff Stackhouse /Josh Davy / UCCE*)
12:00 -12:45	COVID-19 and Safety for Farm Workers (*C. Bryan Little/ Farm Employers Labor Service*)
12:45- 2:30	Lunch/Trade Show - Vic Woolery Famous Tri-Tip Sandwiches

**** Lunch Provided by: Nationwide Insurance***

**** Beverages Provided by: Pepsi Cola***

C.E. Credits: 2.5 hrs Laws & Regs; 1.0 hrs Other

Please Register by calling the Tehama County Department of Agriculture at (530) 527-4504 or email your RSVP to: MVieyra@tehamaag.net

Deadline for Registration is November 7, 2020

Dallisgrass Staggers

Josh Davy—Livestock and Range Advisor Tehama, Glenn, Colusa
Dr. Art Neves

Dallisgrass is one of the most common irrigated pasture grasses found in the Sacramento Valley due to its ability for abundant seed production. Dallisgrass produces seed throughout the summer months, which facilitates its rapid establishment in summer irrigated areas. Although it does not match the production and quality of common cool season grasses such and orchardgrass, ryegrass, and fescue, dallisgrass is a desirable forage grass because of its hardiness in grazing tolerance and high palatability.

Managers of dallisgrass pastures should be aware, however, of a potential toxicity to livestock and horses that can occur. The condition is called dallisgrass "staggers" and is typically expressed by muscle trembling, head tremors, an inability to control normal foot placement (staggering), and even falling down. Symptoms usually become worse when animals are excited, making it especially necessary to be cautious when moving potentially infected animals out of problem areas. Toxicity is caused by an ergot (*Claviceps paspali*) infection of the seedhead in mature dallisgrass. Animals become affected when they consume seedheads of dallisgrass plants that contain the ergot fungus. Livestock can develop a desire for infected seed heads and actually seek them out in a pasture.

Ergot infection of dallisgrass generally occurs when there is an exceedingly wet and/or humid period just after the seed head forms, such as an early fall rain. The fungus first infects the pistil of the seed head and then enlarges in place of the ovary. Unlike the usual flat appearance of dallisgrass seed heads, those infected with the ergot have conspicuously large sclerotium (up to ½ cm) that replace the individual seeds normally seen. These structures help the ergot fungus survive until favorable conditions again occur for it to re-infect plants. The structures can be reddish-brown or black. Infested plants also produce a sticky honey-like substance over the seedhead. Call your Veterinarian or Farm Advisor for help in identifying infected plants.

There is no medicinal treatment for dallisgrass staggers, however, animals generally recover if moved to non-infected pastures. Mowing infected seed heads can help to control the problem in pastures, however, toxicity is still possible in infected hay. Because the ergot requires specific humid conditions, the regrowth after mowing is often not infected. Early detection by checking dallisgrass seedheads for ergot infection can prevent outbreaks from occurring because cattle can be moved to alternative feed and seedheads can be mowed to prevent them from being eaten.

Other common grasses can also produce grass staggers and have similar symptoms. The most common is both annual and perennial ryegrass, though infection occurs differently between them. Perennial ryegrass causes toxicity from consuming the leaf, while annual ryegrass more closely resembles dallisgrass in have toxicity occur from consumption of the seedhead. Phalaris species such as harding grass, reed canary grass, and annual canary grass can also cause grass staggers if applicable conditions are met.

Information for this article was drawn from:
Bradfor P Smith. Large Animal Internal Medicine. Edition 4. 2009. Mosby Elsevier

Picture from North Carolina State University forage website: http://www.ncsu.edu/forage/dallis.htm

Livestock & Range News

http://cetehama.ucanr.edu

TEHAMA, GLENN, COLUSA COUNTIES

Livestock and Range News is a newsletter published by the Farm Advisor's office containing research, news, information, and meeting notices related to the areas of livestock production, irrigated pasture, range, and natural resource management.

In this Issue...

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